The sustainability relevance and impact on the automobile industry brand's reputation

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Abstract

Title: The sustainability relevance and impact on the automobile industry brand's reputation

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Nowadays, clients are more demanding of the brands they like. For a brand to be considered in a consumer's mind, it needs to do more than good products; it needs to make public statements about various political and social issues that are current and relevant to the brand.

With this study, I intend to analyse sustainability's relevance and impact on a brand's reputation in the automobile industry.

Firstly, some literature reviews were analysed to gather information and comprehend other researchers' methods of investigation. Several interviews were conducted to examine a small population sample to design an appealing survey. The survey was analysed with SPSS to answer the research questions that emerged from the Literature Review research.

The main findings of this study imply that, in fact, sustainability does have an impact on a brand's reputation in the automobile industry. In addition, this can be shown in the real-life case study "Diesel Gate" analysed in the Literature Review chapter.

Keywords: Brand Reputation; Automobile Industry; Brand Image; Sustainability

Sumário

Título: A relevância e impacto da sustentabilidade na reputação das marcas, na indústria automóvel.

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Hoje em dia, os clientes são cada vez mais exigentes com as marcas que gostam. Para uma marca ser considerada na mente de um consumidor tem de fazer mais do que ter bons produtos, precisa de fazer declarações publicas sobre diversos problemas sociais e políticos, que sejam atuais e relevantes para a marca.

Com este estudo, pretendo analisar a relevância e impacto que a sustentabilidade tem na reputação de uma marca, na indústria automóvel.

Primeiramente, foi feita uma análise literária de modo a analisar e obter mais informação e compreender o método de investigação de outros autores. Segundamente, várias entrevistas foram realizadas para analisar uma pequena amostra da população, de modo a poder criar um questionário apelativo. O questionário foi analisado com SPSS para possibilitar a resposta às diferentes perguntas de investigação que surgiram do capítulo de análise literária.

Os resultados deste estudo sugerem que de facto, a sustentabilidade tem um impacto na reputação de uma marca dentro da indústria automóvel. E ainda, estes resultados podem ser visíveis no caso real "Diesel Gate" analisado no capítulo de analise literária.

Palavras-Chave: Reputação da Marca; Indústria Automóvel; Imagem de Marca; Sustentabilidade;

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Introduction

1.1. Consumers and Current Markets

Nowadays, clients have become more demanding. It is no longer enough for brands to produce good products; they need to uphold specific standards and create a strong and beneficial brand reputation. As such, brands invest more time and resources into developing their reputation.

The new generation values not only green policies but also promotes and expects brands to engage in CSR (corporate social responsibility). This is, they expect that the production process is ethical and sustainable, carbon footprint, work conditions, pollution, and other aspects are constantly being watched and criticised.

Companies emit statements and reports to ensure their values and practices are known. This helps them increase the strength of their brand reputation. However, it is also a risk. If brands make promises they cannot keep, it will harm them more than if they did not make the promise in the first place. Having a bad reputation can lead to disastrous consequences.

More and more, people try to be sustainable in every aspect of their day-to-day life; this includes how they value and perceive vehicles. However, not all believe that electric cars are the solution, so the topic of sustainability in the automobile industry is a very current one, and it has been carefully discussed by many.

The number of brands with a social identity has been increasing. Meaning that more brands make statements supporting or boycotting certain issues. These can be either political, social, or even economic. According to the consumer's beliefs, they will either want to continue shopping the brand, or they will "cancel it", being that they will stop purchasing from it.

1.2. Aim of Research

This dissertation aims to explore whether there is an impact of brand sustainable behaviours and brand reputation. In other words, it will study if sustainability statements, claims and actions affect the perspective consumers have of a certain brand. In this case, the focus will be on the automobile industry.

Various forms of data were collected and analysed to make this study possible.

Firstly, an extensive literature review, composed of various research papers and case studies, was collected and thoroughly analysed. These focused on the automobile industry and everything it includes, on sustainability, what it is, how it began to be a relevant topic and how people view it, on brand image, what the concept is, and how it affects a brand, and finally, on brand reputation, and real-life reports on the consequences of a negative impact on brand reputation on the overall brand.

These articles were written by experienced, recognised, and esteemed authors, which provided a generalised idea of what I wanted to accomplish and how to succeed in doing so.

However, the research was insufficient, so interviews were also conducted. The main purpose of these interviews was to collect basic information and gain a grasping understating of consumer's preferences and opinions when it comes to the automobile industry and their sustainability beliefs. The interviews were conducted one-on-one via a shared online document to confer a greater sense of trust and allow interviewees to be truthful. The interviews allowed for a better design of the survey that was later on, distributed via online channels.

The survey allowed me to examine and rank the aspects people value when purchasing a car. Based on the answers given during the interviews, the survey's questions were current, interesting, and related not only to the topic but also to consumer's preferences and beliefs.

Among other questions, the survey allowed people to answer how they viewed a negative impact, concerning sustainability would affect their opinion of brand reputation. Thus allowing for an analysis of the topic in question.

Finally, the answers and tests conducted on SPSS were compared and exemplified with real-life cases, such as the Volkswagen case study.

With this study, I'll explore how a reputation crisis will affect how consumers perceive a brand in the automobile sector. The automobile sector has been highly discussed, especially now with the electric car revolution.

The Volkswagen case study illustrated that a negative impact on brand reputation leads to, what could be, disastrous consequences. Its cash flows decreased as did its stock price and competing power.

When compared to the example of the emissions scandal involving Volkswagen in 2016 it is evident that sustainability does have an impact on brand reputation. The adverse consequences incurred are not inherently permanent, as evidenced by research findings. Volkswagen, employing astute damage control measures and a well-crafted strategy, successfully mitigated the impact and strategically recuperated from the situation.

1.3. Relevance of Dissertation

As mentioned above, consumers are increasingly more worried about our planet and how to have sustainable measures to ensure the population's well-being. As such, I decided to focus on how these behaviours and beliefs impact brands and their companies.

Nowadays, sustainability is a hot topic, and it interests various types of people. In addition, it has been discussed by governments, companies, and even societies in general. The public interest in the topic, made me curious to further study it, as I believed it is relevant and interesting research.

Companies have shown interest in sustainability and other social issues. However, the way they express themselves about these topics affects how consumers see them. As such, the brand reputation factor of this study is also very relevant. As mentioned before, people expect certain behaviours and actions from brands, this leads them to create a connection with the brand.

From the tests conducted on SPSS, I could conclude that in fact, sustainability has an impact on a brand's reputation in the automobile industry, from a Portuguese point of view. As such, this dissertation is relevant as empirical evidence on the relation between sustainability impact on brand reputation in the automobile industry.

Literature Review

The present chapter aims to introduce a theoretical framework on the topics linked to the research questions and to the purpose of this study. The relevant concepts and constructs were explored through the support of previous studies and a summary of empirical evidence from numerous academic journals.

2.1. Automobile Industry

The automobile industry is a very unique one. Its size and diversity make it one of the most influential industries. However, this also means it is subject to different pressures and impacts from other industries. (Orsato & Wells, 2007)

With today's desire to live more sustainably, companies adapted to accommodate and satisfy this longing, and the automobile industry was heavily affected. The automobile industry demands high energy consumption, which doesn't align with consumer's new demands.

One of the biggest complaints about the industry is the very pollutant internal combustion engines, associated with emissions, fossil fuse use and noise. This is one of the attributes people want to modify about their vehicles. However, to comply with this want, the whole manufacturing process would need to be transformed, which, to do so, would imply a vast investment. (Orsato & Wells, 2007)

Since the 1980s many manufacturers have adopted policies and strategies intending to reduce the environmental impact resulting from the production process. This also leads to a more efficient and effective production process. (Orsato & Wells, 2007)

Finally, governments regulate this industry, applying external pressures to its various processes. Lately, more and more impositions on the automobile industry have been made. This forces companies to alter their production, manufacturing, and design processes. (Orsato & Wells, 2007)

2.2. **Sustainability (ESG) and Corporate Social Responsibility (CSR)**

Nowadays, people are more concerned about sustainability. This leads them to have certain behaviours and expect companies to engage in them. Clients are more demanding and uphold companies to high standards.

As such, companies modified their previous strategies. Before, companies had utilitarian shareholder-focused strategies. This change resulted from the Industrial Revolution and can be considered CSR's origin (Rodriguez-Gomez et al., 2020). In addition, the feminist movement for women's rights also had a big impact on the CSR movement.

CSR has been used by companies to improve their image and brand. With global markets, companies realized that having a good brand and image can allow them to operate in various markets, otherwise impossible. From this, we can conclude that engaging in sustainable practices can give companies a competitive advantage.

The first supposed mention of sustainability was in the 18th century in Germany. This report creates debates across multiple groups, thus creating momentum for innovation in various areas. After a while, it became a boundary term, connecting politics and science. To this day, you cannot discuss sustainability without creating a scientific and political debate. "In the past two decades, networks of diverse actors have been formed, alliances have been built, institutions and organisations have been constructed, projects have been formulated, and money – in increasingly large amounts – has been spent in the name of sustainability." (Scoones, 2007)

Sustainability itself became a global political topic after the 1992 United Nations conference in Rio. After, sustainability measures were implemented in the government's agenda and in the way they planned to develop (Scoones, 2007). The conference shed light on various important and current political and scientific discussions, such as climate change, biodiversity, and desertification (Scoones, 2007).

Sustainability is derived from six different schools of thought. That is one of the reasons why it is so difficult to create a single definition of sustainability. It englobes various terms with completely different foundations. (Kidd, 1992)

The ecological/carrying capacity root is arguably the most significant definition root of sustainability. Ecology was talked about long before sustainability was a topic. It refers to the

consequences of the relationship between Man and the environment, particularly when involving development. It mainly focuses on the physical resources, such as land availability, population levels and growth rates. (Kidd, 1992)

The environmentalist movement of the 1970s against the policies, strategies and values of big companies created the resource/ environmental root of sustainability. This is a concern about the Earth's capacity to endure the population's growth and development. With this movement, some governments started enforcing laws and regulations for development. (Kidd, 1992)

The belief is that human activity can and will degrade the planet if not stopped. This movement (the biosphere root) starts viewing the plant with finite resources and as a closed system. With this also comes the concern for future generations. It is the current's generations duty to ensure a viable planet for future generations. (Kidd, 1992)

Sustainability can also be associated with a dislike of new and modern technologies (the critique of technology root). This belief states that agriculture would be best without technology. Technology is corrupt. It dehumanises and disorganises the processes.

Another school of thought from which society emerges has an economic background. This was formulated after the 19th revolution, which led to the loss of many human values, and focused on profits. Society's goal should be wealth and the gathering of material possessions. This created a cultural revolution against the capitalist society. People believed that the economic growth needed to be stopped or it would have catastrophic consequences. It also created the idea that growth is not forever, there is a cap to how much you can grow, so new moral and ethical concepts were developed. (Kidd, 1992)

The final pillar of sustainability is the ecodevelopment root. It was defined as "an approach to development aimed at: harmonizing social and economic objectives with ecologically sound management, in a spirit of solidarity with future generation" by Professor Ignacy Sach in 1977. It states the importance of normative rules and values when planning and developing societies. (Kidd, 1992)

2.2.1. Consumers expectations of Sustainability (ESG) and Corporate social responsibility (CSR)

As previously mentioned, the topic of sustainability has become more relevant and discussed over the years, making it a great topic of study and research. CSR activities are important as shareholders are becoming more socially aware and conscious. (Ettinger et al., 2020)

Societies, in general, have attributed great importance to this topic, but they aren't the only ones concerned about sustainability. Governments, companies, and consumers also expressed their apprehensions related to this topic, of great importance and relevance. As such, they also take a special interest in creating sustainable policies and habits. (Kolk 2016)

This leads to a growing pressure for companies to act responsibly, both sociologically and environmentally.

Multinational companies face this pressure in a greater way, they have to conduct themselves according to consumers' expectations, both in their home country and in all the countries they operate in. In addition, they also must conform to the rules, laws, and customs of these countries.

"Societal expectations vis-à-vis business have increased more generally" (Kolk 2016). This trend can be associated with the various debates involving CSR and sustainability.

Finally, research conducted by the French company Opinionway on 414 French consumers shows that 85% of French consumers expect companies to engage in policies aimed at improving societies' well-being. More specifically, 26% believe that companies should participate in activities and initiatives that improve and preserve the environment. (Louis & Lombart, 2023). All the explained give raise to RQ1: "People expect brands to have sustainable behaviour".

2.2.2. Value of companies' sustainability initiatives

In the past years, multiple parties have been developing awareness of the social and environmental consequences of human activity, especially of business operations. As such,

consumers have been pressuring brands and companies into adopting more responsible behaviours and practices when it comes to sustainability. (Hwang & Kim, 2018).

Adopting sustainable behaviours or supporting sustainable initiatives improves the consumer's self-image. Since self-image is strongly and directly linked to well-being, these sustainable initiatives lead to an increase in the consumer's well-being. (Louis & Lombart, 2023).

Consumers that feel good about themselves, are more likely to be loyal to a brand (El Hedhli et al., 2013).

Consumers' self-image is determined by how they view their actions. Self-conscious emotions like guilt and shame can be determinants in people's behaviours. These emotions and how consumers view themselves can shape their behaviours and attitudes (Hwang & Kim, 2018).

Consumers have a crucial part when it comes to companies' initiatives, of any kind. They are both the judges of said initiative as they are the ones affected by it. (Aksak 2016). If a consumer is unsatisfied or unpleased with an initiative, his feedback to others will not be positive and it can create a loss for the company. This is why companies invest in research before making decisions, to see where they may be affected.

According to research (Louis & Lombart 2023), we can see the consumer's feelings towards sustainability. From the study, we know that 91.1% of the participants reported that recycling and protecting the environment contribute to their overall satisfaction with life.

From this, it emerged RQ2: "Consumers do value companies' sustainability initiatives".

2.2.3. Consumers' perception of a brand aims at its sustainability initiatives

Companies are under increasingly high pressure to adopt sustainable behaviours.

Consumers are more likely to connect with companies that undertake CSR initiatives that relate to their values. This is because it increases their self-esteem and increases their satisfaction (Chung et al 2015)

Many companies are pressured by their stakeholders to engage in sustainable activities. According to stakeholder theory, a consumer's purchasing decision is influenced not only by economic factors but also, by economic reasons. Consumers' purchasing decision process is no longer determined by price alone; it is still a big determinant as consumers are still price sensitive; however, more and more consumers have environmental concerns.

Value theory states that CSR activities are founded on companies' core values. Research has found a strong correlation between CSD and a brand's reputation. This means there is a link between brand reputation and the consumer's perception of the brand or company. However, this impact may not be positive. If there is evidence of inconsistency or ulterior motives, when it comes to these CSR values and initiatives, it can create damage to the reputation and loss of trust in the brand. As such, to avoid these situations, the motives behind the CSR values and initiatives should be transparent and clear, not leaving consumers wondering. This can also prevent consumers from being sceptical about their motives and values, which can also be damaging to the brand's reputation. Another strategy for companies to avoid scepticism is to focus their CSR strategies and initiatives in their area of activity, their industry. (Aksak 2016)

The way a consumer views CSR will influence their reaction to the company's activities related to those policies, thus, impacting the consumer's purchase intention and corporate reputation, (Bianchi et al., 2019).

So, RQ3: "A company's sustainable behaviours affect consumers' perception of it".

2.3. Brand Image & Brand Reputation

A brand is a name, term, design, symbol, or any other feature that identifies one seller's goods or services as distinct from those of other sellers (American Marketing Association, 2023)

The ISO (International Organisation of Standardization) defines a Brand as "an intangible asset that is intended to create distinctive images and associations in the minds of stakeholders, thereby generating economic benefit/values"

As such a brand can be defined as a product that adds other dimensions that differentiate it from others that fulfil the same need. These differences can be symbolic, more tangible, emotional or intangible.

Brands satisfy both emotional and functional needs. On the one hand, brands have and represent certain values and beliefs that consumers identify, or strive to identify with, this way fulfilling emotional needs. On the other hand, the brand's products had a specific purpose, thus fulfilling a functional need. (de Chernatony, 1999)

For the brand to be as strong as it can be, managers strive to incorporate both the emotional and the functional values into the brand. However, most of the branding activity focuses on the emotional appeal of the brand. (de Chernatony, 1999)

For a brand to be considered it must first be remembered by the consumer. The brand must have had an impact on the consumers' minds. (Bhasin, 2023)

Brand Knowledge is complex. It can be described as the pieces of information and associations people form about a brand. Its components are Brand Awareness, Brand Image, and Brand Recall, which is why associative memory and brand associations are so important. (Bhasin, 2023)

Brand image is the perception potential consumers have of a brand. Brand image is a broad concept, including the product's name, features, looks and appearances, such as the logo and the package in which the product comes. It can be formed through a mixture of a rational and emotional interpretation of a brand (Alwi and Kitchen, 2014).

Brand image is a crucial part of the marketing mix. It is what allows prospective consumers to connect and identify with the brand. This can highly influence the customer's decision-making process. It is known that people try to purchase products that reflect their values, personality, and status. Due to this, marketers use symbolic imaging to appeal to their specific target audience. They are much more likely to purchase it if they relate to it. (Ataman & Ülengin, 2003)

An easy way for companies to show their values is through their advertising, packaging, distribution, and word of mouth. However, consumers can infer them from the actions and statements the company publishes.

Finally, brand image can be more impactful in decision-making than the product's features and attributes. As such, the product's success can be determined by its image. (Ataman & Ülengin, 2003)

Brand reputation is the collective view people have of the brand, from how it treats its employees to how it presents its products. How people evaluate the decisions and actions the brand performs.

If a brand's reputation is affected, the consequences can be tragic. A brand's reputation is what leads consumers to trust it. Building a trust report with consumers should be the brand's main purpose.

Brand reputation can be damaged if it does not uphold the values and statements promised. Anything that makes the consumer lose trust in the brand leads to a blemished brand reputation. This can, at times, lead to a decrease in sales and profits, which can endanger the brand's ability to survive.

Having a good brand reputation is crucial for every company. By building a relationship of respect and trust with consumers, throughout the years, they are more likely to believe the brand's promises and offerings. (de Chernatony, 1999)

The main difference between these two concepts is that brand image focuses on the latest perception consumers have of the brand. It is an everchanging concept, while brand reputation is more stable. It represents the collection of the most important brand's images over time. (de Chernatony, 1999)

Then, RQ5: How desired purchase intention attributes are affected by consumer's expectations about sustainability, brand's attitudes perception, automobile industry sustainable behaviour, brand's transparency, brand's reputation and brand's falsehood".

2.5. Volkswagen Case Study

The consequences of a negative impact on brand reputation can be seen in the Volkswagen emissions scandal from 2015, known as the "Diesel Gate"

In 2007, Volkswagen created and committed to "Strategy 2018" where they vowed to be the number one automobile company in the industry by 2018. This commitment and strategy went beyond economic performance. Volkswagen was also committing to ecological and sustainable practices. The company openly talked about their commitment to fuel efficiency and

minimizing harmful emissions as part of its ecological plans and goals. (Mačaitytė & Virbašiūtė, 2018)

In September 2015, the United States Environmental Protection Agency (EPA) emitted a statement questioning the veracity of Volkswagen's emissions statements. Volkswagen had been emitting fraudulent statements about their car's emissions. This led not only to a loss of trust in the brand but also to legal concerns. The company was using software that allowed the concealment of the true data about the amount of nitrogen oxide being emitted. Nitrogen oxide is a highly reactive gas, that is harmful to humans and results from car emissions. (Mačaitytė & Virbašiūtė, 2018)

Said software was designed to pass the emissions tests run and developed by the EPA. When the truth was uncovered it was found that Volkswagen's car emissions were 40 times higher than the federal maximum allowed. (Mačaitytė & Virbašiūtė, 2018)

When the truth about the emissions was, initially, uncovered, Volkswagen denied it and tried to pass the software as a mistake. However, later on, they admitted to dissaving the test, people and governments. (Mačaitytė & Virbašiūtė, 2018)

After their admission of guilt, the brand started to pay car owners compensation. Nonetheless, their reputation had already been damaged, which led to their stock prices decreasing and, by 2018, they still weren't up to their peak in 2015, before the emission scandal. (Mačaitytė & Virbašiūtė, 2018)

2.5.1. How the stock market reacted to the emission scandal

Immediately after the EPA announcement, Volkswagen's stock price fell by 19%, going from 162,4€ to 132,2€. A decrease of 30,2€ per share. This decrease was the immediate, overnight, reaction to the announcement made by the EPA. After Volkswagen's admission to the emissions scheme, the stock price suffered and decreased again, this time by 20%. Going from 132,2€ to 106€, decreasing 26,2€ per share. Finally, after a while, shareholders seeing these variations in the stock market, reacted negatively and the stock price decreased once again. At this point, Volkswagen's stock price was valued at 92,36€.

The diesel gate scandal cost the company more than 75% of its stock value, being at its lowest since 2011.

The trading volume suffered an immense increase, being stocks at traded four times higher levels. This shows the instability within the company and the market, as people were closely following the news about the company.

This phenomenon showed that shareholders are about more than just profits and dividends. It shows that social factors, such as sustainability, matter as well. (Mačaitytė & Virbašiūtė, 2018)

The scandal did not cause only economic repercussions. Manufacturers and other brands lost trust in Volkswagen as well. In addition, other brands went under additional testing to confirm the veracity of their emissions values. (Mačaitytė & Virbašiūtė, 2018)

Consumers are now reluctant to believe the automobile industry and its companies. The diesel gate affected other automobile companies, their stock price suffered a 2% to 4% decrease. The impact can be seen mainly in Volkswagen's main competitors. (Mačaitytė & Virbašiūtė, 2018)

In addition, there is a clear loss in Volkswagen's power over its competitors. This is shown by its market share loss. In 2014, Volkswagen accounted for 12,41% of the market share, in 2015, its market share decreased to 12,04%, and by 2016 Volkswagen had only 11,35% of the market share. The decrease in market share can be linked to the consumer's loss of trust in the brand. (Mačaitytė & Virbašiūtė, 2018)

2.5.2. Impact on corporate financial performance

In 2015, due to the payment of compensations and government charges, Volkswagen's profits turned into a loss. (Mačaitytė & Virbašiūtė, 2018)

However, their vehicle sales weren't as affected as one could expect. In October 2015, their sales decreased by 3,5% (accounting for 136.345 units), and by November 2015, their sales had already increased by 0,4% (133.201 units) compared to the previous year (November 2014). Finally, by December 2015 their sales increased by 1,78%. (Mačaitytė & Virbašiūtė, 2018)

However, when looking at 2016, there was a 0,27% decrease in units sold.

Investors started second-guessing Volkswagen due to their lack of sales and profit growth. As such, the company loses its investors' trust.

The scandal is estimated to have cost the company $30 billion.

Finally, the revenue did not decrease as much as the net income. This can be associated with the charges and compensations paid by Volkswagen. (Mačaitytė & Virbašiūtė, 2018)

2.5.3. Impact of the scandal on brand reputation

There are different ways to measure a brand's reputation. One of which is by using the Best Global Brand List.

Best Global Brand List is a list created every year by "Interbrand". To be considered in this list, a brand needs to truly be global, breaking geographic and cultural barriers. In 2014, Volkswagen was considered 31st on the list, and by 2017 it was in 40th place. This shows that even after two years, the brand still hadn't recovered from the scandal. Nowadays, in 2023, the brand is ranked at 50th. As such it is evident that the brand is not as relevant nor as strong as it was before the diesel gate scandal. (Mačaitytė & Virbašiūtė, 2018)

RepTrak is a list created each year by the Reputation Institute. This list shows how society perceives the world's most famous companies. In 2014, before Diesel Gate, Volkswagen was ranked in 7th place according to RepTrak, and by 2017, it was in the 100th position on the list. The biggest reason for the downfall was the scandal. Most people no longer identify with the brand, are not loyal to it, nor would they recommend it to others. In addition, it reveals a lack of trust by investors. (Mačaitytė & Virbašiūtė, 2018)

So, RQ4: "A sustainability crisis reputation affects consumer's purchase intention".

Methodology & Data Collection

The present chapter is dedicated to displaying how the research questions and the mentioned hypothesis should be validated. It provides the tools, suitability, and justifications of the research methodology, along with the rationale for the data analysis tool selected.

In addition, this chapter explains each step and explores the reasons behind the analysis and provides a steppingstone to it.

3.1. Research design

Both brand reputation and sustainability are highly studied topics. As such, to conduct this dissertation, a variety of papers and case studies were pulled and analysed to gather information and draw conclusions. This empirical research allowed the general understating of the industry and the topics being studied.

To collect information about the market and what it thinks about the topic being studied, interviews were conducted, and a survey was published. This allowed communication and anonymity, allowing for truthful answers and more reliable answers.

3.2. Qualitative Research

Qualitative research is the collection and analysis of non-numerical data that allows a better understanding of the population's attitudes, beliefs, and behaviours, among others. The objective of this chapter was to gain information and understand the sample in this study to better design the survey they would later on answer.

To conduct the qualitative research, information was gathered from various interviews to design the survey for the qualitative research. These interviews allowed for a better understanding and insights.

Several one-on-one interviews were conducted to collect information to design a better, clearer, and precise survey. To do so, different age clusters, all with the same number of respondents, were selected and analysed.

To ease the interview process, a Word document was drafted, this document contained the various questions the interviewee was supposed to answer and was posteriorly distributed online. This allowed for faster data collection; however, it made it more difficult to clarify any doubts that could appear from the questions. In addition, it made it impossible to get more detailed and further development, allowing only a more generalised knowledge of the people interviewed.

In this study, it was opted to do interviews instead of focus groups. This is because focus groups are harder to conduct since they imply a bigger time commitment. In addition, to conduct a focus group it is necessary to have a place where you can conduct the study. So, logistically, it made more sense to commit to an interview form of qualitative research and not focus groups.

The empirical data and everyday knowledge about the industry and current customers' beliefs allowed the construction of the questions in these interviews (Appendix 1). The interviews were designed to have a flow, allowing, the interviewee a better experience when answering them.

3.3. Quantitative Research

Quantitative research is the collection and analysis of numerical data. It is used to find patterns, and relationships, and make predictions about a certain population in a study. These results can sometimes be used and generalized to a wider and bigger population than the one being studied.

After conducting and analysing the interviews, a survey was prepared (Appendix 2). The interviews allowed for a deeper understanding of the market and the current views of consumers on the explored topics. As such, the survey was direct and quick to answer. This was intentional, it is a known fact that people tend to dismiss, or not complete surveys if they are long and boring.

The Qualtrics platform was used to create and distribute the survey. This allowed for a quick distribution and fast data collection, with a simple link people could answer the survey. The survey was distributed through multiple online platforms, such as WhatsApp, Facebook, and Instagram. Once again, the survey was anonymous, the answers were more truthful, and it minimised biased responses.

The decision to conduct a survey was because this can gather a substantial number of responses, creating a small but statistically relevant sample, and its simplicity to analyse. To reduce biases, the survey should be answered by people with different social and economic backgrounds. However, the survey was shared with people from the same circle (university forums and friend groups), so some biased results should be expected.

3.4. Volkswagen Case Study

As empirical data, the Volkswagen case was explored and compared to the results collected from the quantitative and qualitative research. This case study is very relevant because it is a real-life example of how sustainability affects consumers' perception of a brand, thus exploring the topic analysed in this dissertation. The case study explores how the emission scandal led to a decrease in cash flows, stock price and competing power.

This case study is proof that, in a specific period, a brand's reputation was affected due to misleading statements relating to sustainability.

The Diesel Gate scandal has been studied and analysed by more experienced researchers, as such, its results and insides are crucial to better understand the industry and how it relates to sustainability. In addition, being a real-life case study, it provides more data (such as the variations in the stock market) than what could be collected in this study.

For these reasons, this case study was chosen and analysed in depth in the Literature Review chapter.

3.5. Data Collection

3.5.1. Primary Data

Primary data was collected through the following stages: interviews and an online survey.

Four interviews were conducted to have a significant representation of each age cluster. Although there are some limitations, these insights are extremely noteworthy since there were more male respondents than women. They allowed for a better understanding of the sample in question, thus allowing for a better survey design.

The education level varied depending on the age of the respondents. The younger age group had only the high school level, the second group had already completed their undergraduate, and finally, the last two groups had either finished the equivalent of a master's degree or their master's programme.

After gathering information for qualitative research, quantitative research was conducted.

Finally, the survey allowed for collecting multiple responses and a better understanding of how people view sustainability in the automobile industry.

This survey, while representing only a small sample, allowed a grasping understanding of how people perceive the automobile industry, what they value most in vehicles and what are their perceptions of sustainability. To make sure all answers were valid, an option on Qualtrics was selected that ensured that unfinished responses were not accounted for. This allowed an easier data cleaning and selection.

Two hundred and thirteen (213) answers were collected from the survey. However, after cleaning the uncomplete, it remained one hundred and eighty-two (182) valid answers.

Despite trying to eliminate biases, the survey had a significantly higher number of responses from females (58,8%) when compared to males (only 41,2%). As mentioned above, the survey was distributed through friends and university forums, so it was expected to have an age bias. Most of the respondents of this survey were between eighteen and thirty-four years old. More specifically, 60,4%, were amongst the eighteen to twenty-four years old age group, and 16,5% were between twenty-five to thirty-four years old. These age groups have a smaller budget, and this is reflected in the answers to the survey. Being that most of the people who answered (47,8%) claimed to have less than 500€ (five hundred euros) as their monthly income. Finally, as expected most people who answered are students without a job (45,1%), being that some (14,3%) have a job, but 32,4% are employed and 6,6% are self-employed.

3.5.2. Secondary Data

Secondary data is data used by the researcher that was previously collected by someone else.

After analysing the answers to the survey these were compared to the real-life case study of Volkswagen. This showed the impact of sustainability on brand reputation and brand value in the automobile industry.

The most important secondary data used in this dissertation is the Volkswagen Case Study, mentioned above. This case study was mentioned in the Literature Review and Methodology, this is due to its importance. As stated before, the case study can be a real-life representation of how sustainability affects the brand reputation of the brand. The relevance and the relatability of the case study, to this, make its analysis crucial to the conclusions of the survey and interviews.

The case study had a bigger sample size, and it was done by more experienced researchers, as such, its results are invaluable and fundamental to consider.

3.6. Measures / Constructs

The consumer's expectations and perceptions, as well as the brand's behaviours, transparency, and reputation, were registered through a set of questions described in Tale 3.1.

Table 3.1: Measures/Constructs

	Construct	Items	Scale
Brand	Q2 – Brand's transparency	11	Binary (1- Yes, 0 – No)
	Q8 – Brand's sustainable image	7	Ordinal (5-point Likert Scale)
	Q10 – Brand's reputation	11	Ordinal (5-point Likert Scale)
Consumer	Q3 - Consumer's expectations	1	Ordinal (5-point Likert Scale)
	Q4 – Consumer's attitudes towards Sustainable Brand Initiatives	5	Ordinal (5-point Likert Scale)
	Q5 – Consumer's perception towards sustainability	1	Ordinal (5-point Likert Scale)
	Q6 – Consumer's perception towards Automobile Industry sustainable behaviour	7	Ordinal (5-point Likert Scale)
	Q7 – Consumer's purchase intention attributes	7	Binary (1- Yes, 0 – No)
	Q9 – Consumer's purchase intention towards false brand's sustainable behaviours	1	Categorical (1- Yes, 2 – Maybe, 3 – No, 4 – I don't know)
	Q11 – Consumer's purchase intention under a brand's reputation crisis	1	Ordinal (5-point Likert Scale)

3.7. Data Analysis

The Data Analysis is initiated with a sample characterization of demographic variables such as age, gender, occupation, and monthly income, using simple frequency tables.

Afterwards, and to validate the constructs indicated above with more than one item and in a five-point Likert scale, Cronbach's alpha was computed to assess their scale reliability.

To verify research questions 1, 2 and 4, a proportion test of hypothesis was made, to analyse if in the large majority, consumers' expectations towards a brand's sustainable behaviours, sustainable brand's image and consumer's purchase intention under a brand's reputation crisis was met.

To analyse the relationship between consumer's perception towards sustainability and consumers' attitudes toward brand-sustainable initiatives, the Spearman correlation coefficient (r_S) was performed.

To investigate the impact of consumers' perceptions and attitudes, brand's transparency and reputation on the number of purchase intention attributes two regression models were estimated through the Ordinary Least Squares Method (OLS). The first one is only with the predictor variables of interest and the second introducing also the demographics as control variables. The OLS conditions of residuals normality, homoscedasticity and independence were verified through the Kolmogorov-Smirnov test, Breusch-Pagan test and Durbin-Watson test respectively. Moreover, an outliers' detection was made, using Case Wise diagnosis and Cook's distance.

Finally, to assess the relationship between demographic variables and consumer's purchase intention a set of Chi-Square tests were performed. The Cramer's coefficient was also considered to analyse the intensity of such relationships (higher values of the coefficient indicate stronger relations) with residual analysis to identify categories where the relationship was present.

For all statistical tests, significance levels of 10%, 5% or 1% were used and IBM SPSS Statistics version 28.0 to undertake the analysis.

Results and Discussion

This chapter's purpose is to present the results of the collected data from the online survey. The identification of outliers in the dataset is made using the Mahalanobis distance test. It started with data, followed by a check for the internal consistency of the constructs. These basic procedures allowed the statistical analysis to test the research hypothesis.

4.1. Data Preparation

The online survey ran on Qualtrics from October 30th 2023 to November 10th 2023, and gathered 213 answers. After cleaning the answers of those who did not complete all survey in its integrity it remained 182 valid answers.

This online survey is a non-probabilistic method of sampling, and it was chosen not only for simplicity but also for being inexpensive.

4.2 Interview Results and Main Conclusions

After analysing all the interviews, it was clear that some factors transcended age, sex and education. The factor that weighed most in the decision-making process was the price. This was consistent across all age groups. In addition, at least one person per age group mentioned the environment as a factor in the decision-making process. It is an attribute they take into consideration. Some prefer electric cars, while others favour hybrid and long-distance cars, but it's a factor that affects their decision.

Besides price, the younger generation (18-24 years old) relied on brand reputation. This is probably due to the lack of knowledge on the subject. As such, they trust that if a brand has a good reputation, it is because their products are worth their money. They want a brand they can rely on. They have a greater appreciation for the price since they have no income or a meagre budget for the purchase.

The young adult generation (25 – 34 years old) valued the technological features of the vehicle. Young adults live a fast-paced life, and they are used to having everything to be connected. This generation is very accustomed to having and using technology, they want their cars to also

be able to have technological features as they feel comfortable, and it gives them a certain status to have technology features in their cars.

The adults (35 – 44 years old) prefer brands that allow for a good design while being budget-friendly. They want the car to represent their personality. The car's design mirrors their beliefs. However, they do not have a vast budget, so they also value a good price, accompanied by lifestyle representation.

Finally, the older generation (45 years old and over), values comfort and safety. Since they are more established, price isn't a big concern. They are more preoccupied with having a comfortable drive, this can also be associated with being less patient whilst driving.

From this, it can be concluded that most people value price and sustainability when deciding to purchase a car. The other aspects of the vehicle will vary according to their age group.

4.3 Measurement Reliability

The Cronbach's alpha for all constructs with more than 1 item was conducted to check for the reliability and analyse if they serve the purpose of this research, namely Consumer's Attitudes towards Sustainable Brand Initiatives (AT) with 5 items, Consumer's perception towards Automobile Industry Sustainable behaviour (AISB) with 7 items, Brand Sustainability Image (BSI) with 7 items and Brand Reputation (BR) with 11 items.

Cronbach's alpha is a measure usually used to verify the internal consistency of a construct answered in a Likert scale and it is pointed out as the most important coefficient to measure accuracy (Maroco, 2021). The value of the coefficient allows us to verify the homogeneity of the answers of a certain dimension (construct) and values above 0,70 show a satisfactory consistency. The results can be seen in Table 4.1 and Appendix 4 to 7.

All scales showed a very good or good internal consistency, with values of alpha lying between 0,719 and 0,825.

Table 4.1. Cronbach's alpha of the constructs

Construct	Number of items	Cronbach's alpha	Quality
Consumer's attitudes towards sustainable brand initiatives (AT) (Q4)	5	0,825	Very Good
Consumer's perception towards Automobile Industry sustainable behaviour (AISB) (Q6)	6 (1 item excluded: Electric Cars)	0,725	Good
Brand's Sustainability Image (BSI) (Q8)	7	0,719	Good
Brand's Reputation (BR) (Q10)	9 (2 items excluded: price and speed)	0,777	Good

The attributes valued to purchase a car are indicated in Q7, which has 7 items, with binary answers in each item (0 - NO, 1 – YES), so the sum of the answers in all items creates the construct Purchase Intention Attributes (PIA), representing the number of important desired attributes when purchasing a sustainable car. The brand's transparency and truthfulness have 11 features indicated in Q2, for each, the answer is one if the consumer finds an aspect important and zero otherwise. Also, the sum of the attributes important to reveal the brand's transparency was computed, and a new variable Transparency (TRANS) was created. A descriptive analysis of the new variables is presented in Table 4.2.

Table 4.*2. Descriptive Statistics of the New Variables*

Descriptive Statistics							
	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Consumer's Attitudes towards Sustainable Brand Initiatives (AT)	182	1,00	5,00	3,76	0,74	-0,94	1,87
Automobile Industry Sustainable Behaviour (AISB)	182	1,50	5,00	3,70	0,69	-0,77	0,68
Brand Sustainability Image (BSI)	182	1,71	5,00	3,90	0,55	-0,88	2,49
Brand Reputation (BR)	182	1,78	5,00	4,18	0,46	-1,04	3,50
Purchase Intention Attributes (PIA)	182	1,00	7,00	2,70	1,32	0,62	0,27
Brand's transparency (TRANS)	182	1,00	11,00	3,80	2,15	1,28	2,58

4.4 Motivations to buy a sustainable vehicle

Regarding RQ1, a hypothesis test for the proportions of consumer's expectations about sustainability is made. Q3 question denotes an ordinal variable in a five-point Likert scale from 1- definitely not until 5 – definitely yes and was recoded into a dummy variable (EXP), considering zero the categories definitely not, probably not, might or might not (not many sustainable expectations) and one for probably yes and definitely yes (sustainable expectations). Let p be the proportion of consumers that expect automobile companies to engage in sustainable actions, the hypothesis H_0: $p \leq 0,5$ vs H_1: $p > 0,5$ were tested and the test statistic value $z = 11,063$, $p < 0,001$, led to the rejection of the null hypothesis. Then, it can be statistically assured that most consumers expect the automobile industry to have sustainable behaviours (Appendix 8).

So, RQ1: "People expect brands to have sustainable behaviours" ***is verified***.

In a similar way to evaluate if consumers value a brand's sustainable behaviours a set of proportions tests were made. Each of the items in Q8 are on a five-point Likert scale from 1 – Not at all important until 5 – Extremely important, and were recoded into dummy variables, considering zero for the categories not at all important, slightly important and neutral and one for very and extremely important. Let p_i, i= 1,…,7, be the proportion of consumers that expect the brand to have sustainable practise i. The hypothesis H_0: $p_i \leq 0,5$ vs H_1:$p_i > 0,5$ were conducted. Results are shown in Table 4.3 and Appendix 9.

Table *4.3. Results of the proportions tests*

Practises	Test Statistic Z	One Sided p-value
Electric Cars	3,448	<0,001
Low Emissions	16,709	<0,001
Low Fuel Consumption	19,502	<0,001
Hybrid Cars	2,647	0,004
Car Durability	14,104	<0,001
Recycled Materials	3,448	<0,001
Sustainable Manufacturing Process	10,142	<0,001

In fact, most consumers value sustainable practices. Mainly they appreciate Low Fuel Consumption and Low emissions, followed by car Durability.

Then, RQ2: "People value a brand's sustainable behaviours" ***is verified***.

To analyse the relationship between the way a brand associated with sustainable attitudes influences consumer behaviour towards it and the consumer's perception of it, the Spearman correlation coefficient (r_S) was performed. The items "When a brand supports a sustainability initiative: makes it more relevant; makes it more trustworthy; promotes brand admiration; makes it more likely to be recommended to others and it is more likely for a consumer to purchase it" are ordinal variables, in a five-point Likert scale, from 1 – Strongly disagree to 5 – Strongly agree (Q4), and the consumer's perception is also an ordinal variable, in a five Likert scale, from 1 – negatively affect to 5 – positively affect (Q5). The results of the relation values between consumers' perception of a brand's sustainable behaviour and consumer's attitudes towards brand-sustainable initiatives are shown in Table 4.4.

Table *4.4. Spearman's correlations between brand sustainable behaviours and consumer perception*

Items When a brand supports a sustainability initiative (Q4)	Spearman's coefficient	p-value
makes it more relevant	0,572	<0,01
makes it more trustworthy	0,435	<0,01
promotes brand admiration	0,405	<0,01
makes it more likely recommended	0,416	<0,01
is more likely to purchase it	0,654	<0,01

Brands whose consumer's perception are positively affected by their sustainable behaviours makes more likely consumers to purchase it (r_S=0,654, p<0,01) and makes it more relevant (r_S=0,572, p<0,01). Even with lower relation values, a brand with sustainable initiatives is more trustworthy (r_S=0,435, p<0,01), admired (r_S=0,405, p<0,01) and recommended (r_S=0,416, p<0,01).

So, RQ3: "A company's sustainable behaviours affect consumers' perception of it**" *is verified***.

For seeking how a sustainable crisis affects consumer's purchase intention also a hypothesis test for the proportions of consumers who will still purchase a car was presented. Q11 question

reflects an ordinal variable on a five-point Likert scale from 1- extremely unlikely until 5 – extremely likely, and was recoded into a dummy variable, considering zero the categories extremely unlikely, somewhat unlikely and neither likely nor unlikely, (low probability of purchase) and one for somewhat likely and extremely likely (high probability of purchase). Let p be the proportion of consumers who will purchase a vehicle even in a brand's sustainability crisis, the hypothesis H_0: $p \geq 0{,}5$ vs H_1: $p < 0{,}5$ were tested and the test statistic value $z = -13{,}242$, $p < 0{,}001$, led to the rejection of the null hypothesis. Then, it can be statistically verified that most consumers are affected in their purchase intention when a brand's sustainable crisis occurs. (Appendix 10).

RQ4: "A sustainability crisis reputation affects consumer's purchase intention" ***is verified***.

To answer RQ5 previously a Pearson correlation study was made (Appendix 11) which showed that the relation between brand sustainable image (BSI) and automobile industry sustainable behaviour (AISB) were high ($r=0{,}527$, $p<0{,}001$) and significant, so in the model, to avoid multicollinearity problems, only AISB will enter, since it is more related to the number of purchase intention attributes (PIA).

Now, to investigate what impacts the number of purchase intention attributes (PIA), a multivariate linear regression model was estimated by OLS, being *u* the residual (Field, 2017), to answer to RQ5: How desired purchase intention attributes (PIA) is affected by consumer's expectations about sustainability (EXP), brand's attitudes perception (AT), automobile industry sustainable behaviour (AISB), brand's transparency (TRANS), brand's reputation (BR) and brand's falsehood (FALSE):

$$PIA = \beta_1 + \beta_2 AT + \beta_3 AISB + \beta_4 BR + \beta_5 TRANS + \beta_6 EXP + \beta_7 FALSE + u \text{ (Model 1)}$$

Since Q9 is a question which denotes the purchase consumer's intention under brand false sustainable behaviours, and it is measured as a categorical variable, it was recoded into binary by setting value 1 to Yes and value zero for values, No, Maybe and I don't know (False).

The estimated model is (Appendix 11):

$$\widehat{PIA} = 0{,}148 + 0{,}007AT + 0{,}579\, AISB^{***} - 0{,}174\, BR + 0{,}224\ TRANS^{***} + 0{,}361EXP - 0{,}647FALSE^{*}$$

with *p<0,10; **p<0,05; ***p<0,01; R^2=0,224; F statistic=8,426, p<0,001.

The same model with the standardized coefficients (Beta):

$$\widehat{PIA} = 0{,}004AT + 0{,}302\ AISB^{***} - 0{,}061\ BR + 0{,}364\ \ TRANS^{***} + 0{,}106EXP - 0{,}117\ FALSE^{*}$$

The most important predictors to explain the number of sustainable attributes expected to purchase a car are directly related with the *brand's transparency and the truthfulness*, also to the *sustainable behaviours of the automobile industry*. Inversely if the *brand's perceived sustainable behaviours turned to be false* the number of sustainable attributes expected decreases, in accordance with the findings by Du (2022) and Tu (2019).

Considering now as control variables the demographics, except for gender, they are transformed into dummy variables in the following way:

- Age is recoded into zero for ages under 35 years, and one for ages of at least 35 years, and the new variable is named AgeD
- Occupation is recoded into zero for unemployed (Student without a job, Unemployed or Retired) people, and one for employed people (Student with a job, Employed and Self-Employed), and the new variable is named OcD
- Income is recoded into zero for incomes under 2000€, and one for incomes of at least 2001€, and the new variable is named IncD

And a new regression model was estimated:

$$PIA = \beta_1 + \beta_2 AT + \beta_3 AISB + \beta_4 BR + \beta_5 TRANS + \beta_6 EXP + \beta_7 FALSE + \beta_8\ GENDER + \beta_9 AGED + \beta_{10} OcD + \beta_{11} IncD + u$$ (Model 2)

With results (Appendix 12):

$$\widehat{PIA} = -0{,}513 + 0{,}056AT + 0{,}588\ AISB^{***} - 0{,}074\ BR + 0{,}213\ \ TRANS^{***} + 0{,}374EXP - 0{,}650FALSE^{*}\ + 0{,}080\ GENDER - 0{,}343AGED + 0{,}443\ OcD^{**} - 0{,}326IncD$$

with *p<0,10; **p<0,05; ***p<0,01; R^2=0,255; F statistic=5,841, p<0,001.

Even joining the control variables to the model, still the most important predictors to explain the number of sustainable attributes expected to purchase a car are directly related with the brand's transparency and the truthfulness, to the sustainable behaviours of the automobile

industry and inversely related if the brand's perceived sustainable behaviours turned to be false. Yet, if the consumer's is employed the number of sustainable attributes expected to purchase a car increases.

To verify if OLS assumptions are fulfilled, collinearity diagnosis, Kolmogorov-Smirnov normality test for the residuals, Breusch-Pagan test to analyse homoscedasticity of residuals and Durbin Watson test to verify independence of residuals were performed. The results are presented in Table 4.5 for both models (Appendix 11 and 12).

Table 4.5. Assumption Results

	Model 1		Model 2	
	Statistic	Sig	Statistic	Sig
Kolmogorov-Smirnov	0,047	0,200	0,036	0,200
Breusch-Pagan	1,543	0,167	1,105	0,361
Durbin-Watson	2,147	d_L= 2,169; d_U=2,293 (k´=6, n=200)	2,112	d_L= 2,126; d_U=2,335 (k´=10, n=200)

Also, outliers' detection was made, using Case Wise diagnosis and Cook's distance. Case wise detection gives the information for the cases above three standard deviations. Cook's distance indicates how much the estimation of the model changes when the i^{th} observation is removed, and reflects the influence of that observation, when Cook's distance is higher than 1 (Oyeyemi, G.M. et al., 2015) the observation is an outlier. No outliers were detected in both models for any of the two procedures.

4.5. Further results

To develop a profile of consumer's purchase intention under false brand's sustainable behaviours and the brand's reputation crisis, a set of Chi-Square tests was conducted between the demographic variables considered and questions Q9 and Q11. Also, Cramer's V coefficient was estimated to measure the relation intensity, besides a residual analysis was conducted to identify categories where relation was present. The results are presented in Table 4.6 and Appendix 13 and 14.

Table 4.6: Chi-Square Tests results

	Purchase intention towards false brand's sustainable behaviours		Purchase intention under a brand's reputation crisis	
	Test Statistic (p-value)	V	Test Statistic (p-value)	V
Age	1,798 (0,615)	0,099	6,840 (0,145)	0,194
Gender	5,899 (0,117)	0,180	1,339 (0,855)	0,086
Occupation	2,168 (0,538)	0,109	0,610 (0,962)	0,058
Income	0,348 (0,951)	0,044	9,674 (0,046)	0,231

By the residual analysis presented in Appendix 13 and 14, it can be concluded, at 5% significance level, that:

- Males get more undecided on their purchase intention towards false brand's sustainable behaviours
- People with monthly incomes over 2000€ are extremely unlikely to purchase a car from a brand with a reputation sustainability crisis.

Conclusions & Limitations

In this chapter, the main conclusions drawn from the previous chapter will be explained and it will explore the main limitations to be considered when looking and analysing this study.

5.1. Conclusions

This study aimed to see if there was a relationship between a brand's sustainable behaviours and its brand reputation in the automobile industry.

To study this theory a survey was published and then analysed on SPSS software. The purpose of running the different procedures on this statistical software was to study the validity of the research questions, raised from the literature review.

After analysing the research questions, we concluded that they were all verified. This means, that the affirmations were true. Then the most important findings regarding Portuguese consumers:

- People expect brands to have sustainable behaviours, in fact 81,9% expected brands to have actions towards sustainability, similar to the research of the French Company Opinionway, where 85% of French consumers expect companies to engage in policies aimed at improving societies' well-being.
- People value a brand's sustainable behaviours. It was found that 62,6% found very or extremely important Electric Cars. 89,0% Low Emissions, 91,2% Low Fuel Consumption, 59,9% Hybrid Cars, 86,3% Car Durability, 62,6% Recycled Materials and 80,2% Sustainable Manufacturing Process (Louis & Lombart, 2023)
- A company's sustainable behaviours affect consumer's perception of it (Chung et al, 2015). Brands with sustainable behaviours makes more likely consumers to purchase it (Bianchi et al, 2019) and makes it more relevant, trustworthy, admired and recommended.
- A sustainability crisis affects consumer's purchase intention, only 14,8% of the consumers will still purchase a car in a brand's sustainability crisis (Mačaitytė & Virbašiūtė, 2018). The results obtained in Mačaitytė & Virbašiūtė (2018) study showed that after the emissions scandal, Volkswagen's stock value lost more than 75% and had also a significant decrease in its market share, along with other automobile companies. In this study the data collected does not give the possibility of quantifying the lost in

stock value or market share for a brand in sustainability crisis, but if 85,2% of the consumers consider not buying from that brand obviously the lost in market share will be huge, probably followed by decrease in stock market value.

- The most important factors to explain the number of sustainable attributes expected to purchase a car are directly related with the *brand's transparency and the truthfulness*, also to the *sustainable behaviours of the automobile industry*. Inversely if the *brand's perceived sustainable behaviours turned to be false* the number of sustainable attributes expected decreases, in accordance with the findings by Du (2022) and Tu & Yang (2019). The factors with more impact on purchase intention is the brand's transparency and truthfulness (Beta=0,364) and automobile industry sustainable behaviour (Beta=0,302) which are directly related with the consumer's purchase intention. Also, and inversely related with purchase intention is falsehood's brand (Beta=-0,117). Brand's reputation, consumer's attitudes towards sustainable brand initiatives and consumer's expectations about sustainability seem not inhibit severely consumer's purchase intention. So, it can be concluded then that for consumer's point of view sustainable behaviours of automobile industry, brand's transparency and trust are the factors involved in the purchase intention making.

In addition, it was also possible to conclude that, for Portuguese consumers:

- Males are more affected by a brand's false sustainable behaviours than females.
- People with higher monthly incomes (over 2000€/month) are very unlikely to purchase a vehicle from a company after this was involved in a sustainability crisis.

After relating these findings to the ones found in the Literature Research chapter it is clear that sustainability has an impact on a brand's reputation in the automobile industry. With the Volkswagen case study, it was possible to see that after a sustainability crisis, the brand's sales decreased, as market share and its stock value. This can be linked to the brand's reputation being tainted since it was the only company in the market affected by it. As such, sustainable behaviours impact how consumers perceive a brand.

5.2. Limitations

As previously mentioned, there were several limitations when analysing the data collected in this study.

The survey was designed based on interviews as an attempt to make it relevant and interesting. However, the sample of the interviews was small, and not very diversified. The people who were interviewed were friends and family members of the interviewer. As such, they all had similar educational, social, and economic backgrounds. In addition, only four people per age group were interviewed, making it a small sample to collect information.

The sample of respondents to the survey, were selected by convenience, which results in a non-probabilistic sample. Also, collected among friends or university forums leads to a lack of diversity which outcomes in biased results. The biggest biases were age, occupation, and sex. This was to be expected due to the nature of the questionnaire. This questionnaire was designed, published, and shared by a master's student and answered, mostly, by her peers.

In addition, due to limited resources, the sample size, while still allowing for some valid analysis, it was too small to take solid conclusions.

The survey was completely new, and not based on any previous study. This also created some limitations. After feedback, it was clear that some people had some questions about the survey. As such some answers might not be as reliable as wished for.

5.3. Future research

In future studies a probabilistic sample should be taken, to make statistically possible the conclusions' generalisation.

Also, it would be interesting to spread the sample to several countries to compare different perceptions, opinions and sensitivities to the sustainability approach.

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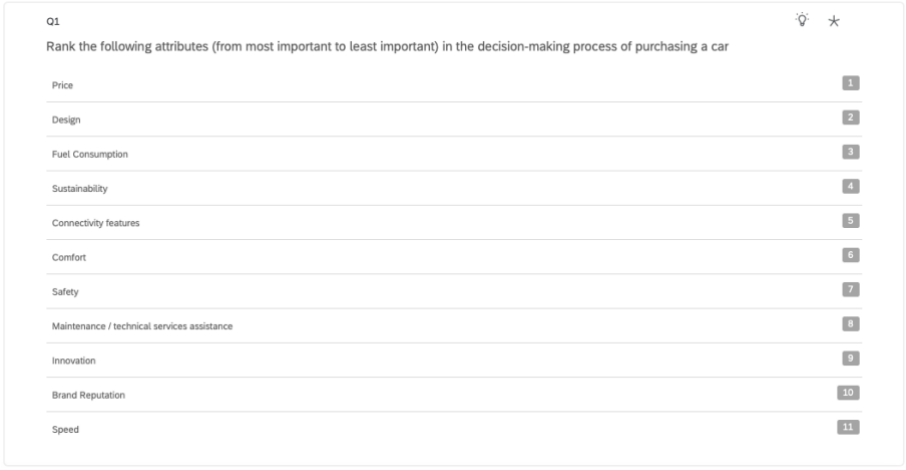
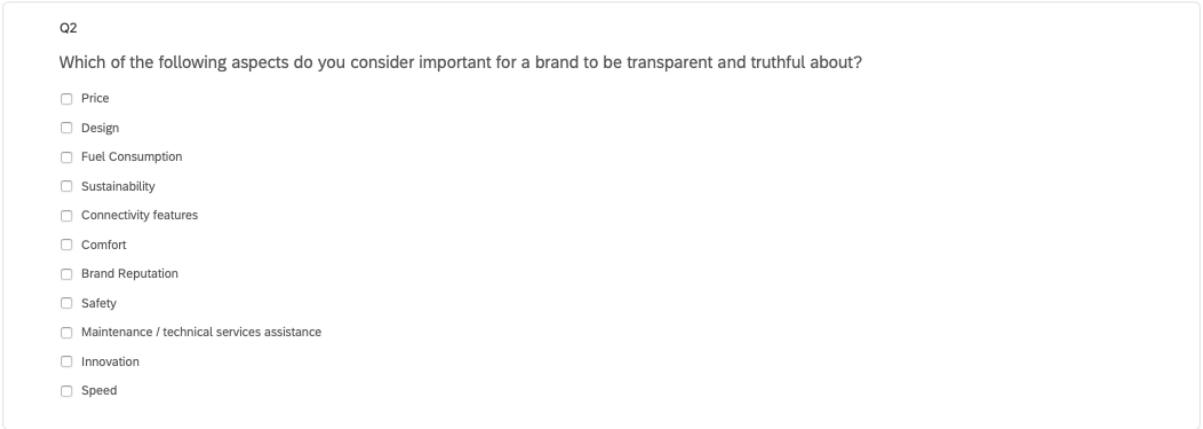
Appendix

Appendix 1: Interview Script

1. When you want to buy a vehicle, what are the main motivations and characteristics you take into consideration? (brand, brand loyalty, avoid risks, price, convenience, value for money, specific rational needs, design, trend, product features, technology, innovation, environment). Why?
2. What brand do you associate with those attributes?
3. When purchasing a car, how important is the vehicle's sustainability in the decision-making process? Why?
4. What characteristics do you think a brand must have to be a market leader? Why?
5. When you think about prosperity / financial health in the automobile industry, which attributes are relevant for you?
6. How do you believe that a reputational crisis affects the brand strength and the financial value of the brand?
7. Which aspects do you believe the brand needs to be as transparent and truthful as possible?
8. Can you please state your name age and sex?

Appendix 2: Survey





Q3

Do you expect automobile companies to engage in sustainable campaigns and actions?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Q4

Do you agree with the following statements?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
When a brand supports a sustainability initiative makes it more relevant					
When a brand supports a sustainability initiative makes it more trustworthy					
When a brand supports a sustainability initiative promotes brand admiration					
When a brand supports a sustainability initiative makes it more likely to be recommended to others					
When a brand supports a sustainability initiative makes it more likely for you to purchase it					

Q5

How does a brand being associated with sustainable behaviours affect your perception of it?

- Negatively affected
- Somewhat negatively affected
- Indifferent / neutral
- Somewhat positive affected
- Positively affected

Q6

How much do you associate these features with sustainable behaviours in the automobile industry?

	None at all	A little	A moderate amount	A lot	A great deal
Electric Cars					
Low Emissions					
Low Fuel Consumption					
Hybrid Cars					
Car Durability					
Recycled Materials					
Sustainable Manufacturing Process					

Q7

Which of the following attributes do you look for when purchasing a sustainable car?

- Electric Cars
- Low Emissions
- Low Fuel Consumption
- Hybrid Cars
- Car Durability
- Recycled Materials
- Sustainable Manufacturing Process

Q8

How important are the following attributes for a brand to have sustainable practices?

	Not at all important	Slightly important	Indifferent / Neutral	Very important	Extremely important
Electric Cars	○	○	○	○	○
Low Emissions	○	○	○	○	○
Low Fuel Consumption	○	○	○	○	○
Hybrid Cars	○	○	○	○	○
Car Durability	○	○	○	○	○
Recycled Materials	○	○	○	○	○
Sustainable Manufacturing Process	○	○	○	○	○

Q9

If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them?

- ○ Yes
- ○ Maybe
- ○ No
- ○ I don't know

Q10

What kind of impact do the following aspects have on brand reputation?

	Negative Impact	Somewhat Negative Impact	Neutral / Indifferent	Somewhat Positive Impact	Positive Impact
Price	○	○	○	○	○
Design	○	○	○	○	○
Fuel Consumption	○	○	○	○	○
Sustainability	○	○	○	○	○
Connectivity Features	○	○	○	○	○
Comfort	○	○	○	○	○
Brand Reputation	○	○	○	○	○
Safety	○	○	○	○	○
Maintenance / technical service assistance	○	○	○	○	○
Innovation	○	○	○	○	○
Speed	○	○	○	○	○

Q11

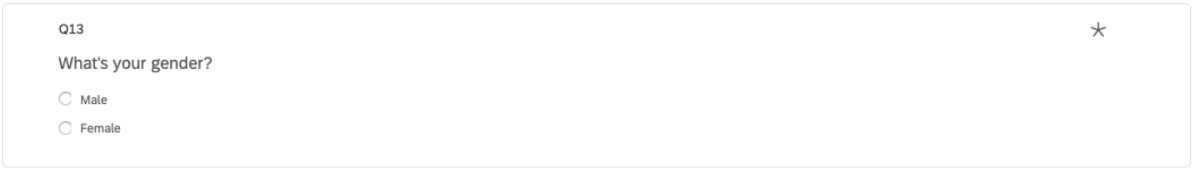
If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them?

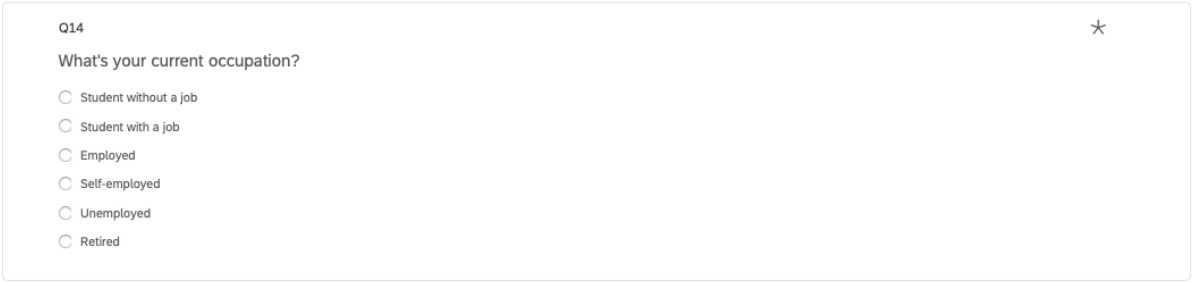
- ○ Extremely unlikely
- ○ Somewhat unlikely
- ○ Neither likely nor unlikely
- ○ Somewhat likely
- ○ Extremely likely

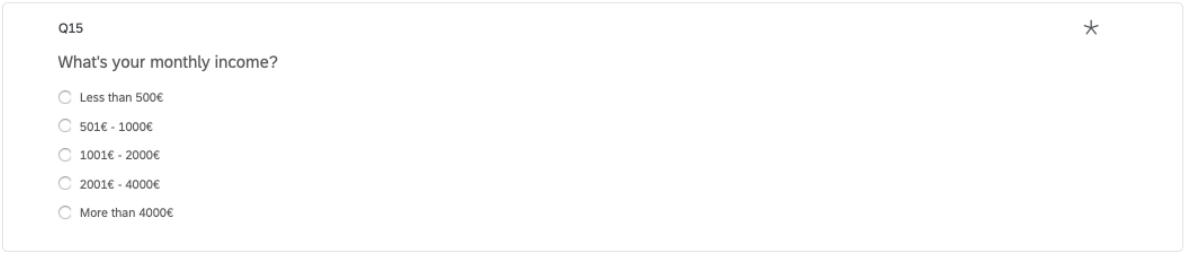
Q12

What's your age?

- ○ Under 18
- ○ 18 - 24
- ○ 25 - 34
- ○ 35 - 44
- ○ 45 - 54
- ○ 55 - 64
- ○ 65 - 74
- ○ 75 - 84
- ○ 85 or older







Appendix 3: Survey Demographics

What's your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 18	1	,5	,5	,5
	18 - 24	110	60,4	60,4	61,0
	25 - 34	30	16,5	16,5	77,5
	35 - 44	7	3,8	3,8	81,3
	45 - 54	15	8,2	8,2	89,6
	55 - 64	18	9,9	9,9	99,5
	65 - 74	1	,5	,5	100,0
	Total	182	100,0	100,0	

What's your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	107	58,8	58,8	58,8
	Male	75	41,2	41,2	100,0
	Total	182	100,0	100,0	

What's your current occupation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student without a job	82	45,1	45,1	45,1
	Student with a job	26	14,3	14,3	59,3
	Employed	59	32,4	32,4	91,8
	Self-employed	12	6,6	6,6	98,4
	Unemployed	2	1,1	1,1	99,5
	Retired	1	,5	,5	100,0
	Total	182	100,0	100,0	

What's your monthly income?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 500€	87	47,8	47,8	47,8
	501€ - 1000€	21	11,5	11,5	59,3
	1001€ - 2000€	26	14,3	14,3	73,6
	2001€ - 4000€	31	17,0	17,0	90,7
	More than 4000€	17	9,3	9,3	100,0
	Total	182	100,0	100,0	

Appendix 4: Internal consistency of Consumer's attitudes towards sustainable brand initiatives (AT)

Reliability Statistics

Cronbach's Alpha	N of Items
,825	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted

Do you agree with the following statements? - When a brand supports a sustainability initiative makes it more relevant	14,84	9,221	,677	,775
Do you agree with the following statements? - When a brand supports a sustainability initiative makes it more trustworthy	15,16	9,074	,606	,795
Do you agree with the following statements? - When a brand supports a sustainability initiative promotes brand admiration	14,87	9,905	,617	,793
Do you agree with the following statements? - When a brand supports a sustainability initiative makes it more likely to be recommended to others	15,04	9,374	,629	,788
Do you agree with the following statements? - When a brand supports a sustainability initiative makes it more likely for you to purchase it	15,31	8,722	,595	,802

Appendix 5: Internal consistency of Consumer's perception towards Automobile Industry Sustainable Behaviour (AISB)

Reliability Statistics

Cronbach's Alpha	N of Items
,715	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How much do you associate these features with sustainable behaviours in the automobile industry? - Electric Cars	22,19	17,173	,270	,725
How much do you associate these features with sustainable behaviours in the automobile industry? - Low Emissions	21,81	16,311	,569	,653
How much do you associate these features with sustainable behaviours in the automobile industry? - Low Fuel Consumption	21,92	16,761	,440	,679
How much do you associate these features with sustainable behaviours in the automobile industry? - Hybrid Cars	22,28	17,518	,374	,694
How much do you associate these features with sustainable behaviours in the automobile industry? - Car Durability	22,02	16,867	,321	,711
How much do you associate these features with sustainable behaviours in the automobile industry? - Recycled Materials	22,35	15,202	,544	,650
How much do you associate these features with sustainable behaviours in the automobile industry? - Sustainable Manufacturing Process	22,15	15,431	,519	,657

Appendix 6: Internal consistency Brand Sustainability Image (BSI)

Reliability Statistics

Cronbach's Alpha	N of Items
,719	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How important are the following attributes for a brand to have sustainable practices? - Electric Cars	23,74	10,811	,356	,714
How important are the following attributes for a brand to have sustainable practices? - Low Emissions	23,15	11,420	,523	,668
How important are the following attributes for a brand to have sustainable practices? - Low Fuel Consumption	23,10	11,880	,452	,684
How important are the following attributes for a brand to have sustainable practices? - Hybrid Cars	23,74	10,814	,519	,664
How important are the following attributes for a brand to have sustainable practices? - Car Durability	23,18	12,941	,180	,741
How important are the following attributes for a brand to have sustainable practices? - Recycled Materials	23,65	10,594	,538	,658

How important are the following attributes for a brand to have sustainable practices? - Sustainable Manufacturing Process	23,23	10,841	,502	,668

Appendix 7: Internal consistency Brand Reputation (BR)

Reliability Statistics

Cronbach's Alpha	N of Items
,758	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
What kind of impact do the following aspects have on brand reputation? - Price	41,38	19,552	,246	,766
What kind of impact do the following aspects have on brand reputation? - Design	40,96	18,733	,487	,730
What kind of impact do the following aspects have on brand reputation? - Fuel Consumption	41,03	19,524	,347	,748
What kind of impact do the following aspects have on brand reputation? - Sustainability	41,13	20,210	,283	,755
What kind of impact do the following aspects have on brand reputation? - Connectivity Features	41,45	18,812	,480	,731

What kind of impact do the following aspects have on brand reputation? - Comfort	40,88	18,379	,620	,716
What kind of impact do the following aspects have on brand reputation? - Brand Reputation	40,93	19,172	,395	,742
What kind of impact do the following aspects have on brand reputation? - Safety	40,65	18,749	,552	,724
What kind of impact do the following aspects have on brand reputation? - Maintenance / technical service assistance	41,19	18,639	,477	,731
What kind of impact do the following aspects have on brand reputation? - Innovation	41,10	18,426	,491	,729
What kind of impact do the following aspects have on brand reputation? - Speed	41,45	20,536	,194	,767

Reliability Statistics

Cronbach's Alpha	N of Items
,777	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
What kind of impact do the following aspects have on brand reputation? - Design	33,36	14,165	,460	,756

What kind of impact do the following aspects have on brand reputation? - Fuel Consumption	33,43	14,611	,361	,770
What kind of impact do the following aspects have on brand reputation? - Sustainability	33,52	14,936	,350	,771
What kind of impact do the following aspects have on brand reputation? - Connectivity Features	33,84	14,168	,465	,755
What kind of impact do the following aspects have on brand reputation? - Comfort	33,28	13,849	,595	,738
What kind of impact do the following aspects have on brand reputation? - Brand Reputation	33,32	14,497	,376	,768
What kind of impact do the following aspects have on brand reputation? - Safety	33,04	13,932	,576	,740
What kind of impact do the following aspects have on brand reputation? - Maintenance / technical service assistance	33,58	13,836	,495	,750
What kind of impact do the following aspects have on brand reputation? - Innovation	33,50	13,754	,490	,751

Appendix 8: Proportion test for analysing expectations (Q3)

One-Sample Proportions Confidence Intervals

Interval Type	Observed	Asymptotic Standard Error	95% Confidence Interval

		Successes	Trials	Proportion		Lower	Upper
Expectations - Q3 = Probably and Definitely yes	Agresti-Coull	149	182	,819	,029	,756	,868
	Jeffreys	149	182	,819	,029	,758	,869
	Wilson Score	149	182	,819	,029	,756	,868

One-Sample Proportions Tests

		Observed						Significance	
	Test Type	Successes	Trials	Proportion	Observed - Test Value[a]	Asymptotic Standard Error	Z	One-Sided p	Two-Sided p
Expectations - Q3 = Probably and Definitely yes	Wald (Continuity Corrected)	149	182	,819	,319	,029	11,063	<,001	<,001

a. Test Value = ,5

Appendix 9: Proportion tests for analysing sustainable behaviours (items Q8)

One-Sample Proportions Confidence Intervals

		Observed			Asymptotic Standard Error	95% Confidence Interval	
	Interval Type	Successes	Trials	Proportion		Lower	Upper
Q8.1Dummy = Very and Extremely important	Agresti-Coull	114	182	,626	,036	,554	,693
	Jeffreys	114	182	,626	,036	,555	,694
	Wilson Score	114	182	,626	,036	,554	,693
	Agresti-Coull	162	182	,890	,023	,836	,928

Q8.2Dummy = Very and Extremely important	Jeffreys	162	182	,890	,023	,839	,929
	Wilson Score	162	182	,890	,023	,836	,928
Q8.3Dummy = Very and Extremely important	Agresti-Coull	166	182	,912	,021	,861	,946
	Jeffreys	166	182	,912	,021	,864	,947
	Wilson Score	166	182	,912	,021	,862	,945
Q8.4Dummy = Very and Extremely important	Agresti-Coull	109	182	,599	,036	,526	,667
	Jeffreys	109	182	,599	,036	,527	,668
	Wilson Score	109	182	,599	,036	,526	,667
Q8.5Dummy = Very and Extremely important	Agresti-Coull	157	182	,863	,026	,805	,906
	Jeffreys	157	182	,863	,026	,807	,907
	Wilson Score	157	182	,863	,026	,805	,905
Q8.6Dummy = Very and Extremely important	Agresti-Coull	114	182	,626	,036	,554	,693
	Jeffreys	114	182	,626	,036	,555	,694
	Wilson Score	114	182	,626	,036	,554	,693
Q8.7Dummy = Very and Extremely important	Agresti-Coull	146	182	,802	,030	,738	,854
	Jeffreys	146	182	,802	,030	,740	,855
	Wilson Score	146	182	,802	,030	,738	,854

One-Sample Proportions Tests

		Observed						Significance	
	Test Type	Successes	Trials	Proportion	Observed - Test Value[a]	Asymptotic Standard Error	Z	One-Sided p	Two-Sided p
Q8.1Dummy = Very and Extremely important	Wald (Continuity Corrected)	114	182	,626	,126	,036	3,448	<,001	<,001

Q8.2Dummy = Very and Extremely important	Wald (Continuity Corrected)	162	182	,890	,390	,023	16,709	<,001	<,001
Q8.3Dummy = Very and Extremely important	Wald (Continuity Corrected)	166	182	,912	,412	,021	19,502	<,001	<,001
Q8.4Dummy = Very and Extremely important	Wald (Continuity Corrected)	109	182	,599	,099	,036	2,647	,004	,008
Q8.5Dummy = Very and Extremely important	Wald (Continuity Corrected)	157	182	,863	,363	,026	14,104	<,001	<,001
Q8.6Dummy = Very and Extremely important	Wald (Continuity Corrected)	114	182	,626	,126	,036	3,448	<,001	<,001
Q8.7Dummy = Very and Extremely important	Wald (Continuity Corrected)	146	182	,802	,302	,030	10,142	<,001	<,001

a. Test Value = ,5

Appendix 10: Proportion test for analysing purchase intention under a sustainability crisis (Q11)

One-Sample Proportions Confidence Intervals

	Observed			Asymptotic Standard	95% Confidence Interval	
Interval Type	Successes	Trials	Proportion	Error	Lower	Upper

Q11Dummy = somewhat and extremely likely	Agresti-Coull	27	182	,148	,026	,104	,208
	Jeffreys	27	182	,148	,026	,102	,205
	Wilson Score	27	182	,148	,026	,104	,207

One-Sample Proportions Tests

		Observed						Significance	
	Test Type	Successes	Trials	Proportion	Observed - Test Value[a]	Asymptotic Standard Error	Z	One-Sided p	Two-Sided p
Q11Dummy = somewhat and extremely likely	Wald (Continuity Corrected)	27	182	,148	-,352	,026	-13,242	<,001	<,001

a. Test Value = ,5

Appendix 11: Pearson's correlation and Regression results without control variables

Correlations

		PIA	AT	AISB	BSI	BR	Transparency	Expectations	Falsehood
PIA	Correlation	1	,144	,270**	,134	,033	,327**	,087	-,134
	Sig.		,053	<,001	,071	,663	<,001	,244	,071
AT	Correlation	,144	1	,272**	,373**	,061	,003	,386**	-,167*
	Sig.	,053		<,001	<,001	,413	,971	<,001	,025
AISB	Correlation	,270**	,272**	1	,527**	,111	-,086	,043	-,001
	Sig.	<,001	<,001		<,001	,136	,247	,568	,993
BSI	Correlation	,134	,373**	,527**	1	,195**	-,222**	,256**	-,026
	Sig.	,071	<,001	<,001		,008	,003	<,001	,731
BR	Correlation	,033	,061	,111	,195**	1	,135	,127	,024
	Sig.	,663	,413	,136	,008		,068	,088	,750
Transparency	Correlation	,327**	,003	-,086	-,222**	,135	1	-,070	-,041
	Sig.	<,001	,971	,247	,003	,068		,347	,581
Expectations	Correlation	,087	,386**	,043	,256**	,127	-,070	1	,000

	Sig	,244	<,001	,568	<,001	,088	,347		,996
Falsehood	Correlation	-,134	-,167*	-,001	-,026	,024	-,041	,000	1
	Sig.	,071	,025	,993	,731	,750	,581	,996	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model *Summary*[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,473[a]	,224	,198	1,18434	2,147

a. Predictors: (Constant), FALSE, Expectations - Q3 Dummy, Composite measure of AISB - Q6, Transparency - Q2, Composite measure of BR - Q10, Composite measure of AT - Q4

b. Dependent Variable: Purchase Intention (PI) - sum of items in Q7

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70,913	6	11,819	8,426	<,001[b]
	Residual	245,466	175	1,403		
	Total	316,379	181			

a. Dependent Variable: Purchase Intention (PIA)

b. Predictors: (Constant), Falsehood, Expectations, AISB, Transparency, BR, AT

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	,148	,943		,157	,876		

AT	,007	,136	,004	,055	,956	,756	1,323
AISB	,579	,135	,302	4,301	<,001	,897	1,114
BR	-,174	,195	-,061	-,894	,372	,948	1,055
Transparency	,224	,042	,364	5,355	<,001	,959	1,042
Expectations	,361	,251	,106	1,438	,152	,822	1,216
Falsehood	-,647	,375	-,117	-1,723	,087	,963	1,038

a. Dependent Variable: Purchase Intention (PIA)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,4315	4,6791	2,6978	,62593	182
Std. Predicted Value	-2,023	3,165	,000	1,000	182
Standard Error of Predicted Value	,101	,506	,216	,085	182
Adjusted Predicted Value	1,4202	4,5618	2,7021	,63840	182
Residual	-3,27128	2,94916	,00000	1,16454	182
Std. Residual	-2,762	2,490	,000	,983	182
Stud. Residual	-2,882	2,521	-,002	1,007	182
Deleted Residual	-3,56181	3,03999	-,00428	1,22161	182
Stud. Deleted Residual	-2,945	2,561	-,001	1,012	182
Cook's Distance	,000	,118	,007	,016	182
Centered Leverage Value	,002	,177	,033	,032	182

a. Dependent Variable: Dependent Variable: Purchase Intention (PIA)

Residuals Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	,047	182	,200*	,992	182	,396

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

ANOVA a – Breusch- Pagan test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31,023	6	5,171	1,543	0,167[b]
	Residual	586,431	175	3,351		
	Total	617,454	181			

a. Dependent Variable: Squared residuals (Breusch-Pagan test)

b. Predictors: (Constant), Falsehood, Expectations, AISB, Transparency, BR, AT

Appendix 12: Regression results with control variables

Model Summary[c]

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	,473[a]	,224	,198	1,18434	,224	8,426	6	175	<,001	
2	,505[b]	,255	,211	1,17436	,030	1,747	4	171	,142	2,112

a. Predictors: (Constant), Falsehood, Expectations, AISB, Transparency, BR, AT

b. (Constant), IncD, Falsehood, Expectations, AISB, Transparency, BR, Gender, AT, OcD, AgeD

c. Dependent Variable: Purchase Intention (PIA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80,549	10	8,055	5,841	<,001[b]
	Residual	235,831	171	1,379		
	Total	316,379	181			

a. Dependent Variable: Purchase Intention (PIA)

b. Predictors: (Constant), IncD, Falsehood, Expectations, AISB, Transparency, BR, Gender, AT, OcD, AgeD

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	,148	,943		,157	,876		
	AT	,007	,136	,004	,055	,956	,756	1,323
	AISB	,579	,135	,302	4,301	<,001	,897	1,114
	BR	-,174	,195	-,061	-,894	,372	,948	1,055
	Transparency	,224	,042	,364	5,355	<,001	,959	1,042
	Expectations	,361	,251	,106	1,438	,152	,822	1,216
	Falsehood	-,647	,375	-,117	-1,723	,087	,963	1,038
2	(Constant)	-,563	1,056		-,533	,595		
	AT	,056	,138	,032	,405	,686	,718	1,394

AISB	,588	,135	,307	4,372	<,001	,883	1,133
BR	-,074	,204	-,026	-,362	,718	,849	1,178
Transparency	,213	,043	,346	5,002	<,001	,911	1,098
Expectations	,374	,253	,109	1,480	,141	,799	1,252
Falsehood	-,650	,377	-,118	-1,726	,086	,939	1,065
Gender	,080	,197	,030	,408	,684	,804	1,244
AgeD	-,343	,305	-,109	-1,126	,262	,467	2,140
OcD	,443	,213	,168	2,079	,039	,669	1,494
IncD	-,326	,296	-,109	-1,101	,272	,446	2,242

a. Dependent Variable: Dependent Variable: Purchase Intention (PIA)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,2326	4,7040	2,6978	,66710	182
Std. Predicted Value	-2,196	3,007	,000	1,000	182
Standard Error of Predicted Value	,150	,545	,278	,078	182
Adjusted Predicted Value	1,2712	4,6652	2,7012	,67878	182
Residual	-3,10719	2,59794	,00000	1,14146	182
Std. Residual	-2,646	2,212	,000	,972	182
Stud. Residual	-2,783	2,283	-,001	1,006	182
Deleted Residual	-3,43767	2,76761	-,00343	1,22367	182
Stud. Deleted Residual	-2,840	2,312	-,001	1,012	182
Cook's Distance	,000	,093	,007	,013	182
Centered Leverage Value	,011	,210	,055	,035	182

a. Dependent Variable: Purchase Intention (PIA)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual model 2	,036	182	,200*	,990	182	,268

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

ANOVA[a] - Breusch- Pagan test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34,435	10	3,444	1,105	0,361[b]
	Residual	533,259	171	3,118		
	Total	567,130	181			

a. Dependent Variable: Squared residuals (Breusch-Pagan test)

b. Predictors: (Constant), IncD, Falsehood, Expectations, AISB, Transparency, BR, Gender, AT, OcD, AgeD

Appendix 13: Chi-Square tests for purchase intentions towards false sustainable brand's behaviour and demographics

*If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them? * Age*

	Age		
	under 35	at least 35	Total

If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them?	Yes	Count	10	1	11
		Expected Count	8,5	2,5	11,0
		Adjusted Residual	1,1	-1,1	
	Maybe	Count	39	14	53
		Expected Count	41,1	11,9	53,0
		Adjusted Residual	-,8	,8	
	No	Count	71	19	90
		Expected Count	69,7	20,3	90,0
		Adjusted Residual	,5	-,5	
	I don't know	Count	21	7	28
		Expected Count	21,7	6,3	28,0
		Adjusted Residual	-,3	,3	
Total		Count	141	41	182
		Expected Count	141,0	41,0	182,0

*If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them? * Gender*

			Gender		
			Female	Male	Total
If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them?	Yes	Count	5	6	11
		Expected Count	6,5	4,5	11,0
		Adjusted Residual	-,9	,9	
	Maybe	Count	25	28	53

		Expected Count	31,2	21,8	53,0
		Adjusted Residual	-2,0	2,0	
	No	Count	58	32	90
		Expected Count	52,9	37,1	90,0
		Adjusted Residual	1,5	-1,5	
	I don't know	Count	19	9	28
		Expected Count	16,5	11,5	28,0
		Adjusted Residual	1,1	-1,1	
Total		Count	107	75	182
		Expected Count	107,0	75,0	182,0

*If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them? * Occupation*

			Occupation		
			Student without a job, Unemployed or Retired	Student with a job, Employed and Self-Employed	Total
If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them?	Yes	Count	6	5	11
		Expected Count	5,1	5,9	11,0
		Adjusted Residual	,5	-,5	
	Maybe	Count	22	31	53
		Expected Count	24,8	28,2	53,0
		Adjusted Residual	-,9	,9	

	No	Count	46	44	90
		Expected Count	42,0	48,0	90,0
		Adjusted Residual	1,2	-1,2	
	I don't know	Count	11	17	28
		Expected Count	13,1	14,9	28,0
		Adjusted Residual	-,9	,9	
Total		Count	85	97	182
		Expected Count	85,0	97,0	182,0

*If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them? * Income*

			Income		
			under 2000€	at least 2000€	Total
If a brand's perceived sustainable behaviours turned out to be false, would you still consider buying from them?	Yes	Count	8	3	11
		Expected Count	8,1	2,9	11,0
		Adjusted Residual	-,1	,1	
	Maybe	Count	38	15	53
		Expected Count	39,0	14,0	53,0
		Adjusted Residual	-,4	,4	
	No	Count	68	22	90
		Expected Count	66,3	23,7	90,0
		Adjusted Residual	,6	-,6	
	I don't know	Count	20	8	28

		Expected Count	20,6	7,4	28,0
		Adjusted Residual	-,3	,3	
Total		Count	134	48	182
		Expected Count	134,0	48,0	182,0

Appendix 14: Chi-Square tests for Purchase intention under a brand's reputation crisis and demographics

*If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them? * Age*

			Age		
			under 35	at least 35	Total
If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them?	Extremely unlikely	Count	14	8	22
		Expected Count	17,0	5,0	22,0
		Adjusted Residual	-1,7	1,7	
	Somewhat unlikely	Count	52	16	68
		Expected Count	52,7	15,3	68,0
		Adjusted Residual	-,2	,2	
	Neither likely nor unlikely	Count	54	11	65
		Expected Count	50,4	14,6	65,0
		Adjusted Residual	1,3	-1,3	
	Somewhat likely	Count	13	6	19
		Expected Count	14,7	4,3	19,0

		Adjusted Residual	-1,0	1,0	
	Extremely likely	Count	8	0	8
		Expected Count	6,2	1,8	8,0
		Adjusted Residual	1,6	-1,6	
Total		Count	141	41	182
		Expected Count	141,0	41,0	182,0

*If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them? * Gender*

			Gender		
			Female	Male	Total
If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them?	Extremely unlikely	Count	15	7	22
		Expected Count	12,9	9,1	22,0
		Adjusted Residual	1,0	-1,0	
	Somewhat unlikely	Count	38	30	68
		Expected Count	40,0	28,0	68,0
		Adjusted Residual	-,6	,6	
	Neither likely nor unlikely	Count	39	26	65
		Expected Count	38,2	26,8	65,0
		Adjusted Residual	,2	-,2	
	Somewhat likely	Count	11	8	19

		Expected Count	11,2	7,8	19,0
		Adjusted Residual	-,1	,1	
	Extremely likely	Count	4	4	8
		Expected Count	4,7	3,3	8,0
		Adjusted Residual	-,5	,5	
Total		Count	107	75	182
		Expected Count	107,0	75,0	182,0

*If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them? * Occupation*

			Occupation		
			Student without a job, Unemployed or Retired	Student with a job, Employed and Self-Employed	Total
If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them?	Extremely unlikely	Count	9	13	22
		Expected Count	10,3	11,7	22,0
		Adjusted Residual	-,6	,6	
	Somewhat unlikely	Count	33	35	68
		Expected Count	31,8	36,2	68,0
		Adjusted Residual	,4	-,4	
	Neither likely nor unlikely	Count	31	34	65
		Expected Count	30,4	34,6	65,0

		Adjusted Residual	,2	-,2	
	Somewhat likely	Count	8	11	19
		Expected Count	8,9	10,1	19,0
		Adjusted Residual	-,4	,4	
	Extremely likely	Count	4	4	8
		Expected Count	3,7	4,3	8,0
		Adjusted Residual	,2	-,2	
Total		Count	85	97	182
		Expected Count	85,0	97,0	182,0

*If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them? * Income*

			Income		
			under 2000€	at least 2000€	Total
If a brand underwent a reputation crisis linked to sustainability how likely would you be to still purchase a vehicle from them?	Extremely unlikely	Count	12	10	22
		Expected Count	16,2	5,8	22,0
		Adjusted Residual	-2,2	2,2	
	Somewhat unlikely	Count	48	20	68
		Expected Count	50,1	17,9	68,0
		Adjusted Residual	-,7	,7	
	Neither likely nor unlikely	Count	53	12	65
		Expected Count	47,9	17,1	65,0

		Adjusted Residual	1,8	-1,8	
	Somewhat likely	Count	13	6	19
		Expected Count	14,0	5,0	19,0
		Adjusted Residual	-,5	,5	
	Extremely likely	Count	8	0	8
		Expected Count	5,9	2,1	8,0
		Adjusted Residual	1,7	-1,7	
Total		Count	134	48	182
		Expected Count	134,0	48,0	182,0