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Unblocking the fashion industry: the impact of the impact of Blockchain price transparency on consumer purchase intention towards ethical fashion consumption

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RESUMO

Na última década, a procura dos consumidores por moda sustentável aumentou substancialmente, devido a uma maior consciência em relação ao impacto das suas escolhas no planeta. No entanto, o preço elevado da roupa de moda sustentável é um dos principais fatores que impedem o consumo ético, devido ao facto dos consumidores não estarem cientes do racional por trás do preço. A transparência de preço pode ser uma maneira de aumentar a confiança do consumidor e a intenção de compra, e o uso de tecnologia disruptiva, como Blockchain, pode ser um fator fundamental. Este estudo tem o objetivo de abordar um tema pouco explorado anteriormente, focando-se na aplicação da tecnologia Blockchain para aumentar a transparência de preço, especificamente na indústria da moda.

Este estudo explora as atitudes dos consumidores portugueses em relação à adoção da tecnologia Blockchain para aumentar a transparência de preço e o seu impacto na intenção de compra, integrando o papel mediador do ceticismo e valor atribuído pelos consumidores e o papel moderador da sensibilização para questões éticas da indústria da moda. Este estudo contribui para a comunidade académica, que pode explorar outros tópicos relacionados com este e examinar as limitações da presente pesquisa.

O objeto de investigação desta pesquisa considera as respostas de 298 consumidores e os resultados revelam que a transparência de preços através do uso de Blockchain é um fator chave para aumentar a intenção de compra do consumidor em relação ao consumo ético de moda. Os resultados deste estudo sugerem que as empresas de moda deverão investir na implementação de Blockchain nos seus modelos de negócios, a fim de se tornarem mais transparentes e aumentar a intenção de compra do consumidor em relação ao consumo de moda ético.

Palavras-chave: moda sustentável, Blockchain, transparência de preço, consumo ético de moda, intenção de compra

JEL sistema de classificação: Marketing (M31), Responsabilidade social (M14)

ABSTRACT

In the past decade, consumer demand for ethical fashion has substantially increased, as consumers are becoming more conscious about the impact of their fashion choices on the planet. However, the high pricing of ethical fashion is one the main factor impeding ethical consumption, as consumers are not aware of the reasoning behind it. Price transparency can be a way to improve consumer trust and purchase intention, and the use of disruptive technology such as Blockchain can be a key enabler. This research aims to address the research gap by focusing on the application of Blockchain technology to enhance price transparency, specifically in the fashion industry.

This study explores Portuguese consumer attitudes towards the adoption of Blockchain technology for enhancing price transparency and its impact on purchase intention, by integrating the mediating role of skepticism and perceived value and the moderating role of awareness of ethical issues in fashion. This study also contributes to academics, who may further explore related topics and scrutinize the present research's limitations.

The study's research object considers the answers of 298 consumers and the results reveal that Blockchain price transparency is a key factor to increase consumer purchase intention towards ethical fashion consumption. The results of this study suggest that managers should invest on the implementation of blockchain within their business models, in order to become more transparent and enhance consumer purchase intention towards ethical fashion consumption.

Keywords: sustainable fashion, blockchain, price transparency, ethical fashion consumption, purchase intention

JEL classification system: Marketing (M31), Social responsibility (M14)

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1. INTRODUCTION

1.1. Relevance of the topic

The negative impacts of the fashion industry have been discussed over the past decade and it has been found that the industry as a whole is particularly problematic from an environmental and social perspectives. A rising trust deficit has been identified in the fashion sector, with consumers demanding to know more about where and how fashion items are made, their country of origin, the item's quality, and so on. Furthermore, the high pricing of ethical fashion has prevented consumers from purchasing, as they require to know the reasoning behind it. The fashion industry faces an enormous challenge regarding transparency and, to find ways to beat the trust deficit and embrace this new trend, it could follow steps taken in other sectors, such as the food industry (Beard, 2015; Haug and Busch, 2015).

As consumers become more skeptical around the practices of fashion brands and the demand for price transparency grows, the need for constant innovation regarding the way brands disclose product information continuously grows. A report by McKinsey & Company (2021) that forecasts the key drivers for business in 2022, highlights the use of several technologies to store and disclose product information with consumers, in an attempt for brands to build transparency, differentiate themselves, boost consumer loyalty and trust, brand equity and purchase intent. These technologies are centered around blockchain, using radio-frequency identification (RFID), QR codes and near-field communications (NFC).

1.2. Research purpose and problem statement

The application of Blockchain in other industries has proven to be a great enabler for higher trust, confidence, and fairness across the entire industry and among consumers.

Existing literature regarding transparency cost-breakdown strategies in the field of ethical fashion is limited, while it has not explored the possibility of creating price transparency using disruptive technology (Jung et al., 2020; Kim et al., 2020). Thus, its impact on consumer purchase intention has not yet been investigated. This reflects an existing research gap and urge to explore this topic further, as blockchain technology could be an effective instrument for disclosing product information and sharing its pricing history and process with the customer (Yoo and Won, 2018).

Thus, the research problem of this study is whether the use of blockchain technology to enhance price transparency can effectively increase consumer purchase intention towards ethical fashion consumption.

This aim of this research is to quantitatively analyze Portuguese consumer attitudes towards the adoption of blockchain technology for enhancing price transparency and its impact on consumer

purchase intention towards ethical fashion products. This study seeks to provide ethical apparel retailers with insights on blockchain's potential to enable transparency and to increase consumer purchase intention levels.

1.3. Research objectives

In accordance with the research problem, this study has four main objectives, as follows:

1. To critically evaluate the use of Blockchain technology to enhance price transparency and its impact on customer purchase intention
2. To develop a conceptual model that demonstrates the relationship between transparency, blockchain technology and consumer purchase intentions towards the disclosure of the pricing of ethical fashion brands
3. To analyze consumer attitudes towards ethical fashion price transparency via the adoption of Blockchain technology and its impact on consumer purchase intention
4. To provide managerial recommendations to ethical fashion brands on investing in blockchain technology for enhancing price transparency within their operations for increasing customer purchase intention levels.

1.4. Research question

Following the context highlighted above, the following research question has been formulated:

RQ: Is Blockchain price transparency a key factor to increase consumer purchase intention towards ethical fashion consumption?

1.5. Research outline

The present master's dissertation is structured in five chapters: introduction, literature review, methodology, results and discussion, and conclusions and recommendations.

The first chapter introduces the concept of price transparency within the fashion industry and the current overall state of sustainability and ethics in fashion. It describes the research problem and relevance of the study, and includes the research purpose, objectives, and overall structure.

The second chapter consists of the literature review which is broken down into seven sections. Each sections presents relevant theories and frameworks developed by numerous authors and starts with a broader topic, ethical fashion consumption, covering relevant topics to the research, such as the demand for higher transparency in the industry, the origin of blockchain and its application to price transparency, which then lead to the specific aspect that is being investigated: the use of Blockchain

as an enabler for price transparency and its impact on ethical fashion consumption. In accordance with the topics explores, the proposed hypotheses are explained in this chapter, and the conceptual model is presented.

The third chapter discusses in detail the methodology used in fulfilment of the research aim and objectives. The research strategy is discussed, including detailed information on the sampling strategy, data collection methods and data analysis procedures such as measurements and scales used.

Chapter four presents and analyses the finding of the primary research, followed by their discussion and assessment of the validity of the defined hypotheses. Appropriate methods and tools are used for the quantitative data analysis, such as statistic software SPSS.

Lastly, in chapter five, the final conclusions are drawn, addressing the research aim and objectives. Limitations and recommendations for further research are also presented.

2. LITERATURE REVIEW

2.1. Ethical fashion consumption

Over the past years, consumers have started to question the practices of fast fashion brands and have grown more aware of the negative impacts of the textile industry (McNeill and Snowdon (2019). McNeill and Snowdon (2019) identified fast fashion as the model of clothing production currently in force, that accounts for countless negative socio-environmental consequences.

Given the consumer demand for a more sustainable industry, many brands have started to develop sustainable practices within their innovative strategies, particularly in the luxury sector. The sustainable actions of brands, as a result, have been found to be a significant factor to meet consumer's expectations (Hemmonet-Goujot et al., 2022) and a key decision-making factor for consumption consideration (de Lira and da Costa, 2022).

Consumer skepticism then led to the growth of a more conscious consumption, that accounts for a less harmful social and environmental impact (de Lira and da Costa, 2022), commonly known as ethical fashion. A number of authors describe the consumption-oriented ethical fashion consumers as individuals who share a concern over social issues, with interest in knowing how products are manufactured and under which conditions; environmental issues, favoring brands whose production processes generate less waste and pollution; and promote local production, small and medium scaled businesses, that set actual prices that encompass the naturally higher costs of sustainable solutions (Jung and Jin, 2014; Legere and Kang, 2020; de Lira and da Costa, 2022).

2.2. Uncertainty in ethical consumption

The marketplace has seen a substantial call for ethical products in recent years. However, there is still an information gap that leads to uncertainty in ethical consumption, which is even more critical in the fashion sector (Hassan et al., 2013). The manufacturing of fashion items has risen credibility concerns among consumers (Guo et al., 2020). The fashion sector holds some of the most complex supply chains, and brands often get accused of lack of transparency. This creates uncertainty in ethical fashion consumption and affects consumer behavior (Urbany et al., 1989, as cited in Hassan et al., 2013; Guo et al., 2020).

The main concerns that consumers often have about brands' ethical standards evolve around human welfare issues, namely the conditions of the people involved in the supply chain, the use of animal products and negative environmental impacts of production and disposal; all these harmful practices are frequently linked to fast fashion brands.

In ethical fashion contexts, consumers usually face uncertainty regarding how to evaluate a brand's information on ethical issues and how to integrate that information into their choices. Such consumer uncertainty often results in high perceived levels of risk, which leave consumers to seek external information search, since they feel the need to check if brands' statements regarding ethical issues are accurate and credible (Hassan et al., 2013).

2.3. Call for transparency

As consumers become more and more sustainably conscious, transparency of ethical practices and sustainability efforts is one of the most flagrant demands of today (McKinsey & Company, 2019; Kim et al., 2020; Miatton and Amado, 2020). Transparency is commonly defined as "the act of disclosing information to all of the organization's stakeholders through its reporting mechanisms" (Kim et al., 2020, p.1).

A few years back, the average consumer had not questioned the fashion industry's unsustainable practices before and, as a result, brands did not feel the need to publish information related to their manufacturing process (Beard, 2015), which resulted in a much less transparent supply chain, in comparison to the food industry, for example (Beard, 2015; Haug and Busch, 2015).

Evolving generations are becoming more concerned about issues such as fair labor and the environmental impact of their purchasing decisions (Beard, 2015; McKinsey & Company, 2019), but they are also expressing their interest in transparent business practices and, therefore, are more prominent to support brands who comply with those standards (Kim et al., 2020). Consumers' perceptions of a corporation's efforts to be transparent in the production and labor conditions as well as their CSR (Corporate Social Responsibility) activities is known to directly affect consumers' trust and attitudes towards the brand, and indirectly affect their purchase intentions and willingness to spread good word-of-mouth about the brand (Kang and Hustvedt, 2014).

According to various authors, in order to tackle the growing consumer uncertainty, improve the brand's relationship with their consumers and gain consumer trust, retailers should focus on delivering a clear and precise promotion of ethical products (Hassan et al. 2013; Kang and Hustvedt, 2014). Consumers' willingness to purchase also increases when a company is fully transparent on its production processes (Kim et al., 2020).

One way to become more transparent is to disclose information on the supply chain system regarding the manufacturing process of a garment (Kim et al., 2020). Egels-Zandén et al. (2016) proposes three dimensions for supply chain transparency that should reinforce brand image, legitimacy, and reputation as well as customer loyalty. The first is to include the names of the suppliers involved in production process, also referred to as 'traceability'; the second is to include information

on sustainability practices across each supplier; the final is to release information on the buying firms' purchasing practices. An example of this is to provide a cost breakdown specifying the production costs.

With the increasing consumer demand, a few fashion brands have already started to respond to this call for higher transparency by disclosing information on supply chain and sustainable practices (Kim et al., 2020). Brands such as Patagonia and G- Star began providing consumers with access to interactive supply chain maps that share detailed information about the production process (James and Montgomery, 2017). However, not so many brands provide cost breakdowns of each product, as suggested by Egels-Zandén et al. (2016).

The challenge for fashion retailers is to build a transparent business model that is realistic, achievable, and sustainable in the long run, to ultimately gain consumers' trust (James and Montgomery, 2017). The authors deem that the engagement in transparent business practices is known to generate many benefits to brands, including increased brand trust, brand image, consumer awareness and revenue growth due to the consumer perception of brand values. It has been argued that consumers are more willing to purchasing goods from transparent companies than those who do not disclose information associated with CSR practices (Bhaduri and Ha-Brookshire 2011, as cited in James and Montgomery, 2017).

2.4. Price transparency

Previous research acknowledges price as a significant decisive factor when consuming fashion items (Kim et al., 2020). As such, the third dimension of supply chain transparency suggested by Egels-Zandén et al. (2016), that focuses on price transparency, is becoming more and more relevant in the industry.

Price transparency refers to "when a company shares information about its quoted prices with customers in a clear and comprehensive way" (Kim et al., 2020, p.3). The authors go beyond this definition and break down price transparency into different attributes. It should comprise price-setting, price-changing, or cost breakdown information (i.e., designated markup, price increase explanations and direct unit cost).

Nowadays, consumers want to know more about the origin, authenticity, and economic value of fashion items (DeAcetis, 2020). Although many detailed pricing information remains largely hidden from customers, the demand from consumers is continually growing over, as it helps them determine price fairness of the offered product and makes the purchase decision-making process easier. According to Kim et al. (2020), price transparency is connected to price satisfaction. The more transparent brands are regarding their pricing system, the more satisfied customers get. According to the author, price transparency can also result in higher brand loyalty and sales, while it also positively

impacts word-of-mouth sharing intentions and reduces brand switching intentions whilst strengthening brand trust.

2.5. The origin and the use of Blockchain

Blockchain, also known as distributed ledger technology (DTL), is "a technology that allows users to validate, keep and synchronize the content of a transaction ledger that is replicated across multiple users" (Ali et al., 2021, p.1). Other authors describe it as a technology able to store and verify data that becomes available to all parties involved (Yoon and Won, 2018; Yanisky-Ravid and Monroy, 2020; Boukis, 2020; Guo et al., 2020; Miatton and Amado, 2020; Navas et al., 2021).

The most common attribute of Blockchain, as verified in different sources, is that it does not require third-party control of data (Ali et al., 2021). It works as an internal system in which all transactions are recorded in a ledger and, therefore, it is not possible to modify the data without the approval of that ledger (Miatton and Amado, 2020; Navas et al., 2021; Ali et al., 2021). Technically, the transactional data is organized into blocks of information that are securely interconnected using cryptography (Guo et al., 2020; Ylilehto et al., 2021). Then, through governance rules written into the code, these blocks can be verified without a third-party control of data and each block is successively linked to create a chain (Ali et al., 2021; Navas et al., 2021).

Before the invention of Blockchain, many trade transactions relied on third parties, as it was difficult to confirm that a transaction occurred among individuals around the globe without relying on middlemen, such as banks, brokers, and online payment platforms, to verify that such transaction was not fraudulent or invalid (Yanisky-Ravid and Monroy, 2020). On the other hand, Blockchain is permissionless and transaction data are not owned or controlled by any party, therefore, that data becomes available for all, which results in wider transparency (Yanisky-Ravid and Monroy, 2020; Boukis, 2020)

The social media growth over the past years has disrupted traditional mass marketing communication and the focus shifted to online and technology-based interactions (Boukis, 2020; Ylilehto et al., 2021), which can foster brand-consumer relationships (Boukis, 2020). Such interactions have been promoted by taking advantage of the Internet of Things (IoT), Augmented Reality, Virtual Reality, Artificial Intelligence and Blockchain (Rusinek et al., 2018; Boukis, 2020; Ylilehto et al., 2021).

Various industries have already taken advantage of the adoption of Blockchain technology. The food industry is one of them, where this type of technology proves to boost trust, confidence, and fairness across the whole industry and amid customers (Miatton and Amado, 2020). Through the unique ID of the products, it enables anyone to check the details about that specific item and, ultimately is the solution for issues regarding double spending of fair-trade certificates without a

central verification authority. In the coffee industry, for instance, the implementation of Blockchain technology can overcome some of the main encounters across the value chain and helps to make the industry more balanced and sustainable.

Miatton and Amado (2020) suggest building transparency into a complex, opaque, and closed value chain, through a collaborative process that demands collaboration from all the players involved in the supply chain. Thus, a redesign of the whole value chain is required and, with a permissioned Blockchain platform, it should allow: 1) All parties involved to know exactly the origin of each product, as well as the circumstances under which it was distributed, guaranteeing producers fair prices; 2) Providing end-to-end traceability and proved provenance during the entire supply chain, to confirm the item's origin, craftmanship and quality; 3) Encourage factories to firmly share audits and certificates, to confirm they hold and promote sustainable practices (Miatton and Amado, 2020).

2.6. Blockchain transparency

DeAcetis (2020) proposes an innovative approach on Blockchain transparency, where a digital identity is allocated to each product, upon Blockchain verification and tracking. Subsequently, consumers can look up and check the product's authenticity and other variables, including the price breakdown associated with the production of that product, before making a purchase decision.

Many authors discuss how the adoption of Blockchain features can impact several areas of interest for strategic brand management – the main one being brand transparency (Boukis, 2020; Ali et al., 2021). The use of Blockchain technology allied to transparency is expected to impact all sectors and build opportunities to enhance business processes and build trust in data sharing and records management control (Ali et al., 2021), as well as help businesses to differentiate themselves in a saturated retail landscape, as stated by Navas et al., (2021). The authors outline another advantage of Blockchain which is allowing businesses to identify inefficiencies in their supply chain that may help planning the required changes to the business model.

Particularly in the fashion context, Yanisky-Ravid and Monroy (2019) propose Blockchain as a revolutionary technology that can effectively create a more efficient and transparent industry. Blockchain technology offer several benefits to the fashion industry. It enables full transparency of ethical and sustainable practices, and its inherent values of transparency, trust and immutable ledger can help the fashion industry take a step towards a more responsible business and drive social impact (Navas et al., 2021). Moreover, Blockchain seems to represent one of the most advanced information technologies for enabling traceability and information disclosure (Guo et al., 2020). DeAcetis (2020) contemplates Blockchain as a centralized network that offers consumers a new opportunity to engage in a brand's CSR (Corporate Social Responsibility) activities. Moreover, it has been concluded that a

company's CSR performance influences consumers' purchasing intentions (Parguel et al., 2011). Having a positive perception of a brand's environmental efforts leads to a positive perception of a brand's product, as well and higher levels of intention to purchase it (Brouwer, 2016).

Within luxury retail, some brands have already started to leverage new-age technologies like Blockchain to diminish consumers' concerns (DeAcetis, 2020; Williams and Nanda, 2021), not only to fight product counterfeiting and give assurance that the products are genuine and original, but also to deliver full supply chain transparency. An example of this is the association between Prada, Cartier and LVMH, who have partnered with AURA, a Blockchain platform, that overall aims to improve customer relationships (Williams and Nanda, 2021).

While still in the early days of its development, this technology is expected to be the most relevant means for consumers to obtain information about the margins of the products per distribution channel in the most transparent way, since consumers can see the operations process in a transparent way and the security of data management can be greater (Yoon and Won, 2018; Navas et al., 2021; Ali et al., 2021). Ali et al. (2021) underlines some other benefits of Blockchain such as extended visibility and traceability, digitalization, distributed trust while sharing among participants and reliability. The authors highlight trust as a "critical element in the Blockchain environment. Therefore, Blockchain technology could be an effective instrument for disclosing product information and sharing its pricing history and process with the customer (Yoon and Won, 2018). Besides, "Blockchain will make accessing and understanding data easier for the consumer" (Navas et al., 2021, p. 5).

Lastly, a study conducted by Navas et al. (2021), aiming to examine the impact of traditional versus Blockchain ecolabels on consumer trust and knowledge, concluded that both measures were higher for the Blockchain label for Generation Y (25 to 30 years old).

2.6.1. Transparency communicated through Blockchain: industry examples

Over the past years, many technological companies emerged in the industry, to provide appropriate solutions to the growing demand for higher transparency. Many of which focus on the fashion industry and aim to bring transparency to consumers who want to know what goes into their purchases. This involves a deep understanding of the true cost of manufacturing, selling, buying, disposing of materials, and so on, which is critical for many stakeholders to act and make the value chain more sustainable and transparent.

TrustTrace is a highly recognized company in this field. Founded in 2016, its vision is to "bring transparency to producers who really want to know what they sell and for consumers who really care what they buy" (TrustTrace, 2022). It helps brands reducing supply chain risk with 360-degree data on their suppliers in one single platform and analyzes suppliers to ensure sustainability standards are met,

managed and enhanced. Some brands that have used this solution are Asket, Sézane, Decathlon and Residus. The Swedish brand Residus introduced QR-codes in the care label of all their garments, showing consumers the factories involved in the production of each garment, from raw material in the fiber to dying of the fabric and manufacturing of the product (Residus, 2022). The brand stated that they felt it was important that their customers could feel secure that their factories take responsibility for both the environmental impact and the people involved in the production process. All customers can access a garments traceability program on their website and trace all products. This implementation has been done by TrustTrace, a company that provides traceability services and has been supporting fashion brands become more transparent and meet the needs of their consumers (TrustTrace, 2022). This is an example of a fashion brand that uses Blockchain to communicate their supply chain information. Although, it does not communicate the price. Another company that is striving in the technology sector is RastraTech (2022). The company has developed a traceability platform, which makes it possible to connect the links in the production chain to find and converge information on products using emerging digital technologies, such as Blockchain and Artificial Intelligence.

In sum, the use of Blockchain to disclose price transparency comprises the use of a QR code in the care label of fashion products that shows consumers the transactions made in the production of that garment: from the sourcing of raw materials to the dying of the product, manufacturing, and transportation. Sharing this information is important for consumers to feel secure that both the factories and fashion brands hold accountability and responsibility for the environmental and social impact over the making of fashion garments. Moreover, it helps consumers have a clear understanding of the true cost of products, assuring a complete honest relationship and enhancing brand trust.

2.7. Blockchain price transparency and the theory of planned behavior towards ethical fashion consumption

As discussed above, consumers tend to have positive perceptions towards companies that provide transparent information (Kim et al., 2020). However, it is essential to understand which are the factors that drive consumers' attitudes to purchase ethical fashion and how the use of Blockchain to enhance price transparency contributes to that.

Previous literature tends to consider the Theory of Planned Behavior (TPB) to clarify behaviors such as ethical clothing consumption (Brandão and da Costa, 2021). This theory considers a set of cognitions – attitudes towards behavior, subjective norms and perceived behavioral control – as the key predictors of one's behavioral intentions and consequent behavior (Ajzen, 1991, as cited in Brandão and da Costa, 2021).

Kim at al. (2020) ascertains that consumer trust is built upon a company's transparency efforts about its pricing strategy. If companies are reluctant or refuse to share pricing information, consumers may think that it had something to hide, while those who share their pricing strategy or cost breakdowns indicates a sense of trust to consumers, in the sense that brands are willing to disclose confidential information with them. Price transparency has shown to result in strengthening the assurance and reliability of the company (Kim et al., 2020). This reveals the importance to understand consumers' attitudes towards price transparency and its effect on purchase intention. Attitude is defined as an "individual's internal evaluation of the brand" (Mitchell and Olson, 1981, p.318) and is inherently comprised in two degrees – goodness (positive) or badness (negative). Purchase intention is an "individual's conscious plan to make an effort to purchase a brand" (Spears and Singh, 2004, p. 5). Despite distinct, both concepts are related as attitudes influence behavior through behavioral intentions.

H1: Attitude towards price transparency communicated through Blockchain has a positive effect on purchase intention.

The complexity of the fashion industry makes it challenging to guarantee the application of ethical and transparent practices across the whole supply chain (Fletcher, 2013; Niinimäki, 2010). It is almost impossible to know every single detail of each production stage and the standards applied at every step of the way (Harris et al., 2016). Even so, companies have started to communicate their green initiatives, claiming not only social and environmental aspects, but also those related to pricing of fashion items. However, when it comes to these claims, there is not a regulation company that helps preventing greenwashing: "the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the environmental benefits of a product or service (product-level greenwashing)" (Delmas and Burbano, 2011, p.66). This results in a lack of trust among consumers, who become skeptical about the motivations and legitimacy of such ethical claims, which leads to uncertainty in ethical fashion consumption (Brandão and da Costa, 2021). Thus, greenwashing can lead to high levels of skepticism. Consequently, skepticism is very likely to generate a negative attitude towards ethical fashion consumption. So, if fashion brands are less transparent regarding their prices and how these are inherently related to respecting ethical practices, consumers are more likely to have negative attitudes and be more skeptical towards those brands. Moreover, the less likely they are to purchase ethical fashion.

H2: Attitude towards price transparency communicated trough Blockchain has a negative effect on consumers' skepticism towards ethical fashion.

H3: Consumers' skepticism has a negative effect on purchase intention.

For consumers, to compensate the perceived higher price, the perceived 'value for money' must be greater than that of all other alternatives (Gleim et al., 2013). Brandão and da Costa (2021) linked a positive perceived value with a positive attitude towards ethical fashion.

It is also known that a brand's disclosure of its pricing strategy, including production costs and markups, may add value to the brand and consequently to its products, as well as generate positive attitudes towards the brand and positively influence ethical fashion consumption. Particularly with Blockchain, studies have shown that consumer shopping experiences are greatly influenced by new technologies (Rusinek et al., 2018; Ylilehto et al., 2021). The discussion sheds light on the use of these emerging technologies in fashion brands' branding efforts and, most importantly, on how they can change consumers' experience with the brand and add value to them (Boukis, 2020). Thus, perceived value may be considered as a key purchase intention driver. According to Gleim et al. (2013) and Dodds et al. (2013; as cited in Brandão and da Costa, 2021, p.11), perceived value is the "perceived ratio of benefits to costs (i.e., value)". Based on the above findings, the following hypotheses are proposed:

H4: Attitude towards price transparency communicated through Blockchain has a positive effect on perceived value of ethical products.

H5: Perceived value has a positive effect on purchase intention.

One of the main barriers to ethical fashion consumption is lack of knowledge and awareness, as most consumers are not aware of the negative consequences of fast fashion (Connell, 2010; Goworek et al., 2012). Previous studies even reveal that consumers hardly connect fast fashion to their negative impact (Goworek et al., 2012) and that there is a positive relationship between individuals' knowledge of the practices of the fast fashion industry and engagement in pro-environmental behavior (Brandão and da Costa, 2021), which in turn results in higher PBC (Perceived Behavior Control) and a positive attitude towards ethical fashion (Ko and Jin, 2017). As such, it is imperative to understand the impact of knowledge and awareness of the impact of the fashion industry through Blockchain price transparency on ethical fashion purchase intention.

H6: The effects of attitude on perceived value are moderated by the level of awareness towards ethical issues in fashion, with high awareness having a higher effect on purchase intention than low awareness.

As a result of the previous discussion, the final hypotheses are proposed. The conceptual framework illustrated in figure 1 highlights the relationship between each construct, in relation to the TPB cognitions, and how they can predict purchase intention in the context of ethical fashion consumption.

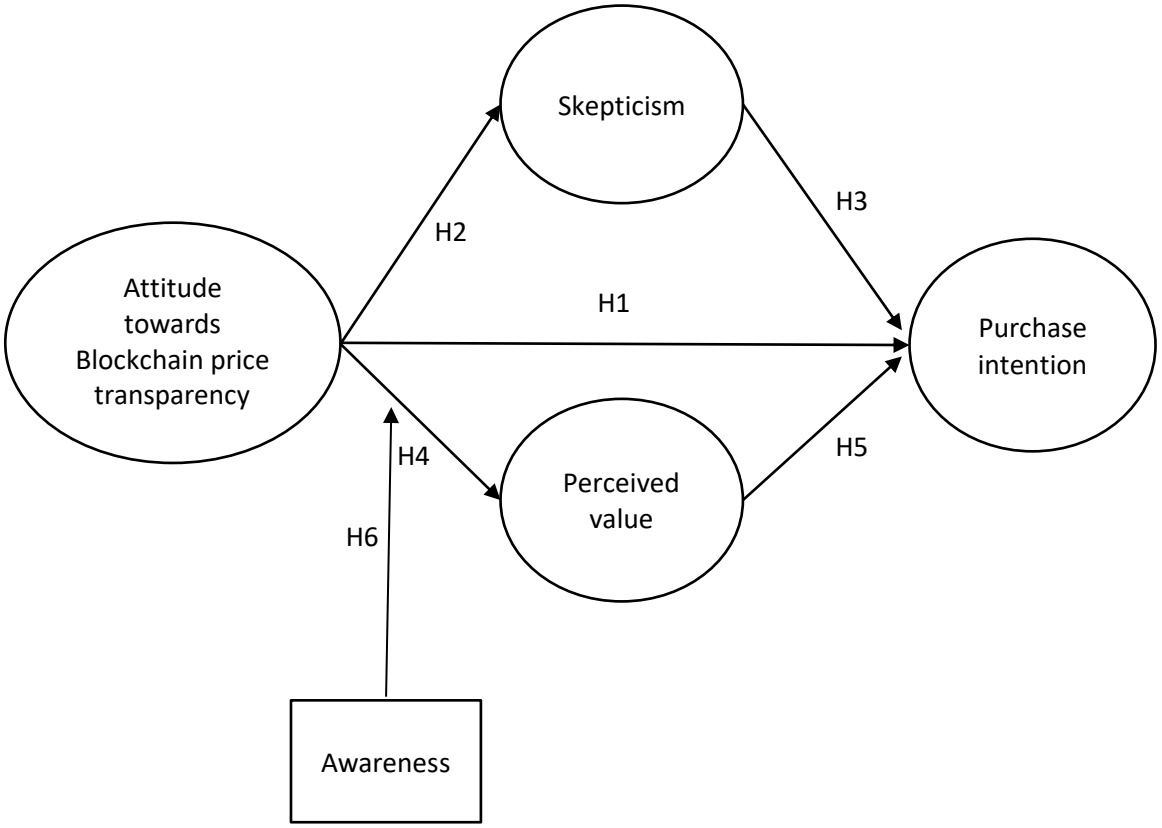

Figure 1 – Conceptual model

3. METHODOLOGY

3.1. Research approach

Given the proposed research objectives, further research will be done to understand what shapes consumer purchase intentions, in specific, regarding ethical consumption in the fashion retail scene. As such, the research methodology will focus on assessing the key ethical purchase intention drivers and, finally, determine if the use of Blockchain technology to disclose the price information of fashion products is or not a key purchase intention driver towards ethical fashion consumption.

The research for this study will be conducted using a deductive approach. A deductive approach design involves the development of a theory, deducing hypotheses that are tested thoroughly. The data collection is cross sectional, which provides a full appreciation of the topic, and investigates the subject within a relatively short time frame.

The theoretical structure of this study will be accomplished by both primary and secondary research, following the concept of triangulation, as exhibited in figure 2.

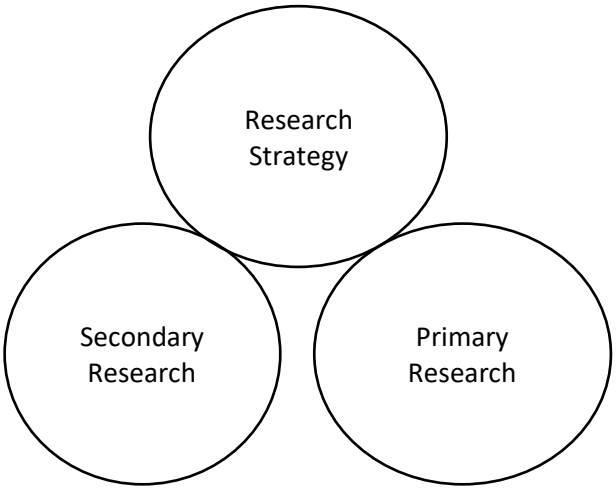

Figure 2 – Data triangulation

The secondary research will comprise the review of academic texts, such as journals, books, and other trustworthy and relevant online sources. The main objective is to provide an understanding of the practical use of Blockchain to disclose price transparency, using the cases of companies and brands who are already using this solution. The primary research will pursue methodological approach, covering quantitative data collection. Using both primary and secondary data allows one type of data to inform and direct the other. In this study, the secondary research helps defining the applicability of Blockchain transparency in the fashion industry, which will be used for building the experimental study

used in the primary research. The primary research will comprise quantitative data, since it is expected to provide a general overview of consumers' views, will help define the key drivers of consumer purchase intention.

Quantitative research will involve the development of an online questionnaire that will allow consumers to reveal their attitudes, interest, and potential engagement towards Blockchain-based brand experiences, as well as their views on the public disclosure of price transparency by fashion brands and further impact on consumers' purchase intentions. Given the type of analysis in this study – to analyze the consumer and its behavior – the quantitative method approach, using an online survey, was selected to test the hypotheses previously proposed. The advantage of an online questionnaire is that it allows the collection of a large amount of data within a short period of time, which then helps to measure the data, generalize results and reveal patterns (Malhotra and Birks, 2007). The quantitative research in this study will allow to truly understand the meaning of behavior, by acknowledging the specific behavior and involvement of consumers towards the adoption of Blockchain technology to enhance price transparency and consequently its impact on purchase intention towards ethical fashion consumption.

3.2. Questionnaire development

The questionnaire was designed on Qualtrics and was composed of closed-questions, mainly statements, using Likert scales, ranging from 'Strongly agree' to 'Strongly disagree'. The survey should be answered by people aged 18-37 years old, since the generations comprised in this age cohort are more prone to technology than older generations, plus, this way, it was possible to reach a larger number of consumers with ethical behaviors due to the generation they were born in. The survey aims to reach over 200 answers, to provide a broad spectrum of data. To achieve such high number of participants, participants were reached over social media channels, such as Facebook, Instagram, LinkedIn, and through snowball sampling. Snowballing occurs when the researcher initially contacts several people who are relevant to the research, and then uses these to establish contact with others.

To test the hypotheses, scales for each construct – attitude, skepticism, perceived value, purchase intention, awareness, and attitude – have been identified (table 1):

Attitude was measured using three items adapted from Spears and Singh (2004). Skepticism was measured using three items adapted from Mohr et al. (1998). To measure awareness and knowledge towards ethical fashion, four items adapted from Kim and Domhorts (1998) were taken into consideration. Regarding perceived value, four items Gleim et al. (2013) were used. Lastly, to measure purchase intention, two items from Yazdanpanhah and Forouzani (2015) were used.

Construct	Items	Adapted items	Source
Attitude	1. “Unappealing/appealing” 2. “Bad/good” 3. “Unpleasant/pleasant” 4. “Unfavorable/favorable” 5. “Unlikable/Likable”	1. “I find the idea of knowing the price breakdown of this T-Shirt appealing” 2. “I find the idea of knowing the price breakdown of this T-Shirt a good idea” 3. “I find the idea of knowing the price breakdown of this T-Shirt pleasant” 4. “I find the idea of knowing the price breakdown of this T-Shirt favorable” 5. “I like the idea of knowing the price breakdown of this T-Shirt”	Spears and Singh (2004)
Skepticism	1. “Because environmental claims are exaggerated, consumers would be better off if such claims on sustainable clothing labels or in advertising were eliminated” 2. “Most environmental claims on sustainable clothing labels or in advertising are intended to mislead rather than to inform consumers” 3. “I do not believe most environmental claims made on sustainable clothing labels or in advertising”	1. “Because environmental claims are exaggerated, consumers would be better off if such claims on sustainable clothing labels or in advertising were eliminated” 2. “Most environmental claims on sustainable clothing labels or in advertising are intended to mislead rather than to inform consumers”	Mohr et al. (1998)

		3. “I do not believe most environmental claims made on sustainable clothing labels or in advertising”	
Ethical Awareness and Knowledge	1. “Chemical pollutants are produced during manufacturing of synthetic or manufactures fibers such as polyester” 2. “Disposable fast fashion products have substantially contributed to the quantity of textile products discarded in landfills” 3. “Phosphate-containing laundry detergents used to wash fashion clothes can be a source of water pollution” 4. “Fashion industry has contributed to a decline in the ecological environment”	1. “Chemical pollutants are produced during manufacturing of synthetic or manufactures fibers such as polyester” 2. “Disposable fast fashion products have substantially contributed to the quantity of textile products discarded in landfills” 3. “Phosphate-containing laundry detergents used to wash fashion clothes can be a source of water pollution” 4. “Fashion industry has contributed to a decline in the ecological environment”	Kim and Damhorst (1998)
Perceived Value	1. “Based on the price, sustainable clothing is very economical” 2. “Sustainable clothing is good value for the money” 3.“I do consider the price for sustainable clothing to be acceptable” 4. “Sustainable clothing is a bargain”	1. “Based on the price, this T-Shirt is very economical” 2. “This T-Shirt is good value for the money” 3. “I do consider the price this T-Shirt to be acceptable” 4. “This T-Shirt is a bargain - "a thing bought or offered for sale much more cheaply than is usual or expected"	Gleim et al. (2013)

Purchase Intention	1. "I intend to buy sustainable clothes" 2. "I plan to buy sustainable clothes in the future" 3. "I will try to buy sustainable clothes in the future"	1. "I intend to buy a similar T-Shirt where I can see the price breakdown associated with its production" 2. "I plan to buy a similar T-Shirt where I can see the price breakdown associated with its production" 3. I will try to buy a similar T-Shirt where I can see the price breakdown associated with its production	Yazdanpanah and Forouzani (2015)

Table 1 – Constructs and items for the research model, adapted from Brandão and da Costa (2021).

The online questionnaire was divided in three parts. Firstly, participants were shown a Classic unisex T-Shirt with sustainable properties priced at 35€ – the standard cost for a sustainable T-Shirt in traditional retail –, as figure 3 illustrates, and were asked about their likeliness to purchase it. Their likeliness to buy the T-Shirt was measured through a scale with 7 points with answers ranging from 1 to 7 - being 1 indicative of extremely unlikely and 7 extremely likely.

Then, some general questions were asked regarding the participants' gender, age, and fashion shopping habits, to collect information on sample demographics to analyze potential patterns among gender, generations and realize if there is a difference between the behavior of ethical fashion consumers and fast fashion consumers. In the second part of the questionnaire, two images illustrating the practical use of Blockchain to disclose price information were shown (figures 4 and 5) and participants were exposed to the price breakdown of the same Classic T-Shirt they had seen before in the first question.

Consumers were impacted by these images that have been simulated using a fictitious ethical brand that fully discloses information on the pricing of its products (price breakdown), comprising the production costs, from manufacturing to delivering the product on the shelves. The images display how blockchain price transparency works in practical terms: consumers scan the unique QR code available on the care labels of the garments (figure 4) and are redirected to that product's pricing information (figure 5). This was followed by two validity questions, to guarantee the legitimacy of the results. One stating that the previous image showed the price breakdown of a Classic T-Shirt, and the other stating the total production costs of that T-Shirt were 20,03€. Both were true, therefore those

who answered “No” to any of these questions were eliminated from the analysis. After looking at the images, participants were asked about their likeliness to purchase that same T-Shirt, knowing now that they could check the price breakdown associated with its production, in order to understand if consumers see value in this type of information from fashion brands or not, as well as if they are more likely to shop at brands that use Blockchain to share detailed information about their production costs and markups. Their likeliness to buy the T-Shirt was likewise measured through a scale with 7 items with answers ranging from 1 to 7 - being 1 indicative of extremely unlikely and 7 extremely likely.

So, the same stimuli were exposed to all the respondents, and both with the price being shown, in order to generate a good level of comparison between the likeliness to purchase ethical products on both circumstances: with or without price transparency.

Finally, the third part of the questionnaire includes questions related to the five constructs and respective items formerly defined in the research model, from which participants had to react and provide their views on each item of the constructs. All of the items from all the scales were measured with a 7-point Likert scale from: 1 - Strongly disagree to 5 - Strongly agree. Altogether, questions will allow to test the proposed hypotheses. The final survey and its questions can be found in appendix A.

Short-sleeved Classic T-shirt with crewneck
Unnisex
Composition: 100% Organic Cotton
Certification: GOTS (Global Organic Textile Standard)
Fit: Regular
Colour: White
Made in Porto, Portugal

Price: 35€

Figure 3 – Question 1: Illustration of ethical white T-Shirt and its characteristics

Figure 4 – Question 6: Illustration of unique QR code on the care label of a garment

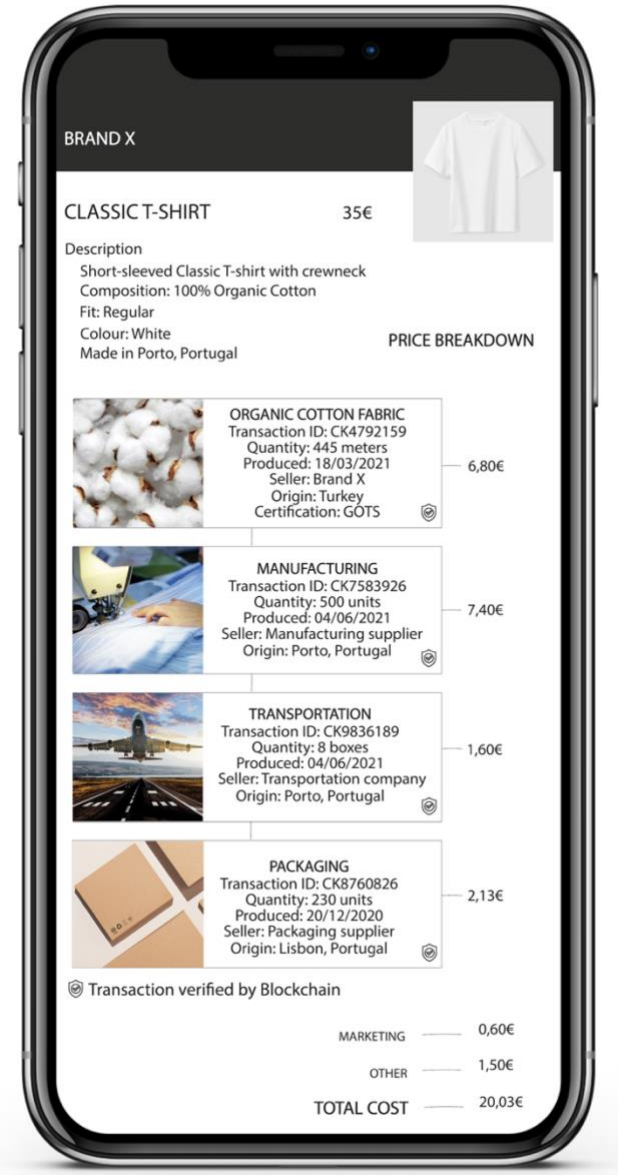

Figure 5 – Question 6: Illustration of a price breakdown after scanning the unique product QR code

4. RESULTS AND DISCUSSION

Following the primary research, the data has been analyzed to classify the findings. The quantitative data has been assessed through appropriate qualitative procedures of analysis, using the statistic software SPSS to run descriptive and inferential statistics and test hypotheses.

4.1. Data collection and sample

In this study, a convenience sample was used and links to the online questionnaire were published on LinkedIn and other social media channels using snowball sampling.

The survey achieved a total number of 341 respondents, obtaining a broad spectrum of data of Portuguese people that was retained for further analysis. The sample was composed of 137 women — 46% of the sample — and 161 men, which represented 54% of the total sample. The majority of the sample was 25-37 years old (55%) or 18-24 years old (40%). Only 5% of the participants were over 38 years old and, because these are over the age cohort needed for this study, those participants were removed from the analysis. Out of the 341 people that answered the survey, 298 were eligible for the study. The number of eligible respondents was based on the age cohort, as previously mentioned, but also on the validity questions. Only those that answered correctly to the validity questions were considered for further analysis. Most of the participants, 80%, declare that they buy apparel at fast fashion establishments. Only 18% mention buying apparel at sustainable fashion brands.

Variables	Frequency	Percent
Gender		
Male	161	54%
Female	137	46%
Age		
18 - 24 years old	118	40%
25 – 37 years old	165	55%
38+ years old	15	5%
Shopping habit		
Fashion Brands	238	80%
Sustainable Fashion Brands	53	18%
Other	7	2%

Table 2 – Sample characteristics

4.2. Reliability tests

Regarding the scales used in the model, their reliability was tested by assessing the Cronbach's α values (appendix C), which confirmed all scales had good levels of internal consistency, with all the values above .80 (Hair, 2011), as illustrated in appendix C.

Furthermore, the Principal Component Analysis (PCA) was performed with varimax rotation to understand if the items were related to each of their own dimension (table 3).

The results suggest that all items relate to their own dimension except all three items from the Purchase Intention dimension, which have high loading values (> .5) under the wrong dimension, therefore both dimensions were combined into one: Value/Purchase Intention.

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Perceived value – item 3	.874	.149	.158	-.151	
Perceived value - item 2	.871	.201	.122	-.136	
Perceived value - item 1	.826	.189	.162	-.208	
Purchase intention – item 3	.762	.279	.214	-.111	.310
Perceived value - item 4	.756	-.100			-.267
Purchase intention – item 2	.706	.290	. 192	-.195	.379
Purchase intention – item 1	.592	.403			.523
Attitude – item 5		.864		-.132	
Attitude – item 4	.255	.846			
Attitude – item 3	.207	.825	.134	-.151	.114
Attitude – item 2		.823		-.223	
Attitude – item 1	.158	.664		-.351	.171
Awareness – item 2		.132	.820	-.209	.174
Awareness – item 3	.277	.175	.810		-.141
Awareness – item 1	.292		.774		
Awareness – item 4			.699		.491
Skepticism – item 2				.922	
Skepticism – item 3		.165	.156	.885	
Skepticism – item 1	-.323	.164	-.204	.764	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 3 – Principal component analysis

The combination of the two components into one single dimension led to the review of the hypotheses. In the conceptual model, five constructs were considered, and the hypotheses were based on the relationships among these constructs. Although, following the data collection, the hypotheses previously defined can no longer be contemplated. Hypothesis 5 – "Perceived value has a positive effect on purchase intention" – and hypothesis 4 – "Positive attitude towards high price transparency communicated through Blockchain has a positive effect on value/purchase intention" – were eliminated from the analysis. The revised hypotheses can be found in table 4. Figure 6 illustrates the revised conceptual model.

Revised H1	Positive attitude towards high price transparency communicated through Blockchain has a positive effect on value/purchase intention.
Revised H2	Positive attitude towards high price transparency communicated trough Blockchain has a negative effect on consumers' skepticism towards ethical fashion.
Revised H3	Consumers' skepticism has a negative effect on value/purchase intention.
Revised H4	The effects of attitude on value/purchase intention are moderated by the level of awareness towards ethical issues in fashion, with high awareness having a higher effect on value/purchase intention than low awareness.

Table 4 – Revised hypotheses

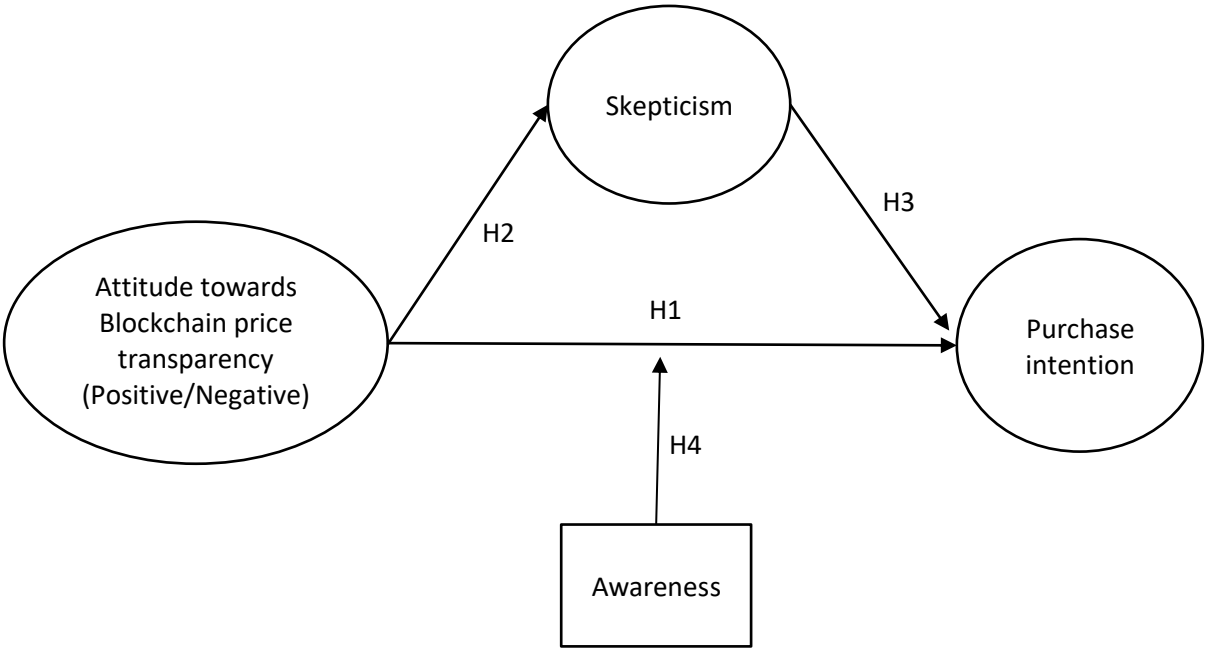

Figure 6 – Revised conceptual model

4.3. Hypotheses testing

H1: Positive attitude towards high price transparency communicated through Blockchain has a positive effect on value/purchase intention.

A simple regression analysis was conducted to examine H1, having into account the average in responses of the three items previously defined for the value/purchase intention construct. As illustrated in table 5, the R square = 0.192, which means attitude explains 19,2% of the variability of value/purchase intention. Ideally, the R square should be > 0.5 for the explanatory variable (attitude) to account for the larger proportion of variability in value/purchase intention.

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.438[a]	.192	.189	5.551

a. Predictors: (Constant), Attitude

Table 5 – Hypothesis 1: Model summary *(N=298)*

Although, looking at the significance value in the ANOVA test (table 6), it is possible to see that p= 0.000 < 0.05, which indicates that, overall, and with 95% confidence, the regression model statistically significantly predicts the outcome variable and therefore it is a good fit for the data.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,161.557	1	2,161.557	70.150	.000[b]
	Residual	9,120.711	296	30.813		
	Total	11,282.268	297			

a. Dependent Variable: Value/Purchase Intention

b. Predictors: (Constant), Attitude

Table 6 – Hypothesis 1: ANOVA test *(N= 298)*

The Coefficients table provides the necessary information to predict value/purchase intention from attitude, as well as determine whether attitude contributes statistically significantly to the model,

by looking at the significance value. Given Sig. 0.000 < 0.05, one can reject the null hypothesis and conclude that a consumer's positive attitude towards high price transparency communicated through Blockchain significantly influences value/purchase intention.

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	4.467	3.679		1.214	.226
	Attitude	1.029	.123	.403	8.376	.000

a. Dependent Variable: Value/Purchase Intention

Table 7 – Hypothesis 1: Coefficients *(N= 298)*

Further analysis was performed to reinforce the validity of the effect of attitude on value/purchase intention. The respondents were shown a Classic unisex T-Shirt with sustainable properties priced at 35€ and, in general, respondents showed low levels of ethical fashion purchase intention (M= 3.42, SD= 1.23). The results reveal a much higher ethical fashion purchase intention when participants were exposed to the price breakdown of the same Classic T-Shirt after scanning the unique product QR code, where the costs associated to the production of the garment are disclosed in a transparent way. In sum, there is a higher ethical fashion purchase intention when there is full disclose of the price breakdown of the T-Shirt versus when confronted with the same stimulus but without price transparency.

A new variable was formed with the difference between the results of the question where participants were shown the price breakdown of the T-Shirt with Blockchain technology and the questions where participants were shown the T-Shirt with its price but with no price transparency communicated through Blockchain. The purpose was to truly understand how Blockchain price transparency adds value to the consumer and increases the levels of purchase intention.

A simple regression analysis was conducted to examine H1. As illustrated in table 8, the R square = 0.025 which means attitude explains 2,5% of the variability of value/purchase intention. Ideally, the R square should be > 0.5 for the explanatory variable (attitude) to account for the larger proportion of variability in value/purchase intention.

Model Summary*b*

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.157[a]	.025	.021	1.174

a. Predictors: (Constant), Attitude

b. Dependent Variable: Value/Purchase Intention

Table 8 – Hypothesis 1: Model summary *(N=298)*

By looking at the significance value in the ANOVA test (table 9), it is possible to see that p= 0.007 < 0.05, which indicates that the regression model statistically significantly predicts the outcome variable with 95% confidence and therefore it is a good fit for the data.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.352	1	10.352	7.508	.007[b]
	Residual	408.161	296	1.379		
	Total	418.513	297			

a. Dependent Variable: Value/Purchase Intention

b. Predictors: (Constant), Attitude

Table 9 – Hypothesis 1: ANOVA test *(N= 298)*

The significance value in the coefficients table (Sig. 0.007 < 0.05) illustrated in table 10 allows to conclude that a consumer's positive attitude towards high price transparency communicated through Blockchain significantly influences value/purchase intention, which reinforces the previous analysis of hypothesis 1.

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-.329	.778		-.423	.673
	Attitude	.071	.026	.157	2.740	.007

a. Dependent Variable: Value/Purchase Intention

Table 10 – Hypothesis 1: Coefficients *(N= 298)*

Morever, some interesting findings can be taken from the demographic statistics. An independent samples T-test was performed and the results show that the levels of likeliness to purchase the T-Shirt with price transparency involved do not significantly differ (t=.894, p=0.37) among men and women, being both genders equally more or less likely to purchase (Male M= 5.28, SD= .903; Female M= 5.18, SD= 1.11). The same can be stated regarding age, with respondents being more or less likely to purchase the T-Shirt (total M= 5.23, SD= 1.00) across the different age groups. The ANOVA one-way test allowed to confirm there is not a statistically significant difference between the means of the different age groups (F= 1.105, p.= .333). Although, respondents who usually shop at sustainable brands showed higher levels of likeliness to purchase ethical fashion when price transparency is involved (M= 5.66, SD= .678) than those who shop at fast fashion brands (M= 5.16, SD= 1.01), which supports the previous research that underlines consumers with pro-environmental behavior being more prone to appreciate price transparency from fashion brands. In the ANOVA one-way test, the results confirmed the likeliness to purchase ethical fashion when price transparency is involved significantly differed between fast fashion and sustainable fashion consumers (F= 7.340, p.= .001). Refer to appendix A for detailed online questionnaire and appendix B for sample characterization results.

H2: Positive attitude towards high price transparency communicated trough Blockchain has a negative effect on consumers' skepticism towards ethical fashion.

Hypothesis 2 was tested through the same linear regression model, as illustrated in table 11. The R square = 0.108 suggests that attitude explains 10,8% of the variability of skepticism.

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.329[a]	.108	.105	3.230

a. Predictors: (Constant), Attitude

Table 11 – Hypothesis 2: Model summary *(N=298)*

The ANOVA test shown in table 12 exhibits a significance value of 0.000 < 0.05 and thus the regression model is statistically relevant to predict attitude towards skepticism.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	375.833	1	375.833	36.023	.000[b]
	Residual	3,088.234	296	10.433		
	Total	3,464.067	297			

a. Dependent Variable: Skepticism

b. Predictors: (Constant), Attitude

Table 12 – Hypothesis 2: ANOVA test *(N= 298)*

The coefficients table allows to conclude with an interval of 95% confidence that, with a Sig. 0.000 < 0.05, the null hypothesis is rejected and positive attitude towards high price transparency communicated trough Blockchain has a significantly negative outcome on consumers' skepticism towards ethical fashion.

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	21.879	2.141		10.221	.000
	Attitude	-.429	.071	-.329	-6.002	.000

a. Dependent Variable: Skepticism

Table 13 – Hypothesis 2: Coefficients *(N= 298)*

H3: Consumers' skepticism has a negative effect on value/purchase intention.

A third linear regression model was performed to test hypothesis 3. The R square = 0.111 represents a low level of percentage explaining the variability of value/purchase intention. Skepticism explains 11,1% of the variability of value/purchase intention.

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	.333[a]	.111	.108	5.822

a. Predictors: (Constant), Skepticism

Table 14 – Hypothesis 3: Model summary (N=298)

The ANOVA test displayed in table 15 shows a Sig. 0.000 < 0.05, therefore there is a statistically significant relevance in using the linear regression model to predict skepticism and its effect on value/purchase intention.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,248.775	1	1,248.775	36.840	.000[b]
	Residual	10,033.493	296	33.897		
	Total	11,282.268	297			

a. Dependent Variable: Value/Purchase Intention

b. Predictors: (Constant), Skepticism

Table 15 – Hypothesis 3: ANOVA test *(N=298)*

Moreover, with a Sig value of 0.000 (<0.005), it is possible to reject the null hypothesis and conclude that consumers' skepticism towards brands has a negative effect on value/purchase intention.

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	40.613	.959		42.328	.000
	Attitude	-.600	.099	-.333	-6.070	.000

a. Dependent Variable: Value/Purchase Intention

Table 16 – Hypothesis 3: Coefficients *(N=298)*

H4: The effects of attitude on value/purchase intention are moderated by the level of awareness towards ethical issues in fashion, with high awareness having a higher effect on value/purchase intention than low awareness.

Lastly, to test the moderation of awareness towards ethical issues in fashion on the effects of attitude on value/purchase intention, as highlighted in hypothesis 4, the variable of awareness was

divided into two groups: low aware and high aware. Those who scored 1-4 (strongly disagree through neither agree nor disagree) on the four questions regarding ethical issues in the fashion industry were labelled as “low aware”, which resulted in a total of 19 participants. Those who scored between 5-7 (somewhat agree through strongly agree) were labelled as “high aware”, resulting in a total number of 279 participants.

Then, a regression analysis using Hayes' Process Macro in SPSS was conducted to test the hypothesis and the results reveal that there is a statistically significant relationship between the levels of awareness towards ethical issues in fashion over the effect of attitude on value/purchase intention (table 17). With a Sig. 0.000 < 0.05 and an R square = 0.216, It is suggested that the model is significant, and attitude explains 21,7% of the variability of value/purchase intention. When looking at the interaction of attitude and awareness towards ethical issues in fashion on value/purchase intention, p= 0.034 < 0.05, therefore the interaction effect is significant. Figure 7 illustrates a visual representation of this moderation where it’s possible to see how awareness changes the interaction between attitude and value/purchase intention. Individuals with higher levels of awareness towards ethical issues in fashion have substantially higher levels of value/purchase intention than those who have low levels of awareness towards ethical issues in fashion.

Thus, the null hypothesis is rejected, and it is possible to conclude that the effects of attitude on value/purchase intention are moderated by the level of awareness toward ethical issues in fashion, with high awareness having a higher effect on value/purchase intention than low awareness.

Model Summary

R	R-sq	MSE	F	df1	df2	p
,4655	,2167	30,0593	27,1111	3,0000	294,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	68,8387	33,5164	2,0539	,0409	2,8763	134,8011
ATTITUDE	-1,5484	1,2060	-1,2839	,2002	-3,9219	,8251
AWARENESS	-64,4184	33,7164	-1,9106	,0570	-130,7746	1,9377
Int_1	2,5814	1,2122	2,1295	,0340	,1957	4,9672

Table 17 – Hypothesis 4: Regression analysis *(N=298)*

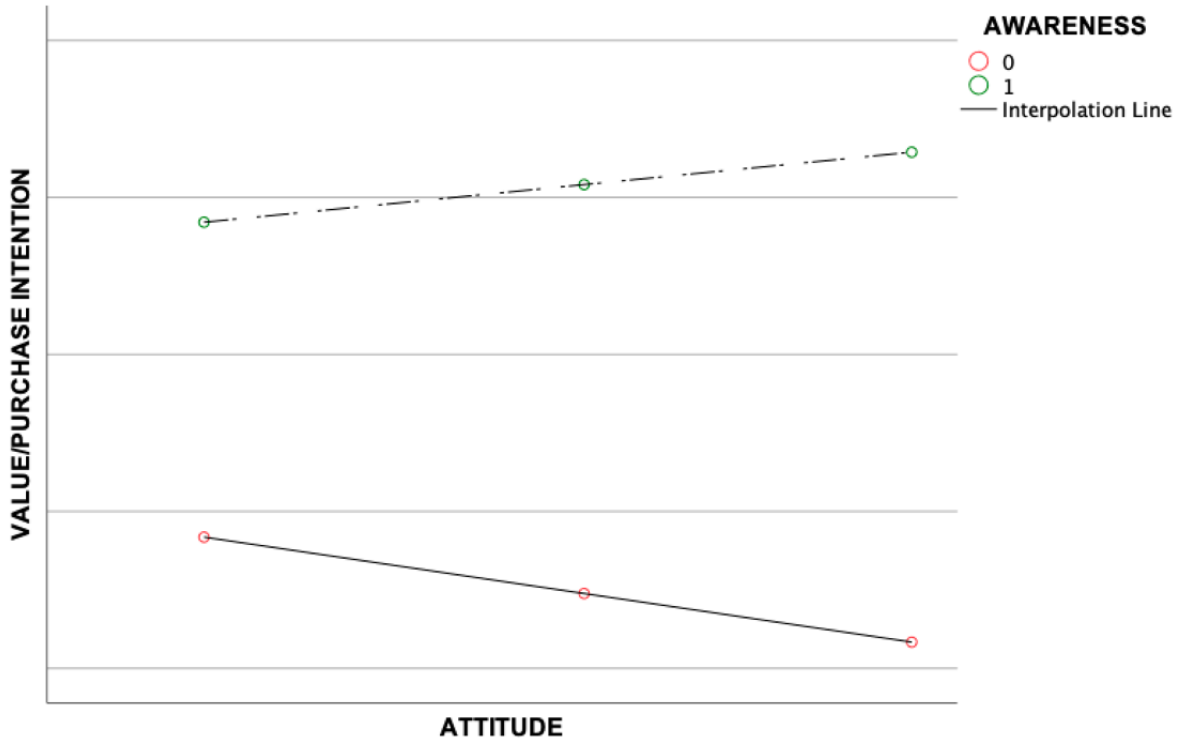

Figure 7 – Hypothesis 4: Graph *(N=298)*

4.4. Discussion

This study's discussion addresses the findings considering the literature reviewed and relates them to the conducted primary research.

The primary research provided an understanding on the attitudes among Portuguese consumers towards price transparency communicated through Blockchain. The literature suggested that consumers tend to have positive perceptions and higher trust levels towards fashion brands that provide transparent information regarding their pricing and production costs, and that price transparency has previously shown to result in strengthening the assurance and reliability of the brand (Kim et al., 2020). Although, the impact of higher price transparency on purchase intention was still to be explored. The research conducted complements the argument presented by Kim et al. (2020) and reveals that there is a higher intention to purchase ethical fashion products when brands fully disclose the price breakdown associated with those products, as consumers' positive attitudes towards high price transparency communicated through Blockchain significantly influence the perceived value and purchase intention towards fashion brands. In addition, the research concludes that the levels of intention to purchase ethical fashion products when brands fully disclose the price breakdown associated with those products is higher for sustainable fashion consumers than fast fashion consumers.

Previous research had identified skepticism as one of the main barriers impeding ethical fashion consumption, not only because the fashion industry is extremely complex and it's almost impossible guarantee the application of sustainable practices throughout the entire supply chain (Fletcher, 2013; Niinimaki, 2010), but also due to previous misleading claims of fashion brands' ethical practices, which lead to lack of trust among consumers and uncertainty in ethical fashion consumption (Brandão and da Costa, 2021). Thus, it was questioned whether consumer attitudes towards high price transparency communicated through Blockchain had a negative impact on consumer skepticism towards ethical fashion. The research results revealed that consumers positive attitudes towards brands' high price transparency led to a negative outcome on their skepticism towards ethical fashion, which means the more brands disclose on their pricing strategy, the less skeptical consumers will be.

Additionally, the impact of skepticism on perceived value and purchase intention was examined and the outcome unveils that consumers' skepticism towards a brand negatively impacts their perceived value and intention to purchase such brand, which further reinforces the previous literature.

Another main barrier to ethical fashion consumption is the lack of knowledge and awareness, as pointed out by Connell (2010) and Goworek et al. (2012). Previous research acknowledges a positive relationship between consumers awareness of the fast fashion industry negative practices and engagement in ethical fashion consumption (Brandão and da Costa, 2021). Along with the increasing awareness and knowledge of the ethical issues in the fashion industry comes the intention to purchase ethical fashion consumption, as appropriate evidence from statistical tests have showed: the more aware consumers are of the negative impact of fast fashion on the planet and how unsustainable the whole industry is, the keener they are to purchase fashion items from ethical fashion brands. This data supports the previously shown research that emphasizes the positive relationship between individuals' knowledge of the practices of fast fashion industry and engagement in pro-environmental behavior, which results in a positive attitude towards ethical fashion and higher purchase intention, as discussed by Brandão and da Costa (2021).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

Prior to investigating consumer attitudes towards the adoption of Blockchain technology for enhancing price transparency and its impact on consumer purchase intention towards ethical fashion products, four objectives were identified to guide the research.

The first was to critically evaluate the use of Blockchain technology to enhance price transparency and its impact on consumer purchase intention. The findings show that blockchain technology is a trustworthy medium to enable price transparency and could improve brands' purchase intention levels.

The second objective was to develop a conceptual model that demonstrates the relationship between transparency, blockchain technology and consumer purchase intentions towards the disclosure of the pricing of ethical fashion brands. This was achieved through the development of several hypotheses that were inter-related and altogether formed a conceptual model that guided the entire research.

The third objective was to analyze consumer attitudes towards ethical fashion price transparency via the adoption of Blockchain technology and its impact on consumer purchase intention. Both the literature review and the research were used to identify consumers' attitudes towards high price transparency communicated through Blockchain and the outcomes revealed that there is a strong interest from consumers in finding out more about the behind the scenes of fashion in relation to price transparency – this means learning more about the production costs and what makes that product a high quality and sustainable one. As the findings reveal, when brands are more transparent in disclosing pricing information, this leads to higher consumer purchase intention levels towards ethical products.

The last research objective was to provide managerial recommendations to ethical fashion brands on investing in blockchain technology for enhancing price transparency within their operations for increasing customer purchase intention levels. As this study outlines, it is strongly recommended that ethical apparel brands enhance supply chain transparency and consider the implementation of blockchain technology in order to substantially mitigate consumers' concerns regarding a brand's supplier's labor policy, price fairness, and product quality, which ultimately boost their trust levels. Thus, managers should reinforce consumer trust by intensifying the integrity and quality of information through blockchain technology. Price transparency is recognized as an influential element in the purchase decision phase, especially in the ethical fashion context where the high price points of such products are perceived negatively by consumers due to the lack of concrete evidence about the

products' manufacturing and supply chain operations. Therefore, it is suggested that managers in the ethical fashion context focus on re-evaluating how they incorporate their values in their business operations foundations. Ethical fashion retailers could increase and enrich their competitive advantage, brand equity and consumer trust by sharing sincere and transparent data about a product's price and supply chain journey via the implementation of blockchain technology.

5.2. Research contribution

Previous academic research suggests that the application of Blockchain in many other industries has enabled higher trust levels among consumers, but its application in the fashion industry was yet to be explored. The use of price transparency strategies in the fashion industry was also very limited, and its impact on consumers' purchase intention had not been investigated before. The contribution of this study is to understand whether the use of Blockchain technology as an instrument to disclose a product's pricing information with consumers can effectively increase consumer purchase intention towards ethical fashion consumption, with a particular focus on Portuguese consumers from generations Y and Z. Research findings show that price transparency communicated through Blockchain is a key factor to increase consumer purchase intention towards ethical fashion consumption. This study contributes to academics, who may further explore related topics and scrutinize the present research's limitations.

5.3. Limitations and further research

While this research makes a clear contribution to research on the effects of Blockchain price transparency on ethical fashion consumption, the nature of the research topic and the methodology used in this research study are subject to limitations. These limitations are outlined in table 18, with recommendations for future research.

Limitations	**Recommendations for future research**
The study's central focus is the consumer and does not comprise the brands' perspective.	Further research may combine a consumer's point of view with a management approach, and explore this topic from the fashion brands' perspective, acknowledging fashion industry-based views, with interviews to experts in the field.
The study's sample is limited to Portuguese consumers only, and the results do not apply to other regions of the globe.	A recommendation for future research would be to also combine research from other parts of the world, which would benefit from comparing

	behavior throughout different populations and cultures.
Primary research data collection is limited, due to time-constraint issues.	Further research may consider using a larger sample and a more diverse range of respondents.
Research methods were restricted to quantitative studies only.	Further research may gain more rigorous and complete results by doing qualitative studies or using observations within the primary research.

Table 18 – Limitations and further research

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7. APPENDICES

Appendix A – Online questionnaire

English

The purpose of this survey is to gather information for my Master Thesis at ISCTE Business School. The collected data will be analysed anonymously and will be used for academic purposes only. The approximate time to complete this survey is 5 minutes. By completing this survey, you confirm that you give your consent to use your responses as a part of this research study.

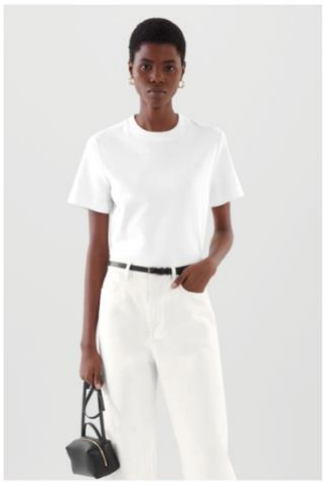
Thank you for taking the time to answer this survey, I highly appreciate your help.

→

0% 100%

Short-sleeved Classic T-shirt with crewneck
Unnisex
Composition: 100% Organic Cotton
Certification: GOTS (Global Organic Textile Standard)
Fit: Regular
Colour: White
Made in Porto, Portugal

Price: 35€



How likely are you to buy this T-Shirt?

- Extremely unlikely
- Unlikely
- More or less unlikely
- Neutral
- More or less likely
- Likely
- Extremely likely

What is your gender?

- Male
- Female
- Prefer not to say

What age group do you fall into?

- 18 - 24 years old
- 25 - 37 years old
- 38+ years old

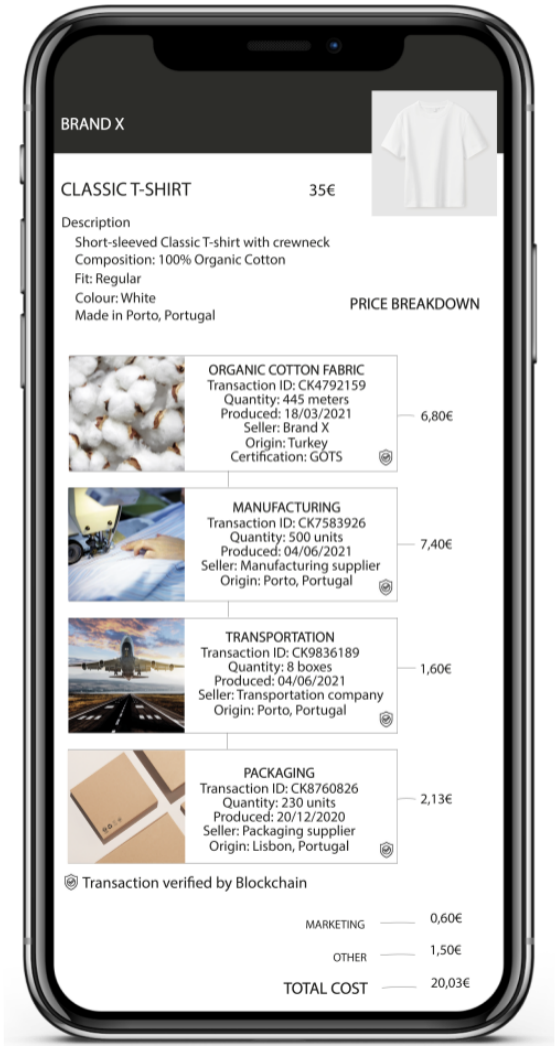
Where do you usually shop your clothes from?

- Fashion Brands (e.g. Zara, H&M, Primark)
- Sustainable Fashion Brands (e.g. Patagonia, Pangaia, Allbirds, Sézane)
- Other

← →

0% 100%

The previously shown T-Shirt has a digital identity allocated to it. After you purchase it, you can scan the unique QR code inside the label to learn more about the T-Shirt's journey and the price breakdown associated with its production.



How likely are you to buy this T-Shirt?

- Extremely unlikely
- Unlikely
- More or less unlikely
- Neutral
- More or less likely
- Likely
- Extremely likely

The previous image shows the price breakdown of a Classic T-Shirt

- Yes
- No

The total production cost of this T-Shirt is 20,03€

- Yes
- No

Please share your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I find the idea of knowing the price breakdown of this T-Shirt appealing	○	○	○	○	○	○	○
I find the idea of knowing the price breakdown of this T-Shirt a good idea	○	○	○	○	○	○	○
I find the idea of knowing the price breakdown of this T-Shirt pleasant	○	○	○	○	○	○	○

I find the idea of knowing the price breakdown of this T-Shirt favorable	○	○	○	○	○	○	○
I like the idea of knowing the price breakdown of this T-Shirt	○	○	○	○	○	○	○

Please share your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to buy a similar T-Shirt where I can see the price breakdown associated with its production	○	○	○	○	○	○	○
I plan to buy a similar T-Shirt where I can see the price breakdown associated with its production	○	○	○	○	○	○	○
I will try to buy a similar T-Shirt where I can see the price breakdown associated with its production	○	○	○	○	○	○	○

Please share your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Based on the price, this T-Shirt is very economical	○	○	○	○	○	○	○
This T-Shirt is good value for the money	○	○	○	○	○	○	○
I do consider the price this T-Shirt to be acceptable	○	○	○	○	○	○	○

This T-Shirt is a bargain - "a thing bought or offered for sale much more cheaply than is usual or expected"	○	○	○	○	○	○	○

Please share your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Because environmental claims are exaggerated, consumers would be better off if such claims on sustainable clothing labels or in advertising were eliminated	○	○	○	○	○	○	○
Most environmental claims on sustainable clothing labels or in advertising are intended to mislead rather than to inform consumers	○	○	○	○	○	○	○
I do not believe most environmental claims made on sustainable clothing labels or in advertising	○	○	○	○	○	○	○

Please share your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Chemical pollutants are produced during manufacturing of synthetic or manufactures fibers such as polyester	○	○	○	○	○	○	○

Disposable fast fashion products have substantially contributed to the quantity of textile products discarded in landfills	○	○	○	○	○	○	○
Phosphate-containing laundry detergents used to wash fashion clothes can be a source of water pollution	○	○	○	○	○	○	○
The fashion industry has contributed to a decline in the ecological environment	○	○	○	○	○	○	○

←

→

0% 100%

Appendix B – Sample characterization results

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Likeliness to purchase ethical fashion with price transparency	Male	161	5.28	.903	.071
	Female	137	5.18	1.111	.095

Table 19 – Likeliness to purchase ethical fashion with price transparency - gender group statistics

		Levene's Test for Equality of Variances		T.test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Higher
x	Equal variances assumed	.823	.365	.864	296	.372	.104	.117	-.125	.334
	Equal variances not assumed			.880	261.617	.380	.104	.119	-.129	.338

x. Likeliness to purchase ethical fashion with price transparency

Table 20 – Likeliness to purchase ethical fashion with price transparency - gender independent sample T-test

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval of Mean Lower Bound	95% Confidence Interval of Mean Upper Bound	Minimum	Maximum
18 – 24 years old	118	5.14	1.053	.097	4.94	5.33	1	7
25 – 37 years old	165	5.31	.960	.075	5.16	5.46	2	7
38+ years old	15	5.23	1.060	.274	4.55	5.72	3	6
Total	298	5.23	1.003	.058	5.12	5.35	1	7

Table 21 – Likeliness to purchase ethical fashion with price transparency - age descriptive

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.223	2	1.112	1.105	.333
Within Groups	296.800	295	1.006		
Total	299.023	297			

Table 22 – Likeliness to purchase ethical fashion with price transparency - age ANOVA

Descriptives

					95% Confidence Interval of Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Fashion Brands	138	5.16	1.017	.066	5.03	5.29	1	7
Sustainable Fashion Brands	53	5.66	.678	.093	5.47	5.85	4	7
Other	7	4.57	1.618	.612	3.97	6.07	3	7
Total	298	5.23	1.003	.058	5.12	5.35	1	7

Table 23 – Likeliness to purchase ethical fashion with price transparency – shopping habit descriptive

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.175	2	7.087	7.340	.001
Within Groups	284.849	295	.966		
Total	299.023	297			

Table 24 – Likeliness to purchase ethical fashion with price transparency – shopping habit ANOVA

Appendix C – Reliability tests

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.894	.894	5

Table 25 – Attitude Cronbach's α

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.896	.896	3

Table 26 – Purchase Intention Cronbach's α

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.890	.890	4

Table 27 – Perceived value Cronbach's α

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.869	3

Table 28 – Skepticism Cronbach's α

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.817	.817	4

Table 29 – Awareness Cronbach's α

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.920	.924	7

Table 30 – Value/Purchase Intention Cronbach's α