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Impact of digital transformation on consumer buying behavior in the luxury industry- European Market

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Abstract (Group part)

The luxury industry has undergone significant transformation owing to the technological revolution and its impact on consumer buying behaviors. To keep pace with this change, luxury brands have adopted a customer-centric approach to establish long-lasting relationships and foster brand loyalty variables and brands. The present thesis examines the adoption of blockchain technology by luxury brands in the European market specifically for luxury handbags and its impact on consumer behavior. The study employs market research and consumer psychology concepts to address three key research questions. Through this study, a better understanding of the effects of blockchain technology on consumer behavior and perception in the luxury industry will be achieved.

Keywords: Market Research, European market, Blockchain Technology, Luxury Industry, Consumer Behavior, Perception.

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1. Introduction (Group part)

The technological revolution that occurred in the late 20th century was the biggest transformation that had an impact on the whole world. It had a positive effect on society who is benefiting from the creation of new systems and tools that changed realities and shifted the power balance. This transformation is already discernible in various areas. Advanced communication networks, coupled with the adoption of modern technologies such as Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), Internet of Things (IoT), Blockchain, and many other tools, have made it much easier for different firms and research centers to share information about technological developments. As a result, the impacts of these advancements are now being felt far beyond the borders of countries where discoveries were originally made. These innovations have allowed businesses to harness the power of data and automation to grow and compete in the global marketplace (Archibugi, 1988). In this context, one of the most important sectors that focused on digitalization and adopted different technologies, allowing it to create a radical change, is the luxury industry with consumers from different countries driving demand for high-end products from many prestigious brands such as Chanel, Dior, Louis Vuitton, and Hermès (Mastropetrou & Bithas, 2021).

With real-time access to vast amounts of data and powerful analytical tools, companies operating in the luxury industry become able to analyze vast amount of data and make more informed decisions, increase efficiency, and drive innovation in ways that were previously impossible (Archibugi, 1988).

Moreover, the adoption of digital technology led to the generation of new values. Furthermore, companies followed new models in order to make their products and services more appealing to their existing customers, thus leading to more retention rate and consequently engaging new clients (Rios, 2016).

For the purpose of more clarification and precision, digital transformation in the luxury industry refers to the integration of advanced technologies and digital platforms into the production, marketing, and sales processes of luxury brands (Mastropetrou & Bithas, 2021). The emergence of these cutting-edge innovations has significantly transformed its consumer buying behaviors, making them increasingly discerning and harder to satisfy. As a result, luxury brands have had to adapt and adopt a more customer-centric approach that puts the consumer's needs and psychology at the forefront. By deeply understanding their target audience and providing them with tailored experiences, luxury brands are able to create lasting connections with their customers and foster loyalty. This has led to a more engaged and diverse customer base, one that is always hungry for new and innovative products and services from these brands. This is one of the most important reasons that made the luxury industry eager to integrate and create different developed strategies that make its brands always exclusive, unique, trusted, and demanded (Wintermeier, 2021). However, despite all these advantages, the impact of digitalization on the luxury industry, its impact on consumer buying behaviors, and how a luxury brand can effectively implement digital transformation while preserving its exclusivity have been ambiguous so far (Mastropetrou & Bithas, 2021).

Nowadays, consumers have become more open and connected to businesses thanks to the existence of different digital channels that changed the way people communicate, access information, and interact with each other. Given the current state of hyper-connectivity among consumers, companies have plenty of options to engage with both their new and existing customers. However, to meet the ever-growing demand of the consumers, it is essential for companies to have a clear understanding of how they can effectively stand out from their competitors and capture the attention of consumers despite the abundance of distractions and noise (Alexa, 2022).

Even with the adoption of innovative and groundbreaking methods, luxury brands are currently facing several challenges like imitation, that are prompting them to compete fiercely in the market and seek out new and unique approaches to stand out. As a result, these brands are constantly striving to stay ahead of the curve and remain relevant, leading to a culture of continuous improvement and experimentation. Despite these obstacles, luxury brands remain committed to providing their customers with the highest quality products and services and are always on the lookout for new and creative ways to enhance the customer experience (Houghton, 2022).

Through this dissertation, our purpose is to study the impact of digital transformation on consumer buying behavior in the luxury industry by focusing on brands that sell luxury handbags and the incident of implementing blockchain technology.

The market for luxury products was worth $300 billion annually in 2022 and it is expected to increase by 5% in its growth rate in the next years. The growth of the luxury industry also implies the existence of problems such as counterfeiting, fraud, and authenticity verification issues. However, the implementation of blockchain technology is able to solve such difficulties by providing information about sustainability and sourcing of luxury products (*How Luxury Brands Prevent Fraud & Backlog With Blockchain*, 2022).

With reference to Harry Robinson, the senior partner at McKinsey, almost 70% of digital transformation failed (McKinsey & Company, 2019). In fact, one of the reasons behind this failure is the implementation of ineffective strategies by companies. Moreover, it is crucial that brands understand why it is important to improve and focus on their digital transformation journey. Consequently, studying the impact of digital transformation on consumer purchasing behaviour is important for luxury brands as it can influence and validate their needs to digitalize (Ris, 2022).

To have broader understanding of consumer perceptions about different luxury brands, we addressed our first research question RQ1 that focused on the attributes that are valued by luxury consumers. The choice of attributes will be justified and based on the findings of previous researchers who were interested in studying what is important for these consumers. Our second research question RQ2 focused on how luxury consumers perceive luxury brands in terms of the attributes that are important for them. The third research question RQ3 studies the specific attributes related to blockchain technology that luxury consumers consider important in their purchasing decision.

To have preliminary insights about this topic, we conducted interviews with consumers. The insights gathered with these interviews, together with the results of the literature review, were the basis of our methodology which included the perceptual analysis to answer the first research question, and a conjoint analysis to address the second research question. By collecting, analyzing, and discussing our findings, we were able to obtain results and finalize our dissertation by a conclusion.

5. Methodology (Amira Donia Jaafoura)

5.1 Preliminary interviews with consumers

To gain further insights from consumers, we did 12 different exploratory interviews with luxury consumers. The interviews took different forms: phone interview, face to face interview and online interview. On average 20 minutes were spent with each participant which was sufficient to go through the entire set of questions. The interview started by general questions to know about the consumer's age, gender, and the country of origins. To know about what luxury consumers value the most, as a second point, we asked them about their overall expectations from the experience. Additionally, we questioned their opinions about the existence of counterfeits in the

luxury market and whether this incident may influence their behaviour. Our last question mainly cantered on their suggestions for the courses of action that companies should take to safeguard their reputations and keep the trust and loyalty of their clients.

A student from Nova SBE in Portugal is the first participant. She emphasized the significance of premium service and product quality. She was aware of the problems with counterfeit goods on the market, but she had never experienced it herself. According to what she said, luxury firms should come up with practical ways to help customers differentiate between authentic and counterfeit goods.

A 21-year-old German boy participated in the second interview. He focused on the value of originality and quality when describing his expectations of luxury brands. Additionally, he claimed that since authenticity is a key feature for consumers, the problem of counterfeit goods not only has a bad effect on a brand's image and reputation, but it can also cause certain buyers to hesitate before making a purchase. For brands to be able to defend their identities, he suggested the enhancement and reinforcement of brands' counterfeiting tactics besides making further information available to consumers.

We had the opportunity to conduct the third interview with an Italian girl who seemed to be very interested to our topic. Our interviewee was clearly up to date to the recent trends in the luxury market and expressed her knowledge about the implementation of blockchain by luxury brands. We were surprised that she was well-informed about the usefulness of technology on solving current problems faced by brands. The 24-year-old girl said that she has never experienced this service, but she heard about this news through online articles. At the end of the interview, she expressed her excitement about this solution as it can raise consumers' trust and loyalty. Moreover, she argued that this initiative can be very efficient to encourage consumers who need to order luxury products (e.g.: handbags or watches) via intermediaries as these products are not

available in their home countries. By giving them further transparency, they would certainly be more confident about their purchase decision.

The responses of the rest of participants were comparable. Most of them raised their expectations about luxury experience to premium level of service which would make them feel special and unique. According to our interviewees, the meaning of luxury is not only about the quality, design and innovative products but it also takes into consideration the experience with the brand. The counterfeit in the industry was perceived as a factor that can negatively influence their intentions to buy luxury goods as well as their attitudes towards the brands. All the participants in our interview emphasized the importance of taking corrective measures so consumers can protect themselves from purchasing imitated goods.

5.2 Choice of Associations

Taking into consideration the literature review and the interviews with consumers, we have selected 4 associations consumers have with luxury brands:

Prestige price

Prestige pricing is considered one of luxury brands features and it represents the extra-cost paid above the product's functional values (Berry, 1994; Han et al., 2010; Kap-ferer et al., 2014; Ko et al., 2019). With reference to Wiedmann et al. (2009) research, luxury consumers perceive the value of luxury brands based on different dimensions such as social, functional, and individual with price playing the role of a moderating variable. The term moderating variable in this context refers to a variable that can influence the relationship between two other variables by adding new information that can either strengthen or weaken the association (Allen, 2017).

In their research, Kapferer and Laurent (2014) highlighted the importance of perceived price in predicting the perception of luxury consumers. To their opinion, the hierarchy of luxury products from the client's perspective revolves around the perceived price which is also influenced by

some factors such as age, earnings, possession of luxury product and previous experiences with luxury.

Faiz Kermani (2006) argued that "prestige pricing is reliant on price insensitivity among consumers. The importance of quality and prestige as buying motives is essential to this". In this dissertation, prestige price suggests higher quality and a prestigious image for the brand and will be used among other associations to analyze its impact on the purchasing behavior.

According to many researchers (e.g., Dubois, Laurent, & Czella,2001; Vickers & Renand,2003), the dimension of luxuriousness index (BLI) states the characteristics of luxury (Kang & Kim, 2016). Kim and Jonhson (2015) defined its components to extended hedonism, tradition, accessibility, and quality. The accessibility dimension of luxuriousness indicates the expensiveness of the brand's products which is also an indicator of quality for consumers (Kang & Kim, 2016).

In addition to the perceived quality and perceived prestige of the brand, consumers of luxury products believe that expensive products prices shape an image of 'big spenders 'and signals a meaning of social wealth to other people (Lichtenstein et al., 1993).

By setting high prices, brand limit the accessibility for its products and consequently enhances the feeling of self-worth and superiority for its consumers (Garfein,1989).

Consequently, prestige price is considered important to studying the perception of consumers in this context.

Transparency

Transparency is a concept that has been incorporated into the business world as stakeholders demanded additional authenticity from businesses they interact with (Holtz & Havens, 2009).

According to Grimmelikhuijsen and Meijer (2012), transparency is also defined by the detailed information provided regarding internal processes and performance.

The article published by De Boissieu et al. (2021) stated that the scandals which occurred in the luxury industry pushed consumers to change their expectations for a greater transparency from luxury brands. In fact, consumers become more conscious of the effects of their purchase due to media coverage and discussions about the effects of modern consuming culture on society and the environment (Carrigan and Attalla, 2001; Connolly and Shaw, 2006; Crane and Matten,2004).

According to Winston (2016) article's, luxury brands are requested to provide information to their clients, civil society and investors regarding their social behaviors and procedures. Ethical minded consumers are those who differentiate between right and wrong behaviors based on morals, values and code of ethics (Sánchez-González et al., 2020). For these consumers, the decision-making process becomes more complex as they consider boycotting non-ethical brands or purchasing their products as a reflection of their values (Freestone and McGoldrick,2008). With reference to his article entitled 'Transparency and its place in Luxury Consumerism', Yum (2021) confirmed that consumers are requesting further disclosure of information regarding the production process and the operating processes to be able to differentiate the willingness of businesses to make a positive impact in the world. In his book entitled 'Sustainability is it Redefining the Notion of Luxury?', Gardetti (2019) stated that providing consumers with complete information about the making process helps brands avoid the confusions that can occur regarding the use of natural resources. As opposed to brands that partially share the details with their clients, luxury brands are expected to prove their awareness about their concern and consequently take a course of action to bring transformations by providing greater transparency. As a result, brand's self-disclosure of information reinforces the connection between the brand and the consumer (Anderberg and Morris, 2006; Grayson and Martinec2004). Consequently, transparency is considered important to studying the perception of consumers in this context.

Virtual exclusivity

Exclusivity is the ability to differentiate from what is common. (Monkhouse et al., 2012). By referring to existing definitions, luxury is associated with rarity and exclusivity (J.-N. Kapferer & Valette-Florence, 2017). In this context, Hennigs et al. (2012) stated that one of the values of luxury players is to enhance consumers' individual values and support the transfer of the brand's social symbolism to their identities. Bauer et al. (2011) have also confirmed that influencing consumers' identities is also a result of satisfying their emotional needs.

In his publication entitled 'Abundant rarity: the key to luxury growth', J. Kapferer (2012) stated that shoppers of luxury goods typically associate luxury to wealthy people who have more authority than others. To raise consumer engagement, luxury brands transfer the offline appearance of consumers to the virtual environment and ask them about their opinions to adjust accordingly (Hennigs et al., 2012).

Moreover, scarcity is considered as mechanism that makes consumers' desires towards the offer (Ballina & De La Ballina, 2019). When brands provide consumers with scarce and rare virtual services and experience, consumers would feel tempted to buy from that specific brand for as it becomes more valued which motivates them to be among the few people who can benefit from that product or service (Wu et al., 2012). This point of view has also been shared by Kim (2018) who confirmed that consumers have increased desirability for products or services that are not easy to find in terms of nature or features.

In their research, Beuckels and Hudders (2016) argued that luxury brands raise consumers' engagement by applying online marketing concepts such as webmospherics which immerses consumers in an online exclusive experience by recreating the enjoyable physical in store experience. In their research paper, Han and Kim (2020) stated that "technological investment is aimed at allowing consumers to use advanced technologies to bring themselves to experience

new services". Furthermore, by capitalizing on the evolution of technologies and effectively using digital tools, luxury markets can make crucial transformations (Dauriz et al., 2014). Given this evidence, Luxury brands are embracing Aura blockchain technologies to exceed consumers' expectations with their unique and luxurious experiences (AURA – the Aura Blockchain Consortium, 2022). As such, offering virtual exclusivity to consumers through blockchain technology matches with their offline unique appearance and satisfies their emotional needs which would potentially influence their overall attitude and perception towards the brand.

Consequently, virtual exclusivity is considered important to studying the perception of consumers in this context.

Innovativeness

Hurley and Hult (1998) considered brand innovativeness as an internal capability of the brand and a component of its culture. Contrary to product innovativeness which is a measurement of the novelty for the product's features, functions, and benefits (Lee and O'Connor, 2003), brand innovativeness is conceptualized as the firm's ability to provide new and useful solutions and it also reflects an image of modernity (Keller,2000; Gurhan-Canli and Batrea, 2004; Henard and Dacin,2010). In this context, Brexendorf and Keller (2017) outlined that the degree of the brand's innovativeness is also dependent on the firm's ability to invest in innovation as well as research and development. Similarly, Keller and Aaker (1998) argued that brand innovativeness depends on the consumers 'perception and assessment of the brand's proposed solutions in terms of efficiency, uniqueness, and reliability.

According to Atwal and Williams (2009), with contrast to traditional marketing that labelled consumers as rational decision makers whose focus is the product features, experiential

marketing viewed consumers as emotional human beings and recognized the importance of providing them with pleasurable and exciting experiences. In this context, Mathwick et al. (2001) defined experiential value by the value that a customer can obtain from any experience.

In their research paper, Han and Kim (2020c) emphasized the importance of experiential value and he defined it as the values driven from the consumption of the experience and not from the possession of the product. The experiential value is taken into consideration by luxury brands while establishing their digital strategy and deploying creative solutions as they recognize its ability to generate positive associations such as joy and excitement with the brand based on the experience (Batat,2019). The impact of the experiential value was also clarified by Han and Kim (2020e) in their research. They gave detailed explanation on its impact by the fact that when the consumer is provided with the experiential value along with other values, this leads to positive responses that can be both emotional and cognitive which influence his attitude toward the brand and potentially result in a purchase decision.

Consequently, innovativeness is considered important to studying the perception of consumers in this context.

Based on the analysis of these associations and by considering its importance to luxury consumers, these findings allow us to our first research question (RQ1).

5.3 Descriptive statistics and perceptual map

Methodology

We applied both qualitative and quantitative techniques to carry out our study. For the qualitative investigation of the research, we conducted interviews with luxury consumers. On the other hand, the quantitative approach was based on the data gathered, which helped us elaborate the conjoint analysis and perceptual map.

For a deeper comprehension of how the adoption of blockchain technology has impacted consumer behaviour and to better monitor the next steps, we used customer interviews as a starting point for our study. In the following phase, we performed the online survey and incorporated the data that we collected to build the multidimensional perceptual map which helped us answer research question 1. The third phase of the process focused on the conjoint analysis and the objective was to answer result question 2. The survey was built using conjointly and the results were examined using descriptive statistical analysis.

Multidimensional perceptual map

We previously provided a general explanation of perceptual mapping. In this part, the focus is on the methodology that we followed when building our map. In fact, a perceptual map is generated to understand the impact of the implementation of blockchain technology on consumer behavior in the luxury industry. The process encompassed different steps. We started by conducting the preliminary interviews with consumers and we used these insights to build a survey to ask consumers about general associations they have to luxury brands. To study the consumers' perceptions regarding luxury brands, we used an attribute-based method which represents a method of rating based on specific attributes (MBA Notesworld, 2011). In their book entitled "The marketing book", Baker and Hart (2007) stated that this method facilitates the identification of similar responses and provides deeper understanding about the different dimensions of perceptual map. Since we have more than one variable to be analyzed, it was necessary to a multidimensional data analysis method, and we applied a factorial analysis. According to Market Vision's research named "TECHNIQUES FOR PERCEPTUAL MAPPING" (2017), "Factor analysis is a data reduction technique that summarizes and combines attributes based on the correlations of those attributes". With reference to Khosrowpour (2000), this technique allows to

condense the different values to factorial axes where data is mostly spread. In fact, the variables serve as indicators to the factors and the overall technique to bring better understanding to the analysis by generated the factors from the initial variables (Frost, 2023). Moreover, we based the perceptual map on the factors obtained.

Furthermore, we used SPSS to analyze the responses, which enabled us to present our findings in a way that is easy to understand and interpret by using different measures such as Mean and median. To build the perceptual map, we used attributes' aggregation technique that helped us gather the different brand's associations into a single variable to be able to position each brand in a multidimensional map. By analyzing statistical results, we were able to identify correlations between the variables which helped us obtain reliable results.

Survey design attributes and levels

We based our analysis on interviews with luxury consumers and industry experts and an online survey through Microsoft forms. Cornell (2022) stated that Online surveys has different advantages such as giving respondents the opportunity to start and finish at their own pace, allowing for more accessibility through any device, more design flexibility besides the ability to screen respondents and learn about their demographics. We referred to the interviews with consumers and to previous research to choose the associations consumers have with luxury brands. To maximize the number of responses, the survey was shared on Facebook, Instagram, LinkedIn, and WhatsApp within different groups. We conducted some interviews with consumers before running the survey and the interviews with industry experts just after the analysis with the objective of making sense of our findings.

Before sharing the survey with the participants, we requested feedback from our supervisor. Consequently, we edited the order of the questions so that the survey starts with 4 tables on which consumers rate each association across the various brands and at the end of the survey,

were asked additional questions to learn more about the demographics of the sample and to gain more insight into consumers' perceptions. The survey remained available for almost 2 weeks. We were continuously evaluating the evolution of the responses thanks to the results' summaries feature. We were able to collect 130 answers.

The survey is composed of two sections: The first section represents 4 tables on which consumers rank luxury handbags brands based on a list of associations. Our associations mainly focused on the constituents of luxury from the perspective of luxury consumers. As stated by Kapferer and Laurent (2016) luxury depends on the perceptions of the consumer, and it is a relative concept. According to Vigneron and Johnson (2004), the concept of luxuriousness is multidimensional and based on different frameworks: an experience, a product or a service may translate the sense of luxuriousness to consumers (Vigneron and Johnson,2004; Wiedmann et al.,2007; Tynan et al.,2010; Berthon et al.,2009; Shukla and Purani,2012).

As a result, the choice of associations included both product dimension by selecting prestige price and the experience dimension by choosing innovativeness, transparency, and virtual exclusivity.

We selected the Likert scale rating that was developed by the psychologist Rensis (Johnson, 2023). Chandola (2022) confirmed its usefulness to gather responses and know about the sample's attitude and opinions regarding a specific brand market or product. He also stated that by answering Likert scale questions, respondents are not forced to choose any answer they are not convinced with, but instead they can respond based on a measurement which better translates their opinions. The scale varied from 1 to 5. In terms of the considered variable,1 stands for Very low while 5 stands for very high. (See Appendix 1 and Appendix 2)

Through the basic questions of the second part, we collect general information about the sample (Age, Gender, European Country, purchase frequency and the purchasing power).

(See table 1). The results of these questions will enable us to have a more detailed view of our

sample.

Additionally, a question is addressed to ask consumers if they had a previous purchase experience to examine if there are actual gaps between consumers and non-consumers' perceptions. Moreover, the familiarity with blockchain technology is taken into consideration to evaluate its link to their perceptions. The last three questions tackle the impact of the added values of the implementation of the blockchain technology on the consumer's perceptions and their engagement with the brand. (e.g.: transparency, uniqueness, sustainability).

Most of the questions in this section were in the format of Likert scaling questions. To prevent prejudice and confusion, we concentrated on providing consumers with specific and exclusive options. The final question is open-ended because we wanted to give the participants the chance to express their opinions, which can give us clearer information and insights that can be used.

When designing our survey, we took into consideration the importance of making consumers feel comfortable. Since adding audios to Microsoft forms allows to raise consumers 'engagement Apon (2022), we inserted playground music as it can make them feel relaxed and focused which helps us gather accurate responses.

Group part

7. Results

7.1 Perceptual map results

Based on the 130 answers collected, we characterized the sample based on the following criteria which are gender, age, country of origin, experienced brands, and consumers' knowledge about blockchain technology.

The two demographic variables: gender, age, can help to understand consumer behaviors. In this context, Sharma et al. (2012) mentioned in their article entitled "Gender and age as moderators in

the service evaluation process", the importance of these both factors and investigated how the relationships between service quality, sacrifice, value, satisfaction, and behavioral intentions are influenced by these two customer demographics.

The other criterion which is the experienced brands shows consumers interactions and familiarity with luxury brands. In their study, Brakus et al. (2009) stated that brand experience refers to "sensations, feelings, cognitions, and behavioral responses evoked by brand-related stimuli that are part of a brand's design, identity, packaging, communications, and environment" (p. 52). Once customers interact with the brand when making a purchase, brand experience is formed (Kumar & Kaushik, 2020). In the same context, Isotalo et al. (2010) mentioned that consumers' attitudes as well as the image they have about brands are mainly influenced by their previous experiences. He further explained that the experience is related to the feelings associated with the product itself or the fun part in the overall experience.

We considered the consumers' knowledge about blockchain technology as it can influence their perceptions about the innovativeness, transparency, and the virtual exclusivity of the listed brands. By being aware of the recent innovations and the added values of blockchain, consumers might have different views and opinions regarding the innovation levels of the different luxury brands in the market. With reference to Noonan and Doran (2021) brands that embrace blockchain technology, that provides transparency and security, may be seen as more innovative and transparent by customers who are familiar with it.

Additionally, familiarity with blockchain technology can potentially influence consumers' perceptions about the virtual exclusivity of the luxury brand. In fact, the use of blockchain technology is a solution for counterfeit issues and allows for leveraged security (Noonan & Doran, 2021).

Besides age and gender, we also considered consumers country of origin, which is also a

demographic variable, to gain further insights about our sample. Based on the report of Microsoft Forms, among all the European participants, 20% are from Portugal, 20% are from France,12% are from Italy, 12% are from Poland ,8% are from Spain, 5% are from Switzerland, 10 % are from Germany, 9% are from Belgium and only 2% are originally from Bulgaria and Turkey.

By including the country of origin, this gives us insights into the cultural and economic context. Europe is growing and improving in terms of technology. Moreover, it is implementing blockchain technologies among many other technological advancements which allows European markets to expand (European Commission, n.d.).

Moreover, according to Ellerbeck (2022), the level of innovation differs from one country to another as not all European countries have the same accessibility and technological advancements. This fact makes it interesting to study the impact of this variable on the obtained dimensions.

All these factors are very important and crucial to study and understand the results obtained.

Sample characteristics – Age

To have further insights into our respondents 'age, we proposed four age ranges which are the following: [18-24], [25-35], [36-45], above 46. We decided to consider these generations as they may have different preferences. By referring to the research paper entitled 'Impact of Age on Purchase Behavior of Luxury Brands', Srinivasan et al. (2014) stated that a relationship exists between consumers age and influence to buy luxury goods, as well as their willingness to repurchase from the brands. This paper concluded that age influences different customers' choices and decisions when selecting prestigious products.

For instance, younger shoppers frequently place a greater emphasis on social standing and their ability to express themselves via their purchases. By providing products that are unique and inspirational, luxury brands can attract consumers who want to express themselves. Younger

consumers might also be more open to exploring with new brands and products, which can offer critical insights into the changing trends and preferences of the luxury industry.

On the other hand, older customers could have different standards and tastes when it comes to luxurious goods. For instance, they might place more value on the total brand experience, quality, and durability. They might also be more fascinated by the tradition and history of luxury brands, and they frequently show more loyalty to well-known companies that have a track record of providing high-quality products and services.

The report provided by Microsoft forms, as shown in Appendix 7, revealed the following percentages: The first age group represents 28% (18-24) of the responses while the second one accounted for 36% (25-35). The third group contributed with 31% (36-45) of the responses, however, we gathered only 5% of the answers from people who are older than 46. Overall, we collected only 7 answers from consumers that are over 46 and comparable number of answers between consumers from [18-45]. These results are aligned with the online article entitled "Understanding The audience For Luxury Brands" by Lala (2022) who confirmed that consumers aged between 25-44 years old represent the biggest audience for luxury brands.

Sample characteristics – Gender

The results are represented in Appendix 8, show that only 13% of the respondents are male while the dominant gender is female with 86% of responses. Only 1% responded by 'prefer not to say'. According to the article entitled 'The rival wears Prada -Luxury consumption as a Female competition strategy' written by Hudders et al. (2014), females have a more positive attitude than men regarding luxury brands since they feel unique and privileged. In the same context, Akan (2020) also mentioned in his article 'Why are handbags by its very nature feminine?' that this consumption is more related to females since they need them to carry different necessities. On the opposite side, men usually carry their wallet without any need for a handbag (Akan, 2020). With

reference to the journal article entitled ‘ is Luxury just a female thing the role of gender in luxury brand consumption ‘ ,previous papers proved that females give higher importance to appearance than men (Meyers-Levy, 1988) and specifically to their physical appearance(Buss, 1989).In fact , female rely on fashion and fashion consumption to make themselves more attractive (Singh, 1993).For females only, luxury brands makes them feel more unique and special (Stokburger-Sauer & Teichmann, 2013)

Sample characteristics – Experienced brands

We collected data from consumers of different luxury brands. The objective was to include consumers that are loyal to different categories of luxury brands to avoid biased analysis and to better represent the population of luxury brands consumers. To have a better idea on their previous experiences, we gave them the possibility to select more than one answer from the following options: Hermès, Louis Vuitton, Jacquemus, Furla, and Other. We collected 13% from Hermès consumers, 21 % for Louis Vuitton, 13% for Jacquemus, 26% for Fula and 28% from customers of other luxury brands. (Appendix 9)

In the context of analyzing differences in consumer behavior towards luxury brands and with reference to Bahanot (.n.d) in her E-book entitled ‘A Study On The Factors Influencing The Purchase Behavior Of High End Luxury Lifestyle Products’, Levitt (1983) and Ohmae (1985) stated that not all these differences can be explained by cross-cultural differences. Moreover, Dawar and Parker (1994) also confirmed the similarity of consumers’ perceptions about a luxury product across different nationalities. She added that according to Anderson and Hee (1998), in some circumstances it is likely that consumers from different nationalities share the same behavior contrary to those from the same nationality. Nowadays, consumer behavior and preferences towards brands are influenced by the Internet and fashion magazines among other means (Levitt 1983; Douglas and Craig 1997). In addition, consumers share a common behaviour

when it comes to searching information about products (Murdock,1945; Dawar and Parker,1994). Consequently, the fact that the cognitive process between consumers is almost the same, this makes consumers from different nationalities behave in the same way towards a specific luxury product (McDonald,1994).

However, others confirmed that cultural differences lead to differences among consumers' behavior when it comes to their responses towards the applied marketing strategies by the brands (Dubois&Duquesne1993; Miller,1995; Shaw&Clarke,1998).

Further analysis

For the sake of the analysis, we were interested to understand the relationship between the three demographic variables (age & gender), country of origins as well as previous experience and familiarity with blockchain as independent variables, with the dependent variables which are factor 1 and factor 2.We considered a linear regression which is statistical method used for determining and predicting the dependent variables' values based on the independent variables 'values (Statistics Solutions, 2021). Consequently, this procedure allows us to measure the connection between the two variables (dependent and independent). Our objective was to determine how changes and variations in the independent variables would impact the dependent variables.

Additionally, by analyzing the impact of experience on each dimension, brands can gain better insights about what influences consumers perceptions and opinions regarding each dimension which allows them to set new strategies related to their sales, marketing, operations, or communication with objective of enhancing their relationship with luxury consumers and non-consumers as well. Moreover, based on these information luxury brands would be able to specify at which level they should improve in terms of services and products. By studying the relationship between the variables, it would be possible for brands to directly make

improvements.

Preliminary analysis - Impacts of Age and Gender on results

To analyze the impact of gender and age on both dimensions, we conducted a linear regression with gender (1=Male, 2=Female) and Age ([18,24] =1, [25,35] =2, [36,45] =3, Above 46 =4) as independent variables. The hypotheses are the following:

H0: There is no significant linear relationship between age & gender and Dimension 1

H1: There is a significant linear relationship between age & gender and Dimension 1

Based on the output of SPSS (Appendix 10), P-value = 0,401> 5%. Consequently, we fail to reject H0 as there is strong evidence for H0. Then, we can say that there is no significant relationship between age and gender and Dimension 1.

Regarding the second Dimension 2, the results are shown in Appendix 11. The hypotheses were as follow:

H0: There is no significant linear relationship between age &gender and Dimension 2

H1: There is a significant linear relationship between age &gender and Dimension 2

P-value = 0,086>5% which led us to the same result. Consequently, we fail to reject H0 as there is strong evidence for H0. Then, we can say that there is no significant relationship between age and gender and Dimension 2.

Impact of the previous experience on the results

To further understand the impact of consumers' previous experiences on both dimensions, we considered previous experience as the independent variable. According to Microsoft forms output and after exporting the results in excel, we coded the different experiences to be able to analyze it using SPSS. In fact, the discrepancy among consumers touchpoints with the brands from the first time they hear about it to their ongoing interactions with it, allowed us to obtain 24 different combinations of experiences. Consequently, we set values that vary from 1 to 24 that were

labelled accordingly. In the first place, we performed a linear regression with factor 1 as dependent variable and experience as an independent variable.

H0: There is no significant linear relationship between previous experience with luxury brands and Dimension 1

H1: There is a significant linear relationship between previous experience with luxury brands and Dimension 1

Based on the output of SPPS (Appendix 12), the p-value is equal to 0.041 which is lower than the significance level of 5%. Consequently, we reject H0. Then, we can say that there is a significant relationship between previous experience with luxury brands and Dimension 1.

In addition, we were interested in studying the impact of consumers' previous experiences on dimension 2. Following the same reasoning, dimension 2 was set as dependent variable while experience was the independent variable. Results obtained from SPSS (Appendix 13) prove that the p-value is equal to 0,001<5% then we can say that there is a significant linear relationship between previous experience with luxury brands and dimension 2.

Impact of familiarity of blockchain on results

To study the impact of consumers 'familiarity with blockchain knowledge on Dimension 2, we conducted a regression analysis based on the two variables factor 2 and the variable familiarity which was coded as follow: Yes=1 while No=2.

H0: There is no significant linear relationship between the familiarity of blockchain and Dimension2

H1: There is a significant linear relationship between the familiarity of blockchain and Dimension2

As shown in Appendix 14, P-value is equal to 0,477 which is higher than the level of significance of 5%. This leads to the conclusion that there is no significant linear relationship between the

familiarity of consumers with blockchain technology and dimension 2.

Impact of country of origins on results

To study the impact of the variable country of origins on the two dimensions, we conducted a linear regression. Factor 1 was our dependent variable while our independent variable is country. The variable country was obtained from the results of Microsoft forms by coding each country by a respective number.

Based on the results (See Appendix 15), the p-value is equal 0,396 which is above a significance level of 5%. This implies that the linear regression model with the country of origin as independent variable and factor1 as dependent variable is not significant and there is no significant linear relationship between country of origins and dimension 1.

Moreover, we were interested to study the significance of the linear regression model with factor 2 as dependent variable and country of origins as independent variables.

The linear regression results shown in Appendix 16 present a p-value equal to 0,179 which is also above the significance value which is 5%. We can then conclude that the model is not significant, and that the country-of-origin variable does not explain variability in dimension 2.

Results of additional questions

As we were interested in gathering further insights and information about our sample, we asked consumers additional questions. The first question was: *How would you feel if you were buying handbags from luxury brands that provide you with transparency*?* We also clarified the dimensions of transparency by: **The ability to track your product's journey from production to retail, including information about the materials used, the manufacturing process, and the distribution channels*. Consumers had to choose from the different options and the results were as follow (Appendix 17): 1- More informed and empowered in your purchasing decisions (4,6%), 2-

The brand is committed to ethical and sustainable practices (6,4%), 3- More integrated and connected (4%), 4- Nothing (7%), 5- All of the above (78%).

The results showcase that enhanced transparency of luxury brands has a positive impact on most of the consumers. Through the responses, such feature supports consumers 'decision making. Additionally, this feature would enhance the connection and integrity that consumers have towards the brand. Moreover, consumers would perceive the brand as more engaged and committed to ethical and sustainable practices. This is important considering the results obtained according to Appendix 18. In fact, when we asked consumers whether they care about sustainability (Eco-friendliness and social responsibility) when purchasing a luxury handbag, answers collected were at 95% a confirmation about the importance of sustainability for these consumers.

Based on the responses for the two previously mentioned questions, it is safe to say that luxury brands that offer better transparency and consequently prioritize sustainability and ethical practices in their management and operational practices are likely to be appealing and attractive for luxury consumers as they become highly conscious about social and environmental issues.

At the end of the survey, we included an open question which is: *How would you feel about owning a luxury handbag that is not only unique and authentic but has a lifetime proof for its authenticity which preserves its value and enables you to have access to benefits and exclusive services?* According to Appendix 19, we noticed that all answers were associated to positive feelings and emotions for example: valued, excited, happy, satisfied, more related to the brand …

This question helped us measure the importance and value of the lifetime proof of the products' authenticity as well as the ability to have access to exclusive services provided by the brand. Based on the results, it is clear that consumers have more appreciation and engagement towards the brand that offers a luxury handbag that encompasses all these features with an ongoing

premium service.

In addition, consumers confirmed that being provided by authenticity checking services is appealing to them and makes them feel unique. In fact, the majority of respondents answered by similar terms to unique and superior to others, which is important to them as they are always seeking social status and prestige.

Moreover, other participants responded that they are eager to experience such services and they would be willing to become loyal customers to luxury brands that offer this. In fact, by building a relationship based on trust, security and transparency enhanced by blockchain technology, this would raise consumers' engagement and result in increased sales and a better brand reputation.

Others mentioned that with the availability of such services, they would probably be willing to invest in more expensive luxury handbags in case prestigious brands are implementing technologies that are using such innovations. This makes consumers feel safer and secure especially when it comes to the problem of counterfeiting which is problematic for them.

Multidimensional perceptual map

For the sake of analyzing the impact of digital transformation on consumer behaviour in the luxury industry and with reference to Gigauri (2019) in her report named 'Perceptual Mapping as a Marketing Research Tool for Brand Positioning', it is important to gather insights about how consumers perceive different attributes which can help brands have a better understanding of what impacts consumers buying decision and consequently brands would be able to attract them (Bhattacharyya & Dasgupta, 2014). With reference to Najafizadeh et al., (2012), we used factor analysis to analyze the correlation between the different variables which led to the generation of different factors using principles component analysis which was set by default in SPSS.

With reference to Jaadi (2021), by transforming a large set of variables into a smaller set that still captures most of the data, the principal component analysis technique enables reduction of the

dimensionality of data. Additionally, principal components analysis explores the linear components of the data and how a specific variable may affect those components (Field,2000). According to the American multinational technology corporation IBM (2021), through applying the factor extraction method, it forms linear combinations that are uncorrelated between variables. This allows to have a first component with a maximum variance while the other components would have smaller meaning into the variance.

Factor analysis is based on the following concepts: Communality, Eigen value, Factor loading, Factor matrix, Factor rotation and Factor score (Gigauri, 2019). Communality is a measure of the variables' variance that can be explained by the factor (Tolmie et al., 2011). According to (Appendix 20), we have the following communalities for the different variables (prestige price, 0.996), (innovativeness, 0.920), (transparency, 0.988), (virtual exclusivity, .972). As the values are close to 1, this means that most of the variance in the variables is explained by the factors.

The rotation method or factor rotation allows to facilitate the interpretation of the factors. This is the result of adjusting and redistributing the factor loadings over the factors through rotating the factors axis (SPSS Factor Analysis - Intermediate Tutorial, n.d.).

We chose Varimax (Kaiser,1958,1959) as rotation technique based on the research of Dilbeck (2017) who highlighted that this statistical technique results in a better clarification about the relationship between the different factors by adjusting the coordinates of the results generated based on principal component analysis. This technique according to some writers (e.g., Nunnally and Bernstein,1994) is an orthogonal solution. In fact, this rotation method simplifies the proposed solutions of factors by transforming larger loadings larger while making smaller ones smaller which consequently results in more obvious factor solutions (Denis,2018).

In his book entitled "Discovering statistics using IBM SPSS statistics", Field (2013) mentioned that following factor analysis with principal component analysis, different factors are obtained

however not all factors would be retained. The process of deciding on which factor to retain and which one to reject was based on the Eigenvalue extraction method that was set by default greater than 1. Moreover, he highlighted the importance of keeping meaningful factors in terms of their Eigenvalues. To do so, Cattell (1966) suggested building the scree plot which is built by plotting the Eigenvalues on the Y axis and the corresponding factor in the X axis. The scree plot allows for a better visualization of the factors and their Eigenvalues.

Based on the obtained scree plot (Appendix 21), we obtained 4 factors with the following respective Eigenvalues (Appendix 22): 71,739%; 25,143%; %3,119; 4,747E-15. However, we decided to eliminate the third and fourth one since its Eigenvalues are very low compared to the others which implies that most of the common variance observed is mainly due to the first and second factors this also goes hand in hand with the principal component method and the scree plot method of extraction. With reference to Exploratory Factor Analysis; Concepts and Theory by Taherdoost et al. (2020), the scree plot method of extraction was proposed by Cattell (1996b) which states that the retention of factors should stop at this exact same point where the slope stars to drop drastically. Criteria's' regarding the factors to keep based on its Eigenvalues differed among researchers. Kaiser (1960) recommended the selection of Eigenvalues that are above 1 by considering that a value of 1 is very significant in terms of variation. According to Costello and Osborne (2005), this leads to the extraction of many factors (Costello & Osborne, 2005). However, Jolliffe (1972,1986) set it to a value of 0.7.

The output of the SPSS provided us with component plot in a rotated space. Both Axis varies between the range [-1,1] with Y axis representing component 1 and X axis for component 2. The interpretation of the factor analysis is based on the proximity of the vectors to an axis. In other words, the extent to which a vector is positioned near an axis determines its contribution to the interpretation of the corresponding dimension. The closer the vector is to the axis, the more

significant its contribution to the interpretation of that dimension.

Based on Figure 9, the rotated component matrix shows that the respondents' perceptions fail to align with both dimensions. Consequently, two dimensions groups were obtained. The first dimension D1 is Prestige price as it focuses on the attribute prestige price. Moreover, dimension D2 is premium services since it is mainly describing innovativeness, transparency, and virtual exclusivity.

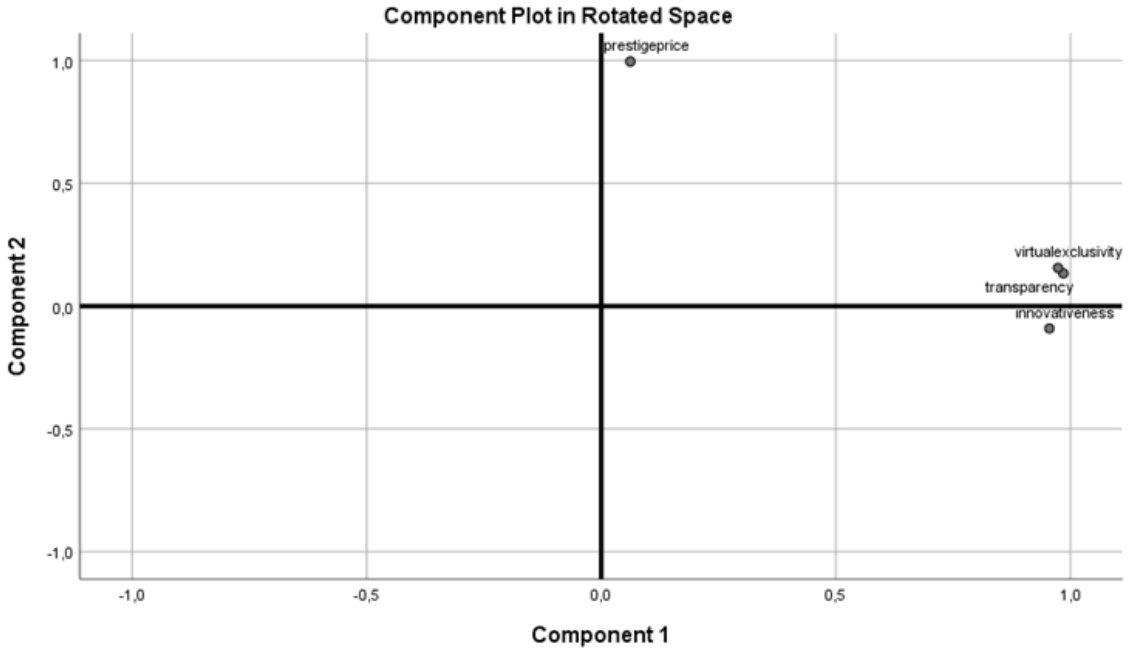

Figure 1:Vectors positioning

Based on the coordinates of the factors for each brand (Appendix 23), we have obtained Figure 10 that displays the relative positioning for each brand based on the two dimensions which are prestige price and premium service. In fact, this means that consumers perceive brands in a different way based on their prestige price and their premium service that are digitally empowered.

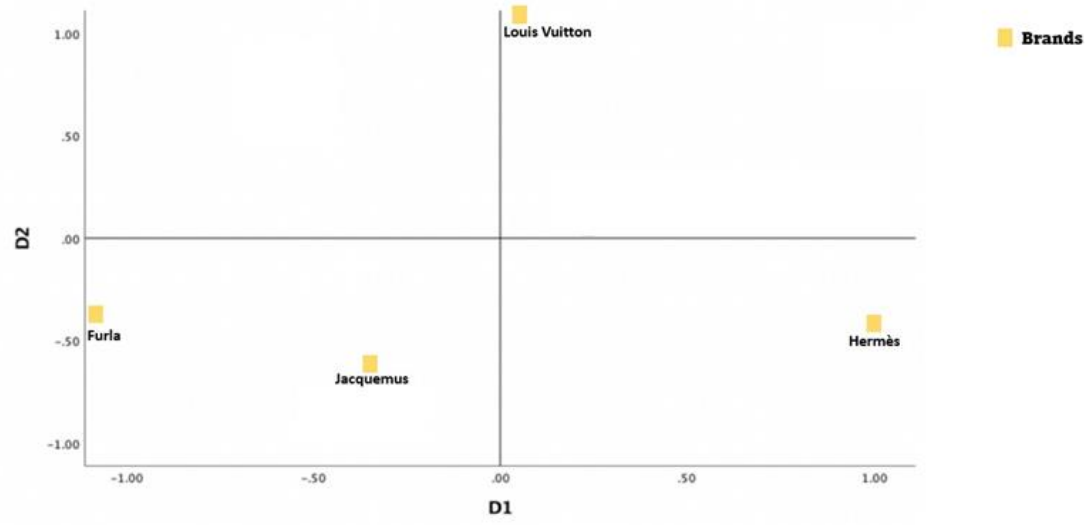

Figure 2:Brands positioning

For instance, Louis Vuitton is perceived to have very high prices compared to Hermès even though both brands are known for their expensive prices in comparison to Jacquemus and Furla. In terms of digitally empowered premium services, Hermès is negatively associated with this dimension as it is positioned below the X axis while the vectors are above the X axis. Moreover, Louis Vuitton is better positioned regarding this dimension.

On the other hand, despite their disparities in both dimensions, Jacquemus and Furla appear to be comparable brands. Furla is seen as being more digitally integrated in terms of premium offered services than Jacquemus, although Jacquemus is offering slightly higher prices.

According to our investigations, we found that Hermès has a strong online presence as mentioned by Hoang (2020) in his article named "Hermès Online Channels Are Booming. Luxury Brands Should Take Note", but it is not that advanced when it comes to digital transformation. With regard to blockchain, the brand does not have a very significant performance. According to Banon (2023), it is working more on integrating Non-Fungible-Tokens (NFTs), that are assets that are stored on blockchain (S, 2023), that have several future benefits for both brands and

consumers. This helps Hermès to ensure authenticity and prevent counterfeiting problems. The company is focusing more on its reputation, especially after the problem that happened to it. The Hermès v. Metabirkins case raised questions regarding how to safeguard NFTs' intellectual property rights. The luxury brand Hermès filed a lawsuit against an artist, called Mason Rothschild, who was selling digital replicas of their renowned Birkin handbags. The case emphasizes the difficulties in upholding intellectual property rights in the digital age, which can be more difficult than in the period prior to the broad adoption of the internet and digital technologies.

This implicates that we have 3 distinguished profiles: the first one includes Hermès which has a prestigious price but less association to premium service. The second profile involves Louis Vuitton which has a prestigious price with a very high performance among the listed brands when it comes to premium service. However, the third profile encompasses Jacquemus and Furla, known for their more affordable luxury prices and their low premium services.

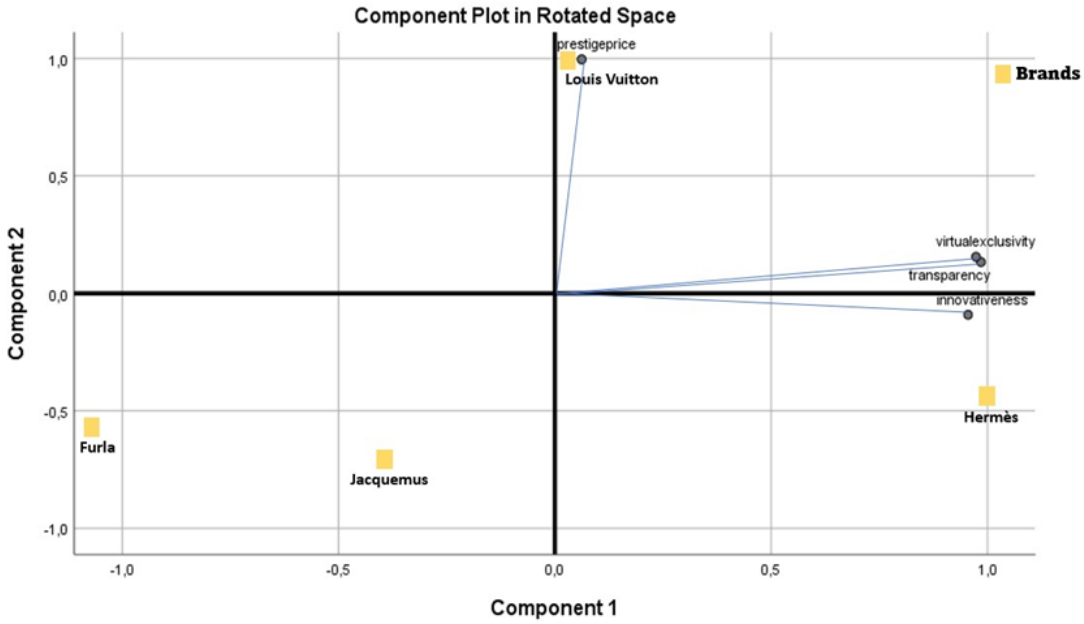

Figure 3:Brands and attribute positioning in rotated space

According to Gordo et al. (2015) in their article, a component plot in rotated space is a diagram that shows multi-dimensional data with each axis standing for a separate variable or component. To make it simpler to see similarities and differences between various sets of environmental data, the plot is made to expose hidden patterns and correlations between variables by rotating the axes. This particular plot presents the data in a clearer manner since it shows both the variables' associations as well as where the data points are in reference to the axes. Making predictions, spotting trends in environmental data, and highlighting problem areas may all be done with the use of this representation.

Based on the component plot in rotated space presented in figure 11, we can notice that virtual exclusivity, transparency, and innovativeness have very close positions in the map with shared directions and comparable coordinates. This means that these attributes are strongly correlated. However, Prestige price does not share a similar direction to these attributes as it is perpendicular to previously mentioned group of attributes which implies an uncorrelation between them.

Based on the attributes, Hermès is associated with high prices but weak in terms of innovativeness, virtual exclusivity, and transparency. Louis Vuitton has a unique position relative to the 3 positively correlated attributes with a strong association with prestige price compared to Hermès. On the other hand, Jacquemus and Furla are negatively correlated to all the considered attributes. This ranking can also be found based on the perpendicular line method which is a way to rank brands based on their performance on one or more attributes (*TECHNIQUES FOR PERCEPTUAL MAPPING*, 2017). First, each attribute is linked to the origin (where the attribute’s score is equal to zero) by a line. Next, a 90-degree rotation of the previous line is created. Following that, each brand is ranked according to how far away it is from the perpendicular line. The attribute performs better for brands that are nearer the perpendicular line

and worse for brands that are farther away. Each brand can also be given a numerical score based on how far away it is from the perpendicular line. By analyzing the relative performance of brands across several qualities, this strategy can help pinpoint areas where companies might improve.

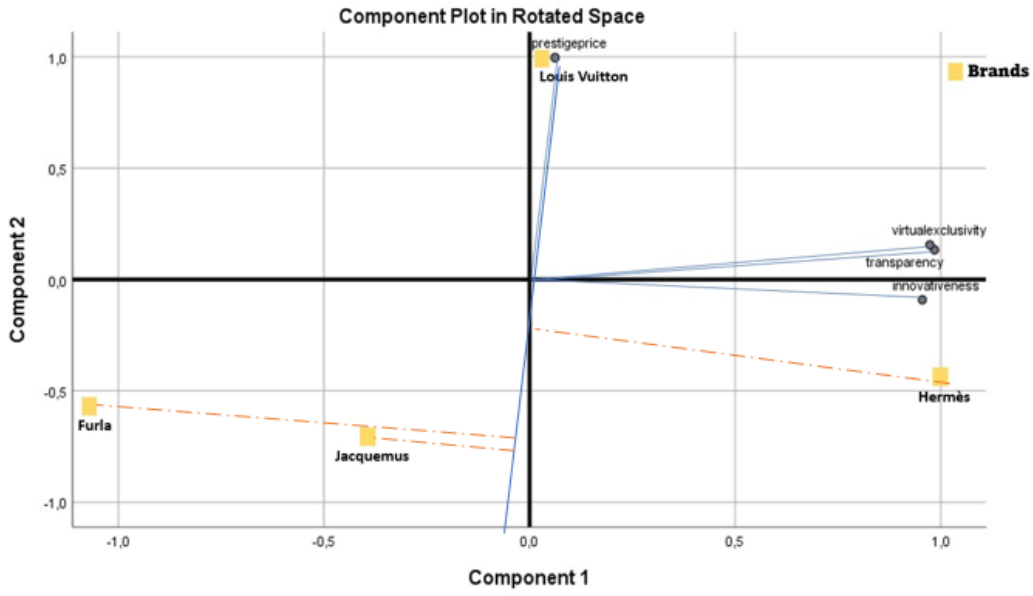

Figure 4:Ranking brands-perpendicular line method

These results can also be obtained by applying the vector model (Figure 12). In his book entitled Multidimensional scaling by Young (2013), the author stated that for this specific model the presence of as many attributes as possible in a multidimensional space is better. In the same context, it was reported that Cornelius et al., (2010) stated that the association between a brand and a specific attribute tends to be higher the more it is far away from the origin in the direction of the vector and when the angle between vectors is small, this implies that they are likely to have similar perceptions. In our case, brands that are 'virtually exclusive' are likely to be transparent and innovative. In fact, when luxury brands provide consumers with detailed information about their supply chain, their sourcing materials, and their overall practices this makes the brand be perceived as transparent. By being transparent, brands can distinguish and differentiate from

other brands which consequently create a sense of exclusivity and uniqueness. Moreover, brands that invest in product designs, incorporate new technologies and capitalize on digital transformation are perceived by consumers as innovative. Through being transparent and innovative, consumers feel that the provider is offering them a sense of virtual exclusivity.

7.2 Interviews with experts

After collecting all the data from consumers, we got answers, and we had the chance to meet with three luxury experts who are working in this field to discuss our findings. The meetings took place via zoom, teams and phone calls. This helped us to confirm our analysis and the accuracy of our data. The first meeting was with the Managing Director Northern Europe of Richemont in Munich. The meeting with him lasted only for 15-20 minutes, so we tried to be very specific and straight to the point. We appreciated the manager's time even though we wanted to dive deeply into more details, and we prepared 13 questions to ask, but we did not have the chance to discuss everything since he had other commitments. As we focused, in our research, on how Richemont took part in the implementation of blockchain, it was very helpful for us to understand the problems that led to the use of this technology and the creation of AURA Blockchain Consortium, that was created with LVMH and Prada, as previously mentioned. We also focused on the importance of our chosen attributes which are: prestige price, transparency, innovativeness, and virtual exclusivity for consumers. Finally, we asked about the impact of this digital transformation on consumer buying behaviors and their willingness to purchase. Through what the manager explained, he was aware of how Richemont used blockchain technology to increase supply chain transparency and lower the risk of counterfeiting which was a big problem and a strong reason behind the creation of this platform. This enhanced the brand's reputation

while also giving consumers more confidence that they were purchasing authentic goods and provided with the best services.

The next interview was conducted with a colleague who previously worked at Chanel. This meeting lasted 20 minutes, and we asked about the necessity of digital implementation and the use of blockchain technology for luxury brands. In this interview, we asked how Chanel can benefit from this innovation and how it can improve the customer experience. We were unable to collect much data because of the brand's confidentiality policy but we tried to understand how this is helpful for both companies and consumers. With this interview, we were also provided with valuable insights into the potential benefits of blockchain technology for luxury brands and their customers.

The third interview was conducted with a friend who works in Louis Vuitton, and it lasted for 30 minutes. In order to better understand client views, expectations, and behaviors, we first looked at the need for technology. Our interviewee gave her viewpoint on how the use of technology may improve the client experience, from facilitating more seamless interactions to delivering personalized recommendations. We also looked at the benefits of using blockchain technology in the luxury sector, particularly in relation to handbags. While acknowledging some of the difficulties involved in implementing such technology, she shared her insights on the potential advantages of using blockchain to improve transparency and lower the risk of counterfeits. The effect of blockchain on sustainability and customers' propensity to purchase was another important subject we covered. In order to track the environmental impact of their products and ensure higher sustainability across the supply chain, premium firms are utilizing blockchain, as she explained through instances. We also talked about how blockchain technology might increase consumers' tendency to buy by enhancing their trust in luxury brands. We discussed our thoughts and skepticisms during the discussion, and the luxury consultant gave us many insights that

helped us comprehend how consumers view blockchain technology while purchasing from premium firms. Overall, this discussion was very instructive and aided in deepening our comprehension of the potential advantages and difficulties of using blockchain technology in the luxury sector. We also discussed our work with her and mentioned attributes and analysis, and she gave us feedback.

We also organized two one last interview a blockchain professor. This interview lasted almost 60 minutes, so we basically discussed together the topic. He gave us more insights about the importance of blockchain technology and the necessity of explaining consumers' perceptions in the luxury industry. When showing him the results, he gave us some recommendations about our analysis and discussed with us the necessity of explaining the digital change that can happen with the existence of blockchain technology and the benefits that it can offer to consumers.

We were able to develop a more comprehensive and sophisticated picture of the subject by aggregating the perspectives of these experts and contrasting them with the information we had already gathered. We were able to view the wider picture and comprehend how blockchain and luxury overlap in the present business environment thanks to the experts' insights.

These interviews were a crucial part of our study process overall. They helped us to strengthen our viewpoints, confirm our findings, and draw more insightful and useful conclusions. We think that luxury goods companies looking to use blockchain technology to improve their operations and gain a competitive edge in the market will find the knowledge we gained from these interviews to be priceless.

In conclusion, the discussions with luxury industry professionals and the consumer data gathered offered insightful information about the application of blockchain technology in the luxury sector. Our team was able to gain insight into how luxury companies like Richemont, Gucci, and Chanel are using blockchain technology to increase supply chain transparency, lower the risk of

counterfeiting, and improve the consumer experience through these interviews. The discussions also highlighted the potential advantages of blockchain technology for sustainability and boosting consumer confidence in luxury businesses. Overall, we were able to better understand the benefits and problems that blockchain brings for luxury businesses because of the information provided by these interviews and this helped us to confirm our previous analysis.

We were lucky to receive encouraging comments from this group of professionals, which not only made us happy but also inspired us to continue researching our subject. It was encouraging to learn that every expert agreed that the subject we chose was not only fascinating but also had a lot of room for development and exploration. We felt quite confident and reassured that we were on the correct path because these specialists were able to recognize the potential in the issue we chose. We appreciated their insightful opinions and are eager to continue researching this subject with fresh enthusiasm and excitement.

Our research was an extensive, team-based effort that included meetings, in-depth investigations, and customer interviews. The seamless integration between these components was one of the main factors that contributed to the significance of our research.

To make sure that we were all using the same strategy and working toward the same objectives, we had multiple meetings with the members of our research team. These sessions were essential for keeping us focused on the fundamental topics we were trying to address and for keeping us on track. As a result of being able to present our study and talk about the implications, we were ultimately able to improve our methodology and comprehend the subject matter better.

Consumer interviews were also a key component of our research. We were able to learn firsthand information about the preferences and actions of customers of luxury items through these interviews. These perceptions have proven to be extremely helpful in comprehending the particular possibilities and constraints that premium businesses confront in the market.

A crucial part of our study method also included our investigations and data collection. We were able to develop a greater knowledge of the bigger context in which our research was taking place by looking at the existing literature and reports. As a result, we were able to contextualize our findings and derive deeper meaning from our research.

Overall, the success of our study effort depended on the combination of meetings, customer interviews, and investigations. Together, these elements helped us comprehend the subject more thoroughly and reach conclusions that were more solid and significant. Collaboration across these various components strengthened our research, enabling us to validate our findings and arrive at a more complex and thorough understanding.

We also considered an online interview published by LVMH page on YouTube on the 21st of June 2021 named "VivaTech 2021|LVMH's Blockchain secures luxury products HUBLOT and BVLGARI cases" (LVMH,2021). Through this interview, the objective was to understand how the use of blockchain revolutionized the concept of buying and owning luxury goods. The interviewees were the digital and client development director of Louis Vuitton and the head of innovation and blockchain at LVMH. According to this interview, the first interviewee said that LVMH has invented the idea of authenticating products via blockchain, and he emphasized their excitement about having other luxury brands join them. He also said that thanks to this technology, all their leather products are already empowered by blockchain and have their own traceability and authenticity. To further explain the process, he demonstrated the authentication by scanning a Louis Vuitton's handbag using the phone. He also showed that it is possible to have further information about the production's location, in addition to its production date, as well as its highest environmental standards. He also mentioned that all these features are highly important for the client. Moreover, according to his expertise, luxury consumers build their trust by knowing the source where the product comes from, as well as the sustainability practices.

Additionally, he also added that it is important for them to show to luxury consumers that sustainability and authenticity are linked. When asked about the meaning of AURA, he said that, according to his personal opinion, it is associated with serenity, trust, and peace of mind, so it is very important to all luxury consumers. According to the second interviewee, who was asked about the development of the consortium itself, he confirmed that the blockchain was created via a collaborative spirit with competitors, with discussion with Louis Vuitton, Prada and Cartier. He said that implementing this technology was a need to answer new luxury market expectations. He said that AURA is a non-profit association, and all the technological advancements would be possible as luxury brands would pay for that to use the platform as a license. When asked about the use of blockchain along the value chain, he said that it is used from upstream to downstream which allows to have information about the materials, as well as the distribution network. Consequently, this helps them to create a new luxurious storytelling to their targets and build a link with them. Moreover, he said that they are doing a great job and acting as advisory council by offering workshops, sharing their experience, and providing guidance to other luxury brands to know how it would be possible for them to implement it depending on their own strategies.

7.3 Conjointly results

As already mentioned in the methodology section, a conjoint study was conducted via the survey platform Conjoint.ly to answer third research question studies the specific attributes related to blockchain technology that luxury consumers consider important in their purchasing decision. The following analysis will examine the survey results and how different attributes affect consumer decisions.

The survey collected answers from April 9th to April 16th, 2023. A total of 353 entries were registered, from which only 51% of these have been classified as good quality responders according to the figure below.

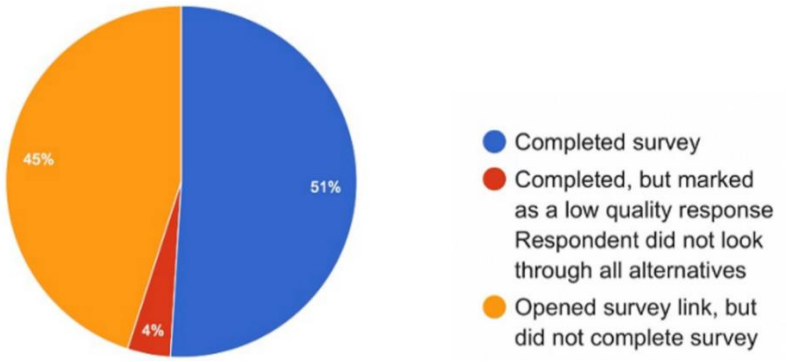

Figure 5:Figure 13 – Survey completion percentage

However, while most of the respondents filled in the survey in less than six minutes, there were some participants who sped through the survey and completed it in less than two minutes. Also, some respondents took more than half an hour to fill in the whole survey. Since these participants completed the survey in an unreasonable period of time, they have been considered as low-quality responders (4% of the total respondents). Results from the latter and from respondents who just opened the survey but gave up during the questionnaire or after receiving a warning of being providing low quality answers (45% of the total) were excluded from the analysis to ensure data reliability (Sauro & Lewis, 2012).

Sample Characteristics

The first step of our analysis was to conduct a demographic characterization of the sample, since it is a crucial indicator of the results. Previous research has looked at how these characteristics affect different contexts' consumer decision-making processes. For instance, Lu, Zeng, and Fan (2016) investigated how age and gender, as well as other demographic factors, affect consumer preferences in the online market. Furthermore, the authors investigated how social status affected buying habits. We have been able to learn more about consumer preferences and behavior in the

luxury handbags market by including these social and demographic characteristics in the analysis.

Age

When it comes to age, the mean is approximately 29,5 years old when considering the 182 good-quality responders. The survey was developed to allow respondents from all ages since our lowest range was less than 18 and our maximum range was above 45 years old. Most of the respondents were aged 26 to 35, comprising about 41.6%. The second biggest share was 32%, from people between 18 and 25. 15.2% between 36 and 45, and 3.4% were above 45 years old. Only 7.9% of the respondents were minors (Appendix 24)

The explanation of this kind of distribution can be discovered in the bigger usage of social media platforms by younger people, and in the spreading method of the survey, where our personal connections have been central.

Gender

Gender-wise, the sample is quite unevenly distributed. When considering completed surveys only, the sample contained 37 male respondents (approximately 20%) and 145 female respondents (approximately 80%) (Appendix 25). This may be related to the fact that women are much more attracted by the product on which the questionnaire is based, and thus were more interested in filling it out.

Social Status

Social status was another measured descriptive variable. Considering only the 182 completed surveys, workers are the mode of the sample (58,4%), followed by students (30,9%), unemployed (7,3%), and pensioners (3,4%) (Appendix 26). It is possible to conclude that the sample is skewed towards students and workers, in particular *young workers*. We can infer this figure because it is congruent with the fact that a total of 73.6% of the responses came from people

between the ages of 18 and 35.

Country

More evenly distributed, however, was the location where the questionnaire was filled out. Indeed, country-wise the responses form somewhat of a normal distribution. Apart from Italy, which accounted for 33% of the responses, each of the other countries recorded about 20% of the total responses (Appendix 27).

Brand preferences

The analysis from the conjointly proved that the survey aimed to acquire responses from individuals regarding their preferences for different luxury handbag brands following a criterion on a variety of features. The chart that is shown on the Conjointly website shows the preferences for different combinations of features within each brand, i.e., Louis Vuitton, Furla, Jacquemus and Hermes, with the "violins" representing the width of potential combinations (Chadha & Ahuja, 2020). The wider the violin displayed by the brand, the more potential combinations of features within the brand. (See Appendix 28)

In reference to the chart from the conjointly websites, the brand with the widest violin is Louis Vuitton, followed by Hermes and then Furla, with Jacquemus having the smallest violin. From this, it shows that Louis Vuitton has the most varied combination of features available, while Jacquemus has the least. The diamonds on the chart in each violin represent the median value for each brand. The diamonds for brands Louis Vuitton and Hermes are located at the negative side of the 0 mark, this shows that the respondents generally preferred features that were more expensive or exclusive. The diamond for showing the median value for Furla, on the other hand, is located to the right of the 0 mark, this shows that respondents preferred features that were more affordable or accessible. Similarly, the diamond for Jacquemus indicating the median value is

also located to the right of the 0 mark, but much further than Furla's, showing that respondents preferred features that were even more affordable and accessible. This finding is consistent with a study by Kim and Ko (2012) that suggests that brand equity is created by the brand's reputation, image, and emotional attachment consumers have to the brand. The strong preference for specific features within the brand may be due to the brand's reputation for quality and exclusivity, leading consumers to associate specific features with the brand.

Based on these results from the website, it can be concluded that respondents generally preferred luxury handbag brands that offered exclusive and expensive features, this is in terms of Louis Vuitton and Hermes. However, there was also a preference for more affordable and accessible brands, such as Furla and Jacquemus (Grewal et al., 2009). This shows that there are different ranges of preferences within the luxury handbag market, and the brands should consider offering a variety of features to appeal to different people who are the consumers.

Generally, the survey results provide insights into the preferences of customers regarding luxury handbag brands and their features. Brands that had a wider range of feature combinations, such as Louis Vuitton, were more preferred, but there was also a demand for more affordable options.

In general, the utilization of conjoint analysis facilitated a thorough evaluation of brand predilections, while considering various permutations of characteristics and costs. Through an analysis of the comparative performance of various brands, enterprises can acquire significant insights into consumer preferences and make well-informed determinations concerning branding, product characteristics, and pricing tactics. These findings from the conjointly website may be useful for luxury handbag brands in developing their marketing strategies and product offerings to cater to a wider range of consumers. (Conjointly, 2023)

Attribute importance

The conjoint analysis technique involves presenting hypothetical product profiles to survey

participants, wherein the profiles are systematically varied across attributes such as price, brand, features, and design. By observing respondents' choices or ratings, researchers are able to quantify attribute importance and evaluate consumer decision-making (Mishra, 1989). We will delve into the details of each brand's respective part in the following discussion.

According to the research by Green and Srinivasan (1990), consumers' trade-offs between different levels of attributes determine the significance of attributes in conjoint analysis. The research revealed that consumers exhibit a tendency to prioritize specific attributes over others, thereby indicating their respective levels of decision-making significance. The comprehension of attribute significance in conjoint analysis facilitates the advancement of products, the formulation of marketing tactics, and the establishment of pricing strategies. Businesses can better serve customers by understanding which attributes most influence their preferences (Mishra, 1989).

Hermès

Based on the information provided from the Conjointly website, it is evident that for the brand Hermes, consumers placed the highest relative importance on the attributes of transparency and product details, which accounted for 55.2% of the total importance. The attribute of certification for authenticity and ownership for the brand Hermes was also highly accounted for, accounting for 32.6% of the total importance. This shows that customers place a significant amount of sensitivity on the authenticity and ownership verification of luxury handbags.

The attribute of design for the brand Hermes was ranked lowest in relative importance, at 12.2% of the total. This makes us conclude that while design is still a vital consideration for customers when choosing a luxury handbag brand, it may also be somehow less vital than other factors such as product information and authenticity. (See Appendix 29)

Louis Vuitton

As the data presented on the Conjointly website indicates that customers placed the greatest

relative importance on the attributes of transparency and product details for the brand Louis Vuitton, comprising 45.0% of the total importance. The Certification for Authenticity and Ownership attribute was deemed significant by customers, constituting 25.3% of the overall importance.

Price was the third most significant attribute, with 20.4% of the total importance. This tells us that while customers are willing to pay a premium for luxury handbags, they also take note of the price in their decision-making process. The attribute of design for the Louis Vuitton brand was ranked lowest in relative importance, at 9.3% of the total. This makes us conclude that while design is still a vital consideration for customers when choosing a luxury handbag brand, it may somehow be less important than other factors such as transparency, authenticity, and price. (See Appendix 30)

Jacquemus

Moreover, the analysis of the Conjointly website data reveals that the brand Jacquemus has received the highest relative importance from its customers for the attributes of transparency and product details, constituting 45.7% of the total importance.

The attribute of "certification for authenticity and ownership" was also considered vital by customers, accounting for 23.4% of the total importance. This shows that customers have a significant sensitivity to the authenticity and ownership verification of luxury handbags.

Price was the third vital attribute, accounting for 19.1% of its total importance. The attribute of design was ranked lowest in relative importance, at 11.8% of the total importance. This tells us that while design is still an important factor to consider for consumers when choosing a luxury handbag brand, it may somehow be less vital than other factors such as transparency, authenticity, and price. (See Appendix 31)

Furla

As with Hermes, Furla did not have a price attribute listed in the chart due to only providing one price option in the survey. While the total sum of the importance values for the three attributes listed is 100%, the relative importance of design for Furla was 20.2%, while transparency and product details had an importance value of 57.7%. The attribute of certification for authenticity and ownership had an importance value of 22.1%.

Generally, it is vital to note that transparency and product details were the most vital attributes for all four brands in the analysis from the website. This can lead us to conclude that customers highly value information about the product they are buying, for example, the materials used, the manufacturing process, and any special features.

In conclusion, attribute importance in conjoint analysis is determined by consumers' trade-off decisions between different attribute levels. The findings of the study indicate that consumers place significant value on attributes such as transparency, product details, and certification for authenticity and ownership when considering luxury brands. Specifically, the analysis focused on four prominent luxury brands, namely Hermes, Louis Vuitton, Jacquemus, and Furla. Price also played a significant role for some brands. Design, while still important, held relatively less significance. Overall, transparency and product details emerged as crucial attributes across all brands, emphasizing the importance of providing comprehensive and accurate product information to customers. Understanding these attribute relative importance values can assist brands in better tailoring their marketing and product development strategies to meet customer needs and preferences (Rahman & Lorica, 1999). (See Appendix 32)

Relative importance by levels

The utilization of conjoint analysis is prevalent in the field of marketing research as a means of comprehending consumer preferences and the mechanisms behind their decision-making. By analyzing the relative importance of attribute levels, researchers gain valuable insights into the

factors that drive consumer choices. The present investigation centers on four distinct attributes, namely Design, Price, Blockchain platform for transparency and product details, and Certification for authenticity and ownership. The goal is to determine the preferences for attribute levels within each brand and understand their impact on consumer decision-making. The findings from this analysis will contribute to a deeper understanding of consumer preferences and inform strategic marketing decisions. (Conjointly, 2016).

Hermès

Based on the preferences for levels relative to other levels for the average customer, specifically within the brand "Hermès", it can be seen from the website that customers have a strong preference for the design attribute. Specifically, design 1 was the most preferred option, with 34.7% of the percentage in its favor.

In terms of the attribute of certification for authenticity and ownership, the digital certification choice was greatly preferred, with a positive preference level of 70.0%, while physical certification was less preferred. This shows that customers are comfortable with digital certification as opposed to physical certification.

Lastly, the attributes of transparency and product details were found to be important factors for customers, with the "present" option preferred with a high positive preference level of 94.7%. This tells us that customers highly prefer transparency and are more likely to buy products when they have all the necessary information about the product's details and its genuineness. (See Appendix 33 and 34)

Louis Vuitton

The brand has a unique set of consumer preferences, according to the chart provided on the conjointly website. In terms of design, the average customer prefers design 1 with 36.5%, followed by design 3 with 33.0%, and design 2 with 30.4%. The preference for designs 1 and 3

shows that the average customer prefers classic and timeless designs over more trendy or bold options.

On the attribute of Certification for Authenticity and Ownership, the digital certification was the preferred attribute with 86.0%. This preference shows evidently that customers place their trust in the digital certification process offered by Louis Vuitton. When it comes to transparency and product details, the customer preference for the "present" option was high at 96.2%. This result suggests that the average customer is interested in having knowledge about the product before making a purchase. Finally, in terms of price, the majority of customers preferred a price of 2500 (82.5%), while 17.5% preferred a higher price of 7000. This result evidently says that the average customer is willing to pay a premium price for Louis Vuitton products. (See Appendix 35 and 36)

Jacquemus

The chart displaying customer preferences for different levels within the brand on the conjointly website reveals that design 3 is the most preferred, followed closely by design 1. The preference for digital certification for authenticity and ownership, as seen from the website, is high at 71.3%. The majority of customers prefer transparency and product details to be present, as indicated by a preference of 93.8%. When it comes to the price of products, the majority of customers prefer to pay $300, with 53.6% of respondents indicating this preference, while 46.4% of the customers prefer to pay $1,000. The relatively lower price preference could be a sign of the brand's target market. (See Appendix 37 and 38)

Furla

The average customer for Furla prefers digital certification for authenticity and ownership, with a preference of 71.6%, as evident from the conjointly website. In terms of design, the preference is shared between design 1 and design 3, with design 3 slightly bettering out with a 36% preference. The high preference for the "present" option in Transparency and Product Details also shows that

Furla's customers value knowing the details and materials used in the products they buy. Generally, the preferences of the average customer for Furla show a focus on transparency, authenticity, and design. These values are likely important to the brand's target market and can help inform future product development and marketing strategies (Chadha & Ahuja, 2020).

To conclude, the examination of the relative significance of various levels in conjoint analysis offers valuable insights into the preferences of consumers for the chosen attributes within each brand. The findings underscore the importance of various factors such as design, certification for verifying authenticity and ownership, transparency and provision of product details, and pricing in shaping consumer preferences. Comprehending the relative significance of attribute levels is beneficial for enterprises in the areas of product development, marketing strategies, and pricing policies. The results indicate that consumers place emphasis on particular levels of attributes and demonstrate unique inclinations towards individual brands. The aforementioned observations can provide valuable guidance to enterprises in customizing their products or services to align with the preferences of their clientele and augment their level of contentment. Subsequent investigations may delve deeper into the interrelationship among said attributes and ascertain supplementary variables that impact the process of consumer decision-making within the domain of luxury brands. (See Appendix 39 and 40)

Ranked list of concepts

The present investigation employed a conjoint analysis technique utilizing a ranked list of concepts methodology to examine the inclinations of consumers towards diverse product characteristics. The data includes information on four brands (Louis Vuitton, Jacquemus, Hermès, and Furla) and their corresponding designs, prices, blockchain platform for transparency and product details, certification for authenticity and ownership, and the rank and value assigned to each concept by customers. The objective of this analysis is to extract valuable insights

regarding the significance of these attributes and ascertain the most attractive combinations for consumers through a thorough examination of the data.

The ranked list of concepts analysis allows us to understand the preferences of customers for different attributes and levels. Based on the data analysis, it can be inferred that among the Louis Vuitton brand designs, Design 1 is the most favored, followed by Design 2 and Design 3. The price point of 2500 euros is favored over other options, and the presence of a blockchain platform for transparency and product details is consistently preferred. In addition, it has been observed that consumers exhibit a marked preference for digital certification as a means of verifying authenticity and ownership, as opposed to relying on physical certification, when it comes to the Louis Vuitton brand.

Jacquemus exhibits a slight variation in preferences. Design 3 is the most preferred, followed by Design 1 and Design 2. The consumer base exhibits a predilection towards price points that are relatively lower, with a particular inclination towards the option of 300 euros. Similar to Louis Vuitton, customers prefer a blockchain platform for transparency and product details, and digital certification is preferred over physical certification.

Hermès displays a distinct set of preferences. Design 1 and Design 2 are preferred by customers in comparison to Design 3. However, the price point of 7000 euros is preferred over lower price options. The preference for a blockchain platform for transparency and product details remains consistent, and digital certification is favored over physical certification.

The customer preferences of Furla exhibit a greater degree of alignment with those of Jacquemus. Design 3 and Design 1 are preferred, while Design 2 is less favored. The price point of 300 euros is preferred, and a blockchain platform for transparency and product details is important to customers. Like other brands, digital certification is the favored mode of certification over physical certification. (See Appendix 41)

Preliminary Statistical Analysis

Correlation Among Variables and Highest-Ranked Attributes: To gain a deeper understanding of our respondents' characteristics, a few additional descriptive questions about their age, gender, social status, etc., as well as a Likert scale question about why they choose to purchase high-end handbags, were added at the end of the conjoint survey (Conjointly, 2016).

By taking into account various motivations and sociodemographic factors, this data will help assess the variability in consumers' attribute preferences across various platforms. For instance, it might make it easier to find any connections between factors like product pricing or preference for Blockchain technology and variables like age or income. We analyze the cross-correlations between the attributes in order to investigate the relationship between the variables and the attributes.

Gender impact on results

The Pearson correlation coefficient in SPSS indicates a bivariate correlation of 0.046 between gender and result. The statistical analysis yielded a two-tailed p-value of 0.543, and the sample size (N) was determined to be 178.

The Pearson correlation coefficient is a statistical metric that quantifies the magnitude and orientation of the linear association between two variables. The present analysis indicates a negligible correlation between gender and result, as evidenced by a coefficient of 0.046. This implies a negligible or non-existent correlation between the two variables.

The p-value of 0.543 that is associated with the study is higher than the conventional significance level of 0.05. This suggests that there is inadequate evidence to reject the null hypothesis, which posits that there is no correlation between gender and result in the population.

Thus, the analysis of the bivariate correlation between the variables of result and gender indicates that there exists a negligible and statistically insignificant association between the two factors

within the selected sample of 178 participants. Stated differently, there seems to be no correlation between gender and the outcomes. It is crucial to bear in mind that the presence of correlation does not necessarily indicate causation. Therefore, additional examination may be necessary to investigate other plausible variables that could be impacting the outcomes. (Refer to Appendix 42)

Age impact on results

The Pearson correlation coefficient in SPSS indicates a bivariate correlation of 0.035 between the variables of result and age. The statistical analysis yielded a two-tailed associated p-value of 0.639, with a sample size (N) of 177.

The Pearson correlation coefficient is a statistical metric that quantifies the magnitude and orientation of the linear association between two variables. The correlation between the outcome and age exhibits a low magnitude, as evidenced by a coefficient of merely 0.035. This implies a negligible or non-existent correlation between the two variables.

The p-value of 0.639 that is associated with the study is higher than the conventional significance level of 0.05. This suggests that there is inadequate evidence to reject the null hypothesis, which posits that there is no correlation between age and result in the population.

Thus, the analysis of the bivariate correlation between the variables of result and age indicates that there exists a minimal and statistically insignificant correlation between the two factors within the population of 177 participants. Stated differently, there seems to be no correlation between age and the outcomes. It is crucial to bear in mind that the presence of correlation does not necessarily indicate causation. Thus, additional investigation may be necessary to examine other plausible variables that could be impacting the outcomes. (Appendix 43)

Cluster Analysis

By clustering survey respondents into different segments or personas, we have been able to gather valuable insights on how different customer segments prioritize and make decisions based on the various attributes of luxury handbags, including brand, design, price, and the blockchain-based digital platform with certification. This information will then guide strategical managerial suggestions for product development efforts to cater to different customer preferences.

After having extracted our raw data from Conjointly platform into Excel, we have cleaned the Data set in order to remain only with the valuable variables that we wanted to analyze for clustering. The variables that have been considered to conduct the analysis for clustering were all the *individual preferences for each attribute level, for each brand*. When the Data set is exported from Conjointly, by convention, these individual preferences are expressed as relative utility values compared to an option that is normalized to 0. For instance, according to Figure 14 below, when assessing each participant's preferences for the different brands, the utility of Hermes has been normalized to 0, while the utilities of the other brands have been expressed in relative terms to that normalized value.

participant_id	Hermès	Louis Vuitton	Jacquemus	Furla	Hermès, Design 1	Hermès, Design 2	Hermès, Design 3	Louis Vuitton, Design 1	Louis Vuitton, Design 2	Louis Vuitton, Design 3
1	0	1,1803	3,2244	0,6133	0	0,3554	0,5467	0	0,3000	0,1141
2	0	1,8394	-0,8332	-2,1894	0	-0,5082	-1,0943	0	-0,2150	-1,4809
3	0	-0,3041	2,3740	-0,4300	0	0,2941	0,0205	0	1,5127	-2,1286
4	0	1,0019	5,0570	1,8210	0	-0,5550	-1,1394	0	-0,0091	-1,2496
5	0	0,8403	3,9200	0,3389	0	0,3293	0,1808	0	0,8986	-0,0806
6	0	-0,6944	0,1881	-3,7537	0	0,1973	1,5648	0	0,0920	-0,1439
7	0	1,5494	1,4447	-2,2894	0	0,3247	-1,6593	0	-0,6065	-2,0856
8	0	1,5262	6,5199	8,8196	0	-0,0913	-0,7219	0	0,0430	0,0913
9	0	2,4478	3,0897	-0,1505	0	0,0402	-0,9333	0	0,2478	0,5227
10	0	0,2779	0,5503	-2,2353	0	0,5182	-0,0991	0	-0,6540	0,5254

Figure 6:Individual Preferences Data Set

Subsequently, we have exported the cleaned Excel file into IBM SPSS software in order to

compute the appropriate statistical techniques for clustering. The method we have followed to come up with different segments was based on the following steps:

Step 1: *Hierarchical Cluster Analysis-Ward's Method Approach* (In order to determine the ideal number of Clusters based on our Data set)

The hierarchical cluster analysis is useful in providing us with a robust estimate of how many clusters our data has. We have preferred the Ward's method approach instead of other hierarchical clustering techniques because it helps creating equal size clusters. If we use another approach, it is possible that we find clusters where there are just a few responses in one group and lots of responses in another, and practically speaking this would not be really useful.

As we said previously, we used the all the individual preferences for each attribute level, for each brand as input variables on SPSS, because there will then be groups of people who tend to have difference preferences for these dimensions, and we might be able to group those types of people. Since our data came from different types of scale, we also have standardized our variables' raw data into Z scores in order for them to be comparable for the analysis. The result of this first step was the creation of a dendrogram. (Appendix 44). This represents a hierarchical branching diagram where each of these branches denotes connections. And the closer those connections are to each other's on this diagram, the more related they are to one another. So, as we move up the branching diagram, the hypothetical clusters become larger and more heterogenous. As we were looking for a robust solution that was relatively stable to small variations in our judgment call, by looking at our dendrogram we ultimately decided to go for a 3 Clusters segmentation. This hierarchical analysis has been considered as the input for the second step.

Step 2: *K-Means Cluster Analysis* (In order to classify and interpret the different Clusters)

Through a k-means cluster analysis we have then assigned cluster membership to individuals based on the algorithm as well as describing those clusters on the dimensions that we created the

clustering on. We conducted the analysis on SPSS using the same variables about participant's preferences that have previously been used for the hierarchical analysis. Accordingly to the conclusion of the latter, the algorithm was set in order to categorize our sample of responders in 3 distinct clusters. Refer to Appendix 46 to check the dimensions of each cluster.

K-means is an iterative algorithm, meaning that it runs until there is a convergence solution.

In our cases it took 5 iterations to converge. We have also run an Anova to see which of the considered variables was not significant for the analysis (Appendix 45). This table allows us to say if the variables that we have included in our model actually help us discriminate across the different clusters. So, we looked for significance level.

According to the Anova we can infer that only variable n.9, that is the preference for "Jacquemus Design 3", was not statistically significant. This means that there is no difference between any of the clusters on the preferences regarding this particular variable.

This also means that all the other variables are significant in determining how groups of individuals are similar to one another and also different from other groups.

Step 3: *Segmentation using Excel* (Looking for patterns to create segments and personas)

We then counted the socio-demographic characteristics of each cluster and looked for patterns in order to come up with 3 different personas (Appendix 47).

For instance, the specific persona derived from cluster 3 is [26,35] aged, female, worker, and she is based either in France or Italy. Subsequently, we have looked for patterns inside each cluster based on the different socio-demographic characteristics. We did this with the intention of coming up with 3 different "personas" by conducting a deeper segmentation using the specific function of the software Conjointly. The Appendixes from 48 to 51 allowed us to assess the different preferences for the different attributes within each brand for these 3 ideal profiles. By also analyzing their preferences for the brands, we finally came up with three different personas

(see figure 15).

Brand	Trendsetter	Status Seeker	Luxury Enthusiast
Hermès	-36,223	30,8492	10,3179
Louis Vuitton	-26,4465	25,0799	7,3198
Jacquemus	30,5713	-22,8401	-3,1841
Furla	26,6913	-38,6788	-17,3267

Figure 7:Clusters' Brand Preferences

Cluster 1: The Trendsetter or Practical Shopper

This persona is highly fashion-conscious and seeks out emerging luxury brands like Jacquemus. They are willing to try new designs and are more price-sensitive compared to other segments. They appreciate the transparency offered by a blockchain-based digital platform, and certification for authenticity and ownership adds to their overall satisfaction.

This persona considers the price and functionality of luxury handbags as essential factors. They are more inclined towards affordable luxury brands like Furla. While they appreciate the blockchain-based digital platform and certification for authenticity and ownership, their purchasing decision is primarily driven by the price and value for money.

Cluster 2: Status Seeker

This persona values well-established luxury brands like Hermes and Louis Vuitton, which symbolize prestige and social status. They prioritize the brand name, iconic designs, and craftsmanship. While they appreciate the blockchain-based digital platform and certification for authenticity and ownership, it might be less of a deciding factor for them compared to brand reputation.

Cluster 3: Luxury Enthusiast

This persona values exclusive, high-end luxury brands and considers design and craftsmanship as top priorities. They are willing to pay a premium for unique and iconic designs, and they highly

value a blockchain-based digital platform for transparency and product details. Certification of authenticity and ownership is also crucial for them.

Simulations

As mentioned in the Insights, the most valued product is Louis Vuitton bag with design 1, price of 2500 euros, blockchain based digital platform and the presence of digital certificate by the survey respondents. In order to further analyze how each clusters' preferences are sensitive to the most valued handbag in the survey which has the blockchain based digital platform for transparency and product details, the simulations tool on conjointly website is used.

Baseline description

The baseline of the simulation was set with two bags from each brand with different price, Hermès having 7000 euros, Louis Vuitton having 2500 euros, Jacquemus having 1000 euros and Furla having 300 euros, in order to have variation in the price. Moreover, the selected eight bags have design 1 as well as digital certification. On the other hand, only one of the bags from each brand has a blockchain based digital platform for transparency. The simulation of all respondents gives the highest preference of 31.8 per cent for the most valued bag which is Louis Vuitton with blockchain based digital platform for transparency and product details while the smallest rates were around 1-2 per cent for the bags without blockchain based digital platform for transparency. For the clusters, the same baseline was used by adjusting in the settings of conjointly simulation tool. (See Appendix 52)

Removal of the most valued bag

The scenario of removal of the Louis Vuitton bag with design 1, price of 2500 euros, blockchain based digital platform and the presence of digital certificate was applied to all respondents, and the three other clusters that are mentioned in the cluster analysis chapter in order to investigate the variation of preference percentages, any possible preference shift to bags without blockchain

based digital platform for transparency and product details. (See Appendix 53)

Cluster 1: The Trendsetter or Practical Shopper

The respondents in cluster 1 have the highest preference share of 37.6% for Furla bag with blockchain based digital platform for transparency and product details and after the removal of the most valued bag this preference share increases to 41.4%. While having increase in the preference share for Hermes bag with blockchain based digital platform for transparency around 10%, the most remarkable increase of 3% was in the preference share for Louis Vuitton bag without blockchain based digital platform for transparency. This increase proves that Louis Vuitton as a brand was not the most priority for respondents in cluster 1. (See Appendix 54 and 55)

Cluster 2: Status Seeker

In baseline scenario the survey participants that are in cluster 2, have high preference share towards bags with blockchain based digital platform for transparency and product details as 46.9 per cent for Louis Vuitton and 46.4 per cent for Hermes which in total makes 93.3 per cent. Strong preference for Hermes and Louis Vuitton continues when the most valued bag is removed from the scenario. The preference share of Hermès with blockchain based digital platform for transparency and product details climbs up to 86 per cent while the change in Louis Vuitton bag without blockchain based digital platform for transparency and product details change from 2.5 per cent to 6.7 per cent. This shows that the cluster 2 has a stronger preference to blockchain technology rather than brand identity. On the other hand, cluster 2 does not have significant levels for preference shares of Furla and Jacquemus bags. (See Appendix 56 and 57)

Cluster 3: Luxury Enthusiast

In the baseline scenario, Hermes bag with blockchain based digital platform for transparency and product details dominates the preference shares with percentage of 59, meanwhile it dominates

with percentage of 77.4 in the absence of most Louis Vuitton bag with blockchain based digital platform for transparency and product details. However, the Jacquemus bag with blockchain based digital platform for transparency and product details increases by almost 2 per cent the respondent of cluster 3 show crucial shift to Hermes from Louis Vuitton. (See Appendix 58 and 59)

8. Conclusion

8.1 Discussion of the perceptual map results

The results of the perceptual map help us to answer to our second research question RQ2 which addresses consumers perceptions about luxury brands. Consequently, we found out that, despite the fact that all the considered brands are operating in the luxury market, there are differences among them. Based on our analysis, there is a difference between the level of associations between brands with attributes.

Louis Vuitton is principally associated with the attribute prestige price, which is represented by the first dimension, with a lower level of association with the second dimension, which is premium service. According to her article, Paton (2023) mentioned that Louis Vuitton contributes by two-thirds of the whole annual operating profit of LVMH, which is the biggest luxury world's leader in the luxury industry. As Salnichenko (2023) stated in her article, Aura Blockchain Consortium aimed to leverage luxury services, improve customer service quality, and set new expectations in the luxury industry, which may explain the increase in sales for Louis Vuitton.

As previously mentioned, the implementation of blockchain technology in the luxury industry enables consumers to benefit from premium quality services with enhanced security. This can explain that Hermès is slightly negatively correlated with dimension 2 which is service premium. Consequently, by taking into consideration the problem that Hermès faced in terms of intellectual

property, it is important that it revolutionize its position regarding this dimension by focusing on innovativeness, transparency, and virtual exclusivity. By doing so, consumers would have a better association with Hermès and the considered attributes in our analysis.

On the other hand, Jacquemus and Furla share similar profiles with a slight variation between both in terms of the two dimensions.

Jacquemus is less negatively correlated with prestige price as it has a higher length of the respective vector. In fact, it is known for producing distinctive and high-quality designs, which may be the reason for its slightly higher pricing than Furla. In the world of luxury fashion, Jacquemus is a relatively new company, yet it has already become well-known for its cutting-edge styles and commitment to sustainability. Customers may therefore be willing to pay a higher price for Jacquemus products because they believe the brand is providing something special and of great quality.

Furla, on the other hand, as confirmed by CHU (2021), is a trusted and well-known luxury company that has been operating for many years. It is still seen as a luxury brand, but it might not be as cutting-edge or distinctive as Jacquemus, which could account for why it is providing slightly lower prices. Furthermore, consumers might be more inclined to buy Furla products as a result of the brand's convenience, innovation, accessibility and strong digital efforts, which could help to balance out any perceived price differences. The fact that it provides value for reasonable and accessible luxury prices makes it more attractive and consumed by customers.

Based on our previous results, we found that there is a significant linear relationship between previous experience with luxury brands and dimension 2 which is service premium, which can also explain the positioning of the perception of consumers regarding the attributes associated to this dimension and the listed luxury brands.

We also came to the result that there is no significant relationship between familiarity with

blockchain technology and dimension 2 which is premium service quality. Such a result can also explain the positioning of Hermès relative to dimension 2, which will be later classified as a limitation to our analysis. This might suggest that that familiarity with blockchain technology may not be a key factor in determining the perception of premium service in the context of these variables and that some consumers might be misinformed or influenced by the brand reputation.

Moreover, statistical results showcase that there is no significant linear relationship between the country of origin with dimension 2 which is premium service, which explains that the country of origin is not a key factor in determining the premium services offered by luxury brands. This lack of influence can be explained by the role of technology, as well as digital devices and social media that facilitate the share of information between consumers. In this context, Chevalier and Mazzalovo (2021) mentioned in the article written by Howard (2021) and titled 'The role of social media for luxury brands', that social media plays a major role to increase luxury consumers' awareness as it takes into consideration cultural changes, as well as digital transformation.

The obtained map provided us with insights regarding consumers perceptions about luxury brands. After careful analysis of our data, we recognized some limitations to our study. It seems that the number of the considered attributes was too small, which somehow led to blank spaces in the map. Consequently, Furla and Jacquemus were not positively correlated to some attributes. When considering the familiarity with blockchain technology, we provided consumers with two options which are either Yes or No. Such options would not significantly reflect the degree of knowledge about blockchain technology, which explains the reason why Hermès was not that successful in terms of digital innovation even though it is implementing NFTs, as mentioned before, which are blockchain based tokens.

Moreover, consumers might be misinformed about blockchain technology. According to our

analysis, the results might be interpreted for different reasons. This can be explained by the fact that our consumers do not have a significant level of knowledge about blockchain technology in the luxury industry or maybe they do not have a clear understanding of what blockchain technology is in general.

Furthermore, when considering the demographics of our sample, we can notice that we had only 5% of answers from people who are older than 46 years old, and only 13% of the respondents are male. Such percentages suggest that there are no representations of these categories in our sample, which have an impact on the results. Additionally, the sample size seems to be too small to represent the whole population of European luxury consumers and we had 28% of consumers who had experiences with other luxury brands, which makes us think that their perceptions might be biased.

Based on the perceptual map, we can see that we did not have more brands that share a similar profile with Hermès or Louis Vuitton. Such information would have been insightful to determine on which dimension these brands differentiate compared to their direct competitors by studying the dimensions while analyzing the differences in performances between brands.

In other words, this would allow us to comprehend more the competitive landscape in the European luxury market.

If we included more brands in our analysis, this would help to make more meaning and sense to our findings. In addition, the findings might be more generalizable and offer a broader insight of how consumers view luxury brands by considering more brands in our analysis.

8.2 Discussion of the conjoint analysis

By the simulations, it was seen that none of the clusters had high preference shift to bags without blockchain based digital platform and the presence of digital certificate even the most valued bag was removed from the choices. This result adds strength to the fact that preference for blockchain

based digital platform and the presence of digital certificate is not only related to preferred brand.

In conclusion, the conjoint analysis conducted on four luxury handbag brands (Hermes, Louis Vuitton, Jacquemus, and Furla) provided valuable insights into consumer preferences and attribute importance. The findings suggest that customers place a high level of importance on transparency and product details when it comes to all brands. The certification process for verifying the authenticity and ownership of luxury handbags was found to be of great significance, as it reflects the value consumers place on ensuring the genuineness of such products.

The significance of design exhibited variations among the brands, with certain brands assigning greater weightage to design in comparison to others. The influence of price on consumer decision-making was observed, exhibiting varying levels of significance across the different brands. It is noteworthy that transparency, product details provided by blockchain technology and certification were deemed more significant than design and price.

After analyzing this information, it has been determined that businesses in the luxury handbag industry should prioritize providing transparent and detailed information about their products. This entails the dissemination of data pertaining to the constituent materials, production methodologies, and distinctive attributes. Highlighting the genuineness and verification of ownership of their merchandise can potentially augment customer confidence and contentment.

Moreover, the implementation of blockchain technology to ensure transparency and traceability of product details has the potential to yield advantages for luxury handbag brands. The implementation of digital certification not only improves operational effectiveness but also conforms to the inclinations of customers who prioritize convenience and technology-oriented procedures.

In order to maintain a competitive edge, it is imperative for luxury fashion brands to adapt their

strategies accordingly. By prioritizing transparency, leveraging technology such as blockchain platforms, and emphasizing digital certification, businesses can enhance their brand image, attract tech-savvy customers, and differentiate themselves in the market.

The results of this study suggest that enterprises operating in the luxury fashion sector ought to give precedence to transparency and furnish comprehensive product details in order to fulfill the expectations of their clientele. The incorporation of technologies such as blockchain to ensure transparency and the provision of digital certification to verify authenticity and ownership can potentially improve brand reputation, appeal to customers who are knowledgeable in technology, and augment trust and customer contentment.

In order to maintain a competitive edge, it is imperative for luxury fashion brands to modify their strategies in accordance with the preferences of their customers. This can be achieved by placing emphasis on transparency, utilizing technology, and prioritizing digital certification. The aforementioned observations possess the potential to enhance the quality of products and services, augment customer satisfaction, and optimize the overarching approach of enterprises operating within the luxury fashion industry.

Subsequent investigations may delve into the interplay among said attributes and ascertain supplementary variables that impact consumer decision-making within the realm of luxury brands. Furthermore, conducting an analysis of the discrepancies in preferences among various demographic segments can yield valuable insights for the purpose of executing targeted marketing campaigns.

For the simulations only design 1 was selected in order to keep the design as fixed while having blockchain based digital platform for transparency and product details variable, moreover the sample size is small in clusters. Our sample is based in Europe, however the brands mentioned are located all around the world. These can be seen as some of the main limitations of the

simulation process.

9. Management Implications

The prioritization of blockchain enhanced solutions by consumers requires that brands use strategic approaches that match with consumers' new demands and needs. To successfully implement this new solution, brands should carefully analyze their existing processes, operations, and supply chain. This would allow brands to identify areas and current issues that may be solved using digital

transformation and new technologies like blockchain.

For an efficient implementation, luxury brands need to consider collaborating with blockchain technology providers or partnering with blockchain specialized companies to facilitate the implementation in their processes and operations. Moreover, luxury brands should benefit from workshops offered by Aura blockchain consortium which supports brands that are willing to join and implement blockchain in their existing strategies (LVMH, 2021). Furthermore, brands should engage with the existing members of Aura blockchain consortium. Consequently, this will help them establish better practices in the luxury industry thus leading to a more reliable ecosystem besides resulting in lower costs (Propello, 2022).

Additionally, brands need to increase their customers' engagement by effectively communicating the benefits of blockchain technology. This will allow brands to improve their relationships with consumers by integrating them in the process and highlighting their objective of providing them with the best luxury experience. Besides having informed customers, it is highly important to educate and update employees about the recent technological advancements that would leverage the overall brand experience.

Following this innovation, brands should follow future technological development and keep

investing in data security and privacy. By protecting data and transactions, companies would gain customers' trust and loyalty (Lestoc, 2018).

To strengthen luxury brands' commitment to providing quality and sustainable practices, they should focus on collaborating with supply chain partners to ensure that products' information and details are shared which enhances transparency, authenticity, innovativeness, and virtual exclusivity.

10. Implications for Future Research

The findings from this research have provided valuable insights into consumer preferences and perceptions within the luxury fashion industry. Nonetheless, various domains require additional investigation to enhance our comprehension of consumer conduct and brand intricacies. Subsequent research endeavors ought to take into account the ensuing implications to augmenting knowledge in this particular field.

Explore additional attributes and levels

Future studies should include additional attributes and levels in their analysis to gain a more comprehensive understanding of consumer preferences. By expanding the range of attributes considered, researchers can capture a more nuanced picture of consumer decision-making in relation to luxury brands. The proposed approach would facilitate a more comprehensive investigation of the interrelationships between various attributes and discern additional factors that impact consumer perceptions and decision-making. The analysis could potentially integrate attributes such as sustainability, social responsibility, and brand heritage. A comprehensive understanding of consumer preferences can be attained by analyzing the interplay between these variables and pre-existing attributes such as price, design, and service quality. This approach can also reveal the distinguishing factors that set luxury brands apart.

Sample representation and size

To enhance the generalizability of the results, forthcoming investigations should strive for a more extensive and heterogeneous participant pool. The present study's sample was limited to European luxury consumers. However, broadening the sample to encompass individuals from diverse regions and cultural backgrounds would augment the external validity of the results. Additionally, it is imperative to strive for enhanced inclusion of marginalized demographics within the luxury consumer cohort. Incorporating a greater representation of male participants and those aged 46 and above would yield a more equitable viewpoint and facilitate the encompassment of a wider spectrum of preferences and perceptions.

Investigation of brand distinctions

Future research should concentrate on identifying specific distinctions between luxury brands and their direct competitors. Researchers can gain insight into the luxury fashion industry's competitive landscape by conducting in-depth analyses of differences in performance and positioning across multiple dimensions. This study highlighted the need for a more in-depth comprehension of how luxury brands differentiate themselves and the specific dimensions in which they excel. Luxury brands seeking to develop distinctive value propositions, refine their strategies, and effectively target consumer segments can gain valuable insight from examining these distinctions.

In summary, forthcoming investigations in the domain of high-end fashion ought to take into account these ramifications in order to augment scholarship and furnish a more all-encompassing

comprehension of customer predilections and perspectives. Through the exploration of supplementary attributes, enlargement of sample representation and size, inclusion of a greater number of brands, examination of the impact of blockchain technology awareness, and scrutiny of brand distinctions, scholars can enhance their comprehension of consumer behavior and provide valuable insights for strategic decision-making in the luxury fashion sector.

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Appendix

1. **Prestige price**

	1	2	3	4	5
Hermès	○	○	○	○	○
Louis Vuitton	○	○	○	○	○
Jacquemus	○	○	○	○	○
Furla	○	○	○	○	○

2. **Innovativeness**

**Brand's willingness to adopt new technologies and purchasing methods, including blockchain technology, which can impact consumer's purchasing experiences.*

	1	2	3	4	5
Hermès	○	○	○	○	○
Louis vuitton	○	○	○	○	○
Jacquemus	○	○	○	○	○
Furla	○	○	○	○	○

Appendix 1:Survey questions 1 and 2 - Microsoft Forms

3. **Transparency***

**The ability to track your product's journey from production to retail, including information about the materials used, the manufacturing process, and the distribution channels.*

	1	2	3	4	5
Hermès	○	○	○	○	○
Louis Vuitton	○	○	○	○	○
Jacquemus	○	○	○	○	○
Furla	○	○	○	○	○

4. **Virtual exclusivity***

**Stands for the perceived uniqueness and rarity of purchasing luxury handbags using digital transformation ,which can make consumers feel special and privileged*

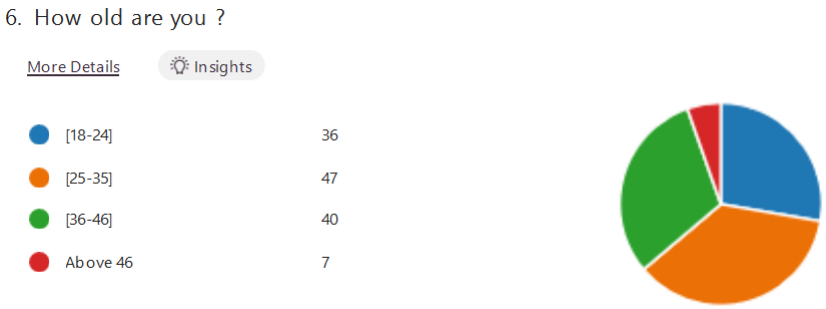
	1	2	3	4	5
Hermès	○	○	○	○	○
Louis vuitton	○	○	○	○	○
Jacquemus	○	○	○	○	○
Furla	○	○	○	○	○

Appendix 2:Survey questions 3 and 4-Microsoft Forms

Table 1 Survey questions -section 2 -Microsft Forms

Question	Options
1.How do you identify yourself?	• Male • Female • Prefer not to say
2.How old are you?	• [18-24] [25-35] • [36-46] • Above 46
3.In which European country are you based?	Open ended question
4.Have you ever purchased a luxury handbag?	• Yes • No
5.If yes, which brand did you choose?	• Hermès • Louis Vuitton • Jacquemus • Furla • Other
6.Do you frequently buy a luxury bag?	• Monthly purchase • Yearly purchase • It depends on the opportunities.
7.How much are you willing to spend on a luxury handbag?	• < €1,000 • €1,000 • ≈ €1,000
8.Are you familiar with blockchain technology?	• Yes • No
9.How would you feel if you were buying handbags from luxury brands that provide you with transparency*? *The ability to track your product's journey from production to retail, including information about the materials used, the manufacturing process, and the distribution channels.	• The brand is committed to ethical and sustainable practices. • More integrated and connected to the brand. • Nothing

10.How will this influence your relationship with the brand you will have?	• More loyalty and trust • Less loyalty and trust • Nothing
11.Do you care about sustainability (Eco-friendliness and social responsibility) when purchasing a luxury handbag?	• Yes • No
12.How would you feel about owning a luxury handbag that is not only unique and authentic, but has lifetime proof for its authenticity which preserves its value and enables you to have access to benefits and exclusive services?	Open ended question



Appendix 3:Insights about the respondents 'age

5. How do you identify yourself ?

More Details Insights

Male	17
Female	112
Prefer not to say	1

Appendix 4:Insights about the Gender of the respondents

9. If yes , which brand did you choose?

More Details

Hermès	32
Louis Vuitton	51
Jacquemus	32
Furla	63
other	68

Appendix 5:Insights about the previous experiences with luxury brands

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,859	2	,929	,921	,401[b]
	Residual	127,141	126	1,009		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 1 for analysis 1

b. Predictors: (Constant), Age, Gender

Appendix 6:Impact of Age and Gender on Dimension 1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4,938	2	2,469	2,508	,086[b]
	Residual	124,062	126	,985		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 2 for analysis 1

b. Predictors: (Constant), Age, Gender

Appendix 7:Impact of age and Gender on Dimension 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4,171	1	4,171	4,244	,041[b]
	Residual	124,828	127	,983		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 1 for analysis 1

b. Predictors: (Constant), Experience

Appendix 8:Impact of previous experiences on Dimension 1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10,332	1	10,332	11,057	,001[b]
	Residual	118,668	127	,934		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 2 for analysis 1

b. Predictors: (Constant), Experience

Appendix 9:Impact of Previous experiences on Dimension 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,515	1	,515	,509	,477[b]
	Residual	128,485	127	1,012		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 2 for analysis 1

b. Predictors: (Constant), Knowledgeaboutblockchain

Appendix 10:Impact of Familiarity with blockchain technology on Dimension 2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,731	1	,731	,724	,396[b]
	Residual	128,269	127	1,010		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 1 for analysis 1

b. Predictors: (Constant), Country

Appendix 11:Impact of Country of origins on Dimension 1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,825	1	1,825	1,823	,179[b]
	Residual	127,175	127	1,001		
	Total	129,000	128			

a. Dependent Variable: REGR factor score 2 for analysis 1

b. Predictors: (Constant), Country

Appendix 12:Impact of Country of origins on Dimension 2

13. How would you feel if you were buying handbags from luxury brands that provide you with transparency*?

**The ability to track your product's journey from production to retail, including information about the materials used, the manufacturing process, and the distribution channels.*

More Details Insights

More informed and empowere...	6
The brand is committed to ethi...	8
More integrated and connecte...	5
Nothing	9
All of the above	102

Appendix 13:Appendix answers about impact of transparency on our respondents

15. Do you care about sustainability (Eco-friendliness and social responsibility) when purchasing a luxury handbag?

More Details Insights

Yes	123
No	7

Appendix 14:Appendix importance of sustainability for our respondents

16. How would you feel about owning a luxury handbag that is not only unique and authentic,but has a lifetime proof for its authenticity which preserves its value and enables you to have access to benefits and exclusive services ?

More Details Insights

130
Responses

Latest Responses

"I will buy more handbags from the brand that implements this"

"I will feel sure about the handbag's authenticity"

"This will influence my attitude toward the brand"

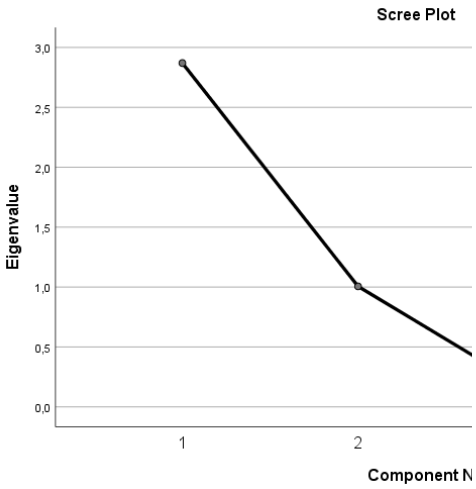
Appendix 15:Collected answers to study respondents 'feelings associated to the technology enhanced experience.

Communalities

	Extraction
prestigeprice	,996
innovativeness	,920
transp	,988
virtualex	,971

Extraction Method: Principal Component Analysis.

Appendix 16:Communalities



Appendix 17:Scree plot

Total Variance Explained

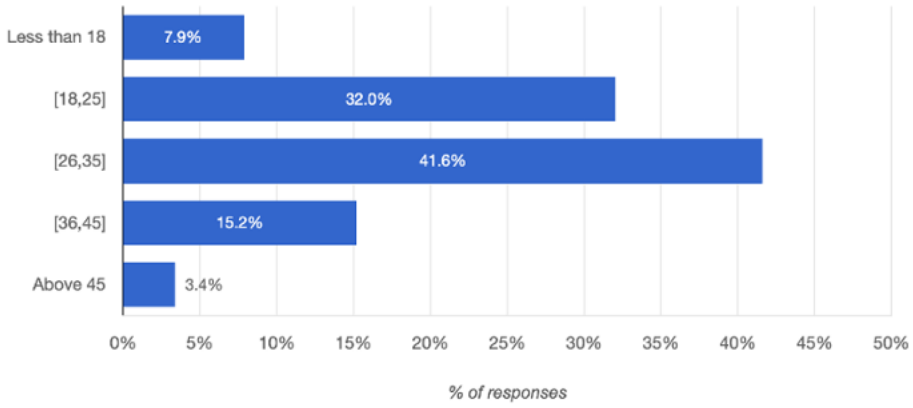
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,870	71,739	71,739	2,870	71,739	71,739	2,833	70,834	70,834
2	1,006	25,143	96,881	1,006	25,143	96,881	1,042	26,047	96,881
3	,125	3,119	100,000						
4	1,899E-16	4,747E-15	100,000						

Extraction Method: Principal Component Analysis.

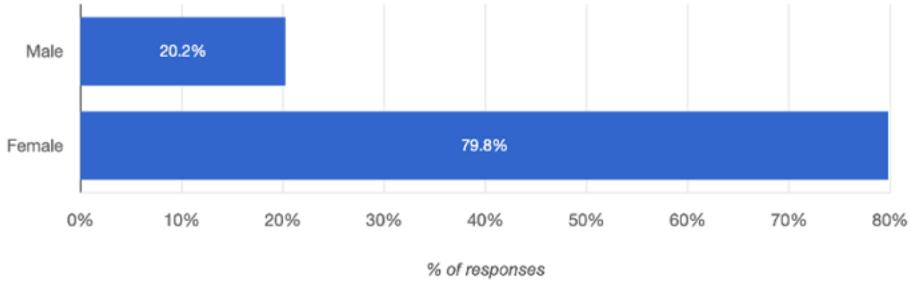
Appendix 18:Eigenvalues -Principal Component Analysis

brands	prestigeprice	innovativeness	transparency	virtualexclusivity	FAC1_1	FAC2_1
Hermès	4,60	3,05	2,71	2,81	-,49477	1,37480
Louisvuitton	3,36	4,72	4,65	4,67	1,49517	,02176
Jacquemus	2,70	2,70	2,54	2,70	-,59836	-,43919
Furla	2,36	3,50	2,39	2,40	-,40203	-,95737

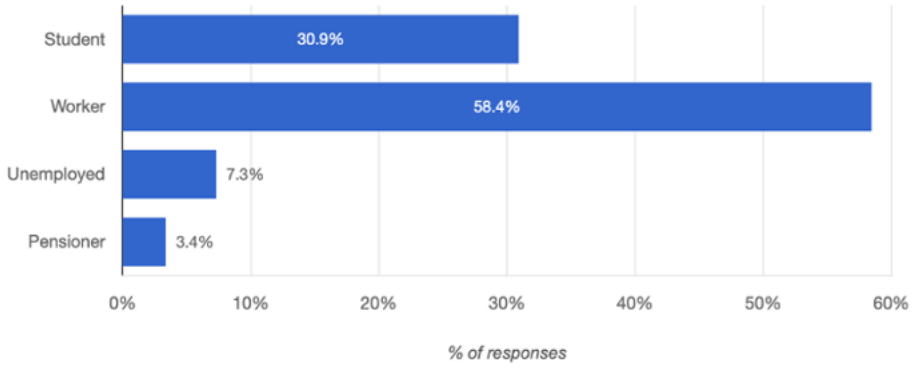
Appendix 19:Brands and factors



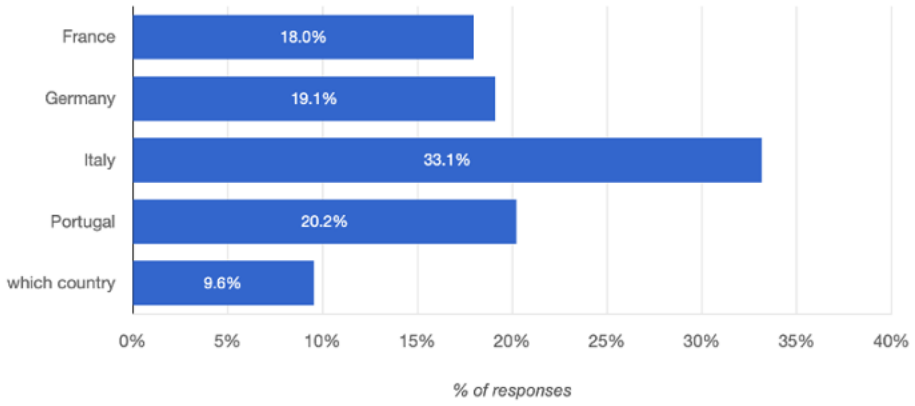
Appendix 20:Sample characteristics: Age distribution



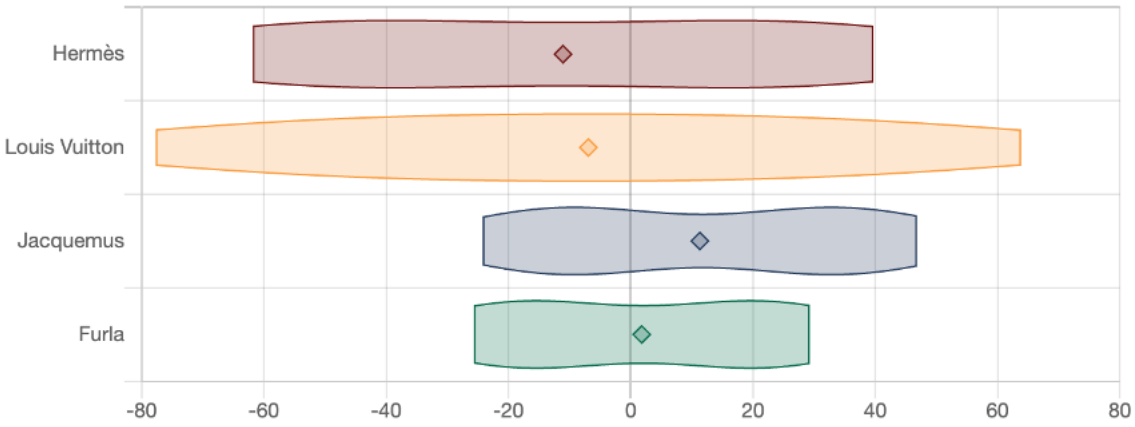
Appendix 21:Sample characteristics: Gender distribution



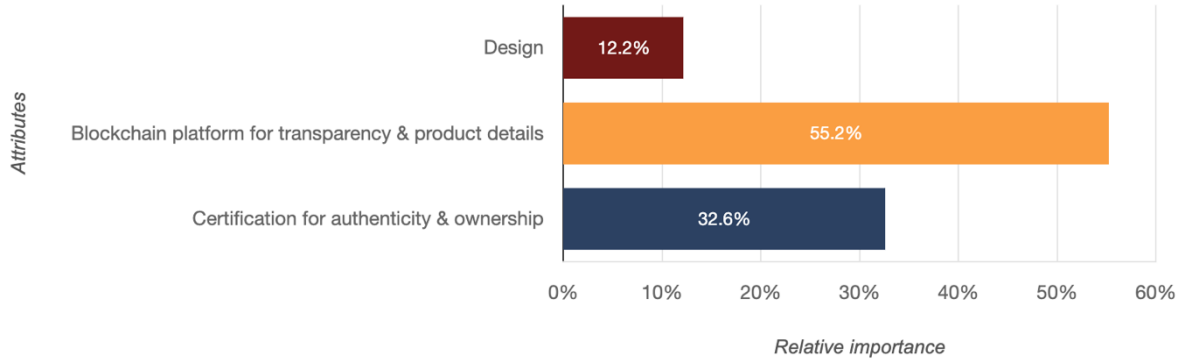
Appendix 22:Sample characteristics: Social Status distribution



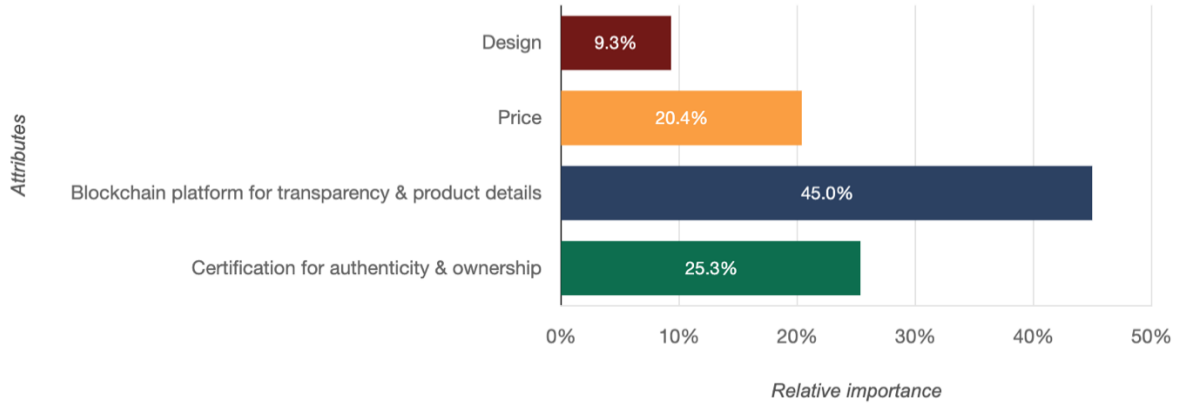
Appendix 23:Sample characteristics: Country distribution



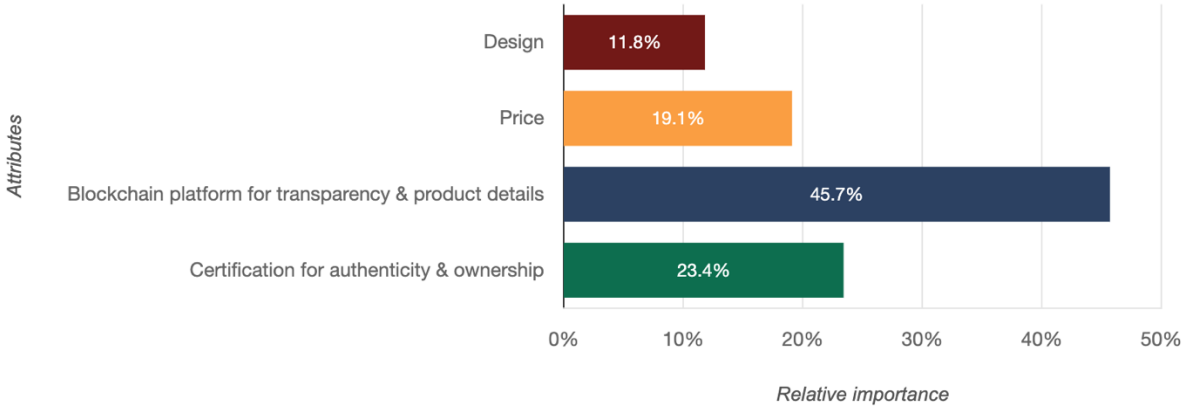
Appendix 24:Brand Preferences



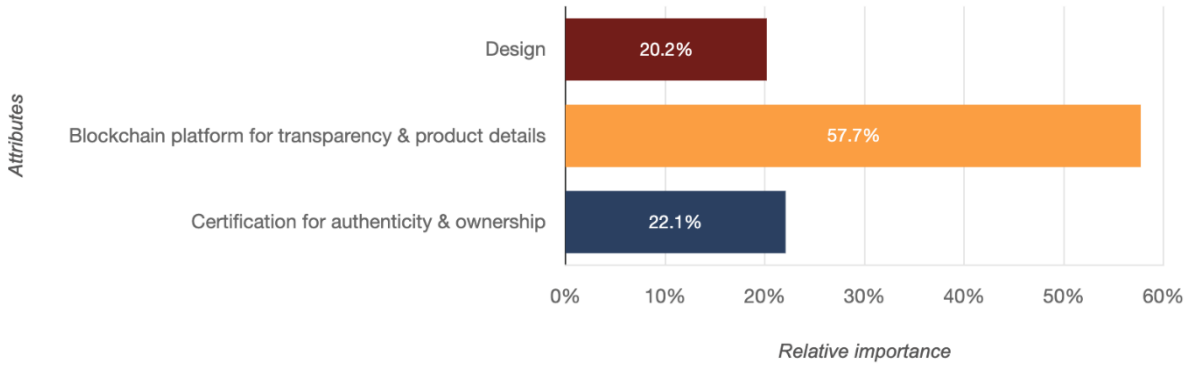
Appendix 25:Attribute Importance Hermès



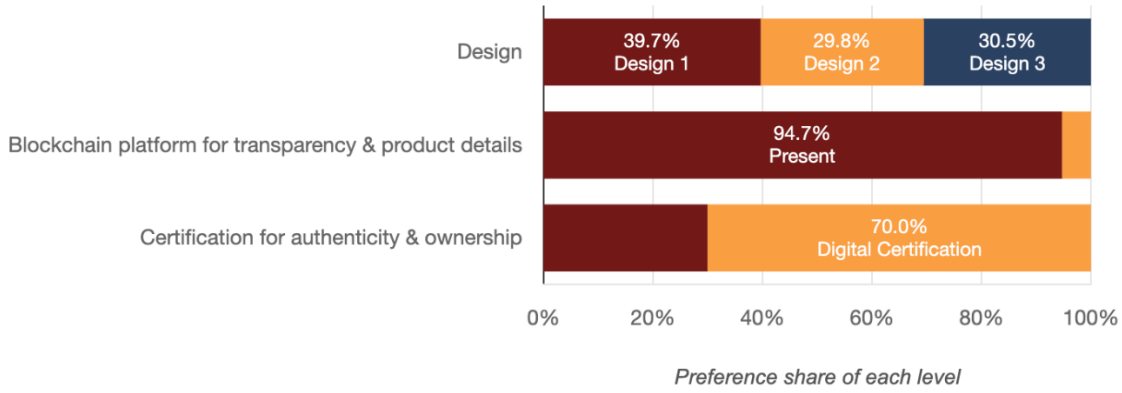
Appendix 26:Attribute importance Louis Vuitton



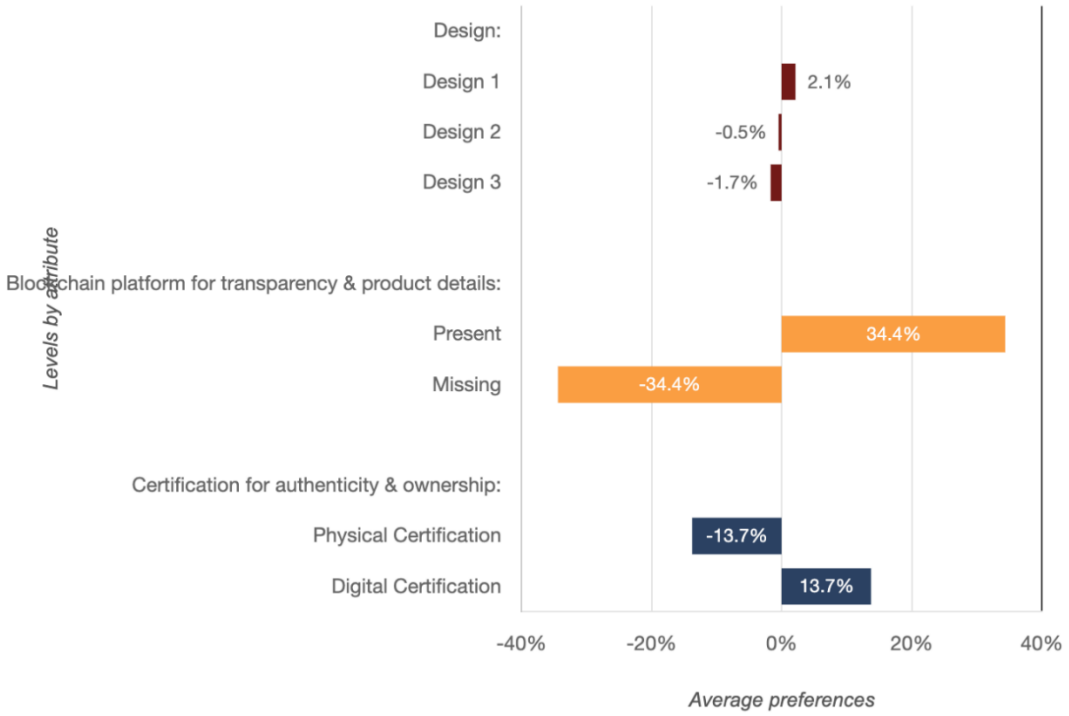
Appendix 27:Attribute importance Jacquemus



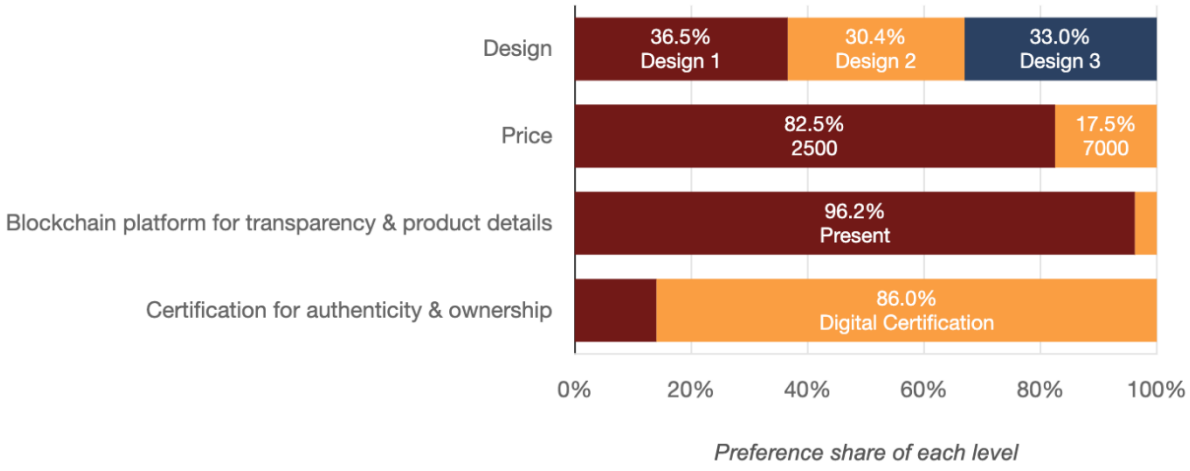
Appendix 28:Attribute Importance Furla



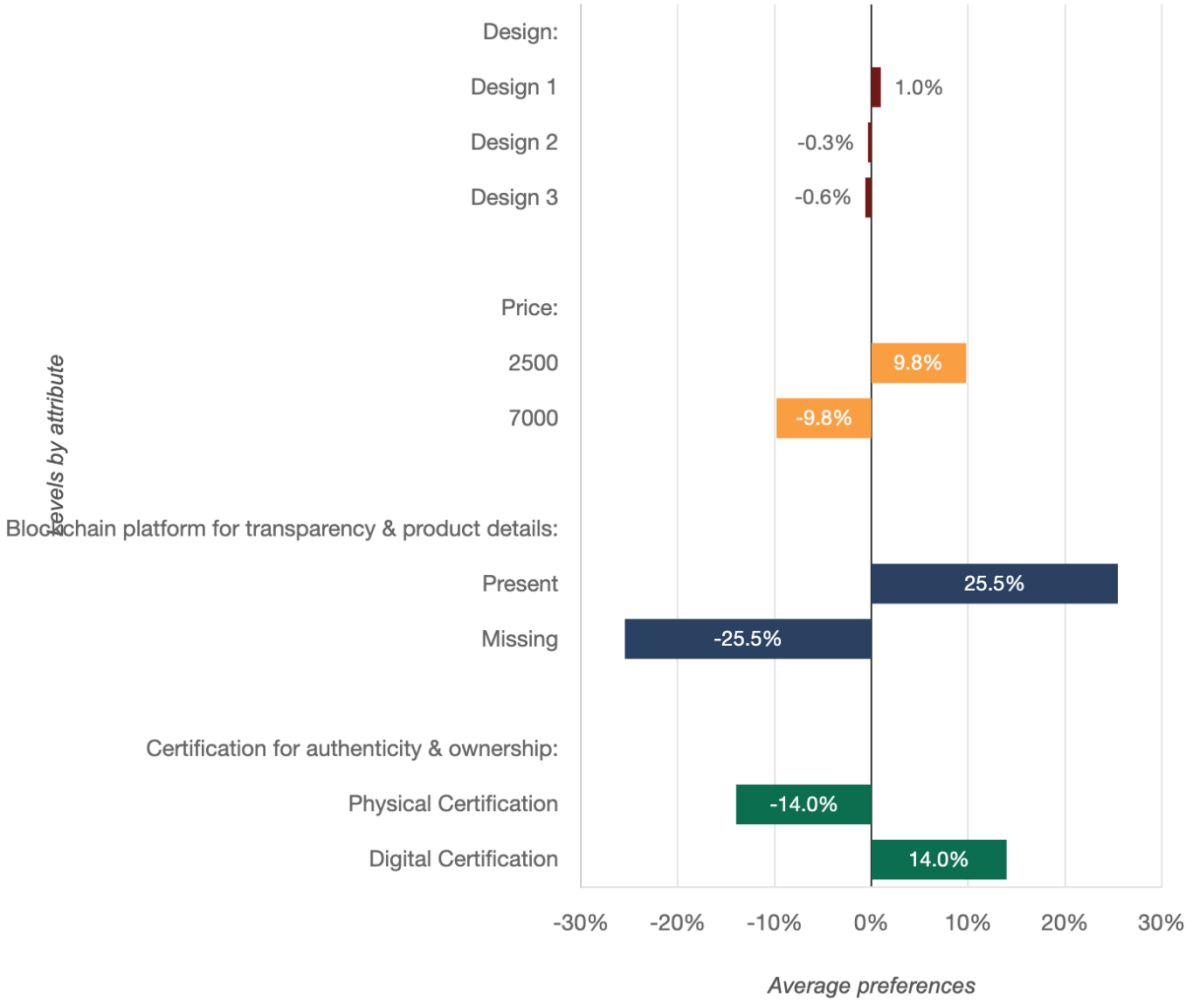
Appendix 29:Relative Importance by Levels Hermès



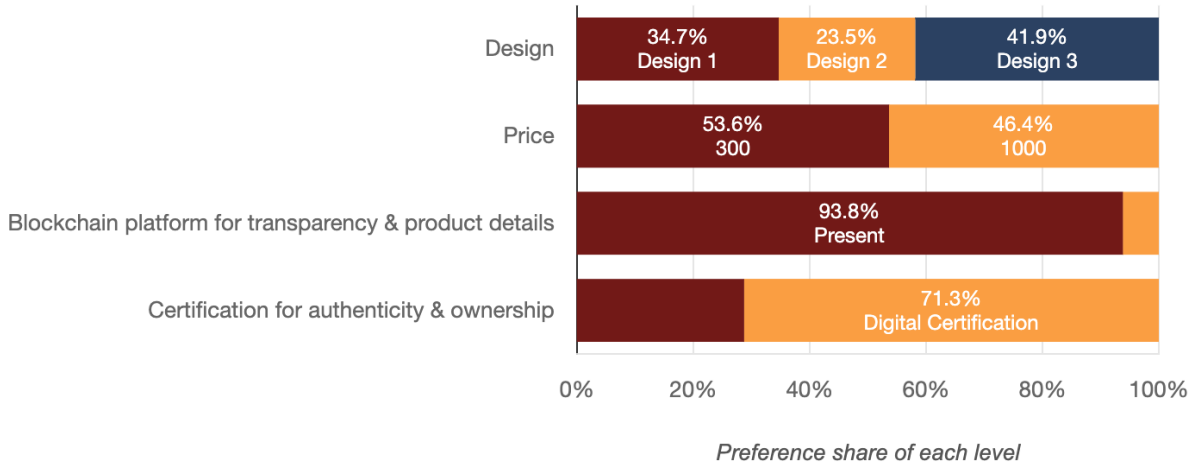
Appendix 30:Preference Levels Hermès



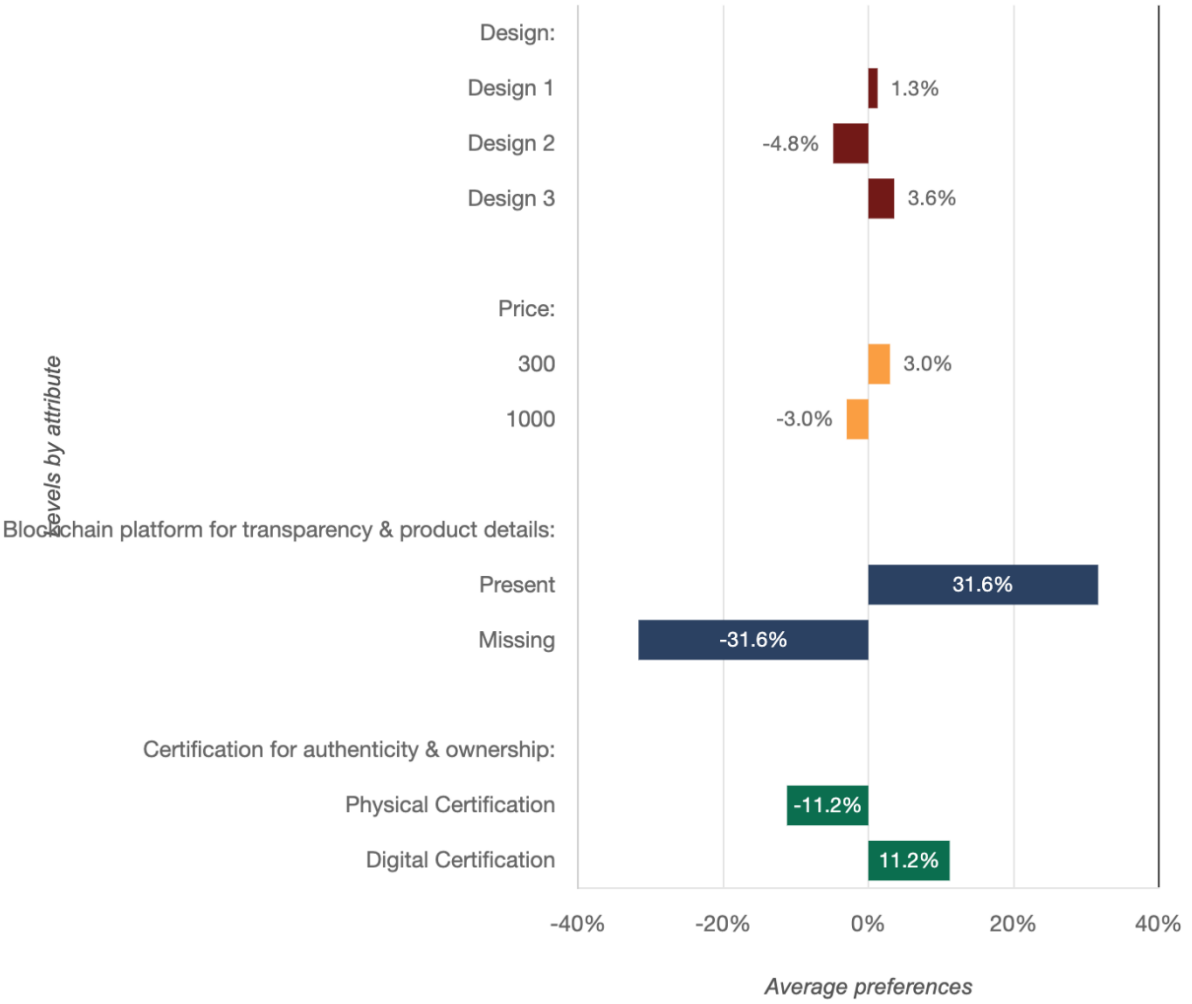
Appendix 31:Relative Importance by Levels Louis Vuitton



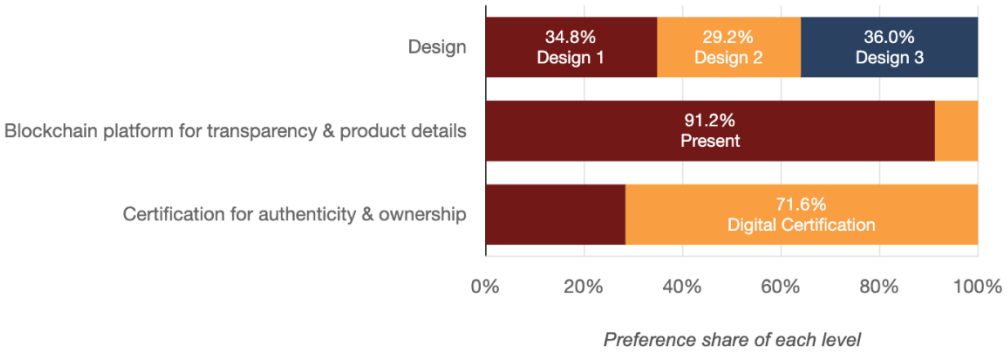
Appendix 32:Preference Levels Louis Vuitton



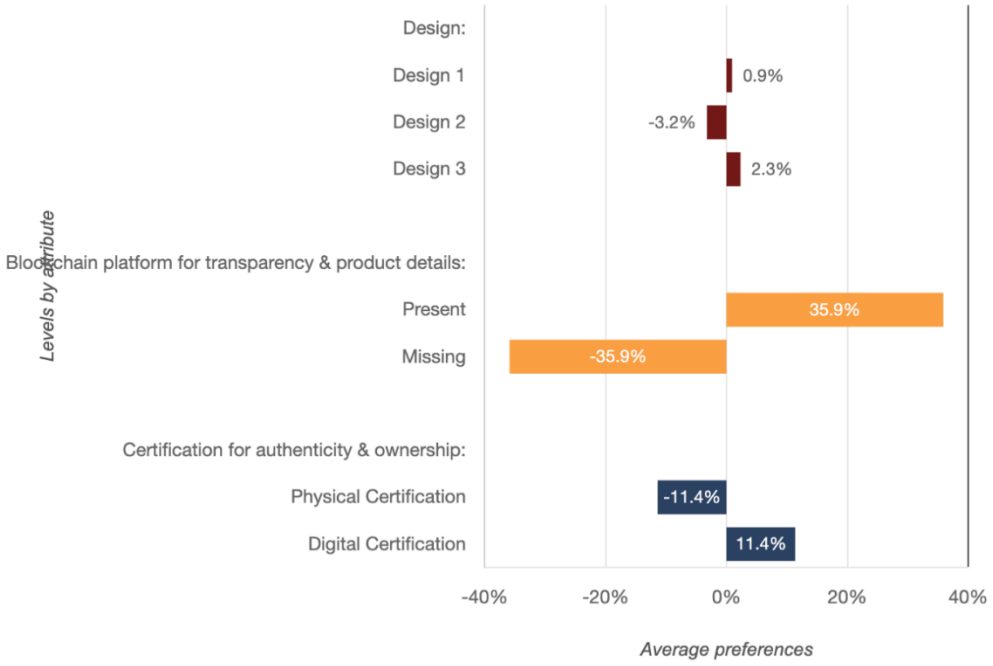
Appendix 33:Relative Importance by Levels Jacquemus



Appendix 34:Preference Levels Jacquemus



Appendix 35:Relative Importance by Levels Furla



Appendix 36:Preference Levels Furla

Appendix 37:Ranked List of Concepts

Brand	Design	Price	Blockchain platform for transparency & product details	Certification for authenticity & ownership	Value to customers	Rank
Louis Vuitton	Design 1	2500	Present	Digital Certification	63.7	1
Louis Vuitton	Design 2	2500	Present	Digital Certification	61.9	2
Louis Vuitton	Design 3	2500	Present	Digital Certification	61.5	3
Jacquemus	Design 3	300	Present	Digital Certification	46.7	4
Jacquemus	Design 1	300	Present	Digital Certification	45.1	5
Jacquemus	Design 3	1000	Present	Digital Certification	42.5	6
Jacquemus	Design 1	1000	Present	Digital Certification	40.8	7
Jacquemus	Design 2	300	Present	Digital Certification	40.8	8
Hermès	Design 1	7000	Present	Digital Certification	39.5	9
Hermès	Design 2	7000	Present	Digital Certification	36.9	10
Jacquemus	Design 2	1000	Present	Digital Certification	36.5	11
Louis Vuitton	Design 1	7000	Present	Digital Certification	36.0	12
Hermès	Design 3	7000	Present	Digital Certification	35.7	13
Louis Vuitton	Design 2	7000	Present	Digital Certification	34.2	14
Louis Vuitton	Design 3	7000	Present	Digital Certification	33.8	15
Jacquemus	Design 3	300	Present	Physical Certification	30.8	16
Jacquemus	Design 1	300	Present	Physical Certification	29.2	17
Furla	Design 3	300	Present	Digital Certification	29.2	18
Furla	Design 1	300	Present	Digital Certification	28.4	19
Jacquemus	Design 3	1000	Present	Physical Certification	26.6	20
Furla	Design 2	300	Present	Digital Certification	26.1	21
Jacquemus	Design 1	1000	Present	Physical Certification	25.0	22
Jacquemus	Design 2	300	Present	Physical Certification	24.9	23

Louis Vuitton	Design 1	2500	Present	Physical Certification	24.3	24
Louis Vuitton	Design 2	2500	Present	Physical Certification	22.5	25
Louis Vuitton	Design 3	2500	Present	Physical Certification	22.1	26
Jacquemus	Design 2	1000	Present	Physical Certification	20.7	27
Furla	Design 3	300	Present	Physical Certification	16.7	28
Furla	Design 1	300	Present	Physical Certification	16.0	29
Furla	Design 2	300	Present	Physical Certification	13.7	30
Hermès	Design 1	7000	Present	Physical Certification	11.7	31
Hermès	Design 2	7000	Present	Physical Certification	9.1	32
Hermès	Design 3	7000	Present	Physical Certification	7.9	33
Jacquemus	Design 3	300	Missing	Digital Certification	1.9	34
Jacquemus	Design 1	300	Missing	Digital Certification	0.3	35
Jacquemus	Design 3	1000	Missing	Digital Certification	-2.3	36
Louis Vuitton	Design 1	7000	Present	Physical Certification	-3.4	37
Jacquemus	Design 1	1000	Missing	Digital Certification	-3.9	38
Jacquemus	Design 2	300	Missing	Digital Certification	-4.0	39
Louis Vuitton	Design 2	7000	Present	Physical Certification	-5.2	40
Louis Vuitton	Design 3	7000	Present	Physical Certification	-5.6	41
Louis Vuitton	Design 1	2500	Missing	Digital Certification	-8.2	42
Jacquemus	Design 2	1000	Missing	Digital Certification	-8.2	43
Louis Vuitton	Design 2	2500	Missing	Digital Certification	-10.1	44
Furla	Design 3	300	Missing	Digital Certification	-10.1	45
Louis Vuitton	Design 3	2500	Missing	Digital Certification	-10.5	46
Furla	Design 1	300	Missing	Digital Certification	-10.8	47
Furla	Design 2	300	Missing	Digital Certification	-13.1	48
Jacquemus	Design 3	300	Missing	Physical Certification	-13.9	49
Jacquemus	Design 1	300	Missing	Physical Certification	-15.5	50
Jacquemus	Design 3	1000	Missing	Physical Certification	-18.1	51
Jacquemus	Design 1	1000	Missing	Physical Certification	-19.8	52
Jacquemus	Design 2	300	Missing	Physical Certification	-19.8	53
Furla	Design 3	300	Missing	Physical Certification	-22.5	54
Furla	Design 1	300	Missing	Physical Certification	-23.3	55
Jacquemus	Design 2	1000	Missing	Physical Certification	-24.1	56
Furla	Design 2	300	Missing	Physical Certification	-25.5	57
Hermès	Design 1	7000	Missing	Digital Certification	-30.0	58
Hermès	Design 2	7000	Missing	Digital Certification	-32.6	59
Hermès	Design 3	7000	Missing	Digital Certification	-33.9	60
Louis Vuitton	Design 1	7000	Missing	Digital Certification	-35.9	61
Louis Vuitton	Design 2	7000	Missing	Digital Certification	-37.7	62

Louis Vuitton	Design 3	7000	Missing	Digital Certification	-38.1	63
Louis Vuitton	Design 1	2500	Missing	Physical Certification	-47.6	64
Louis Vuitton	Design 2	2500	Missing	Physical Certification	-49.5	65
Louis Vuitton	Design 3	2500	Missing	Physical Certification	-49.9	66
Hermès	Design 1	7000	Missing	Physical Certification	-57.8	67
Hermès	Design 2	7000	Missing	Physical Certification	-60.4	68
Hermès	Design 3	7000	Missing	Physical Certification	-61.7	69
Louis Vuitton	Design 1	7000	Missing	Physical Certification	-75.3	70
Louis Vuitton	Design 2	7000	Missing	Physical Certification	-77.1	71
Louis Vuitton	Design 3	7000	Missing	Physical Certification	-77.5	72

Descriptive Statistics

	Mean	Std. Deviation	N
Gender	1.20	.403	178
ID	193942300	827461.667	178

Correlations

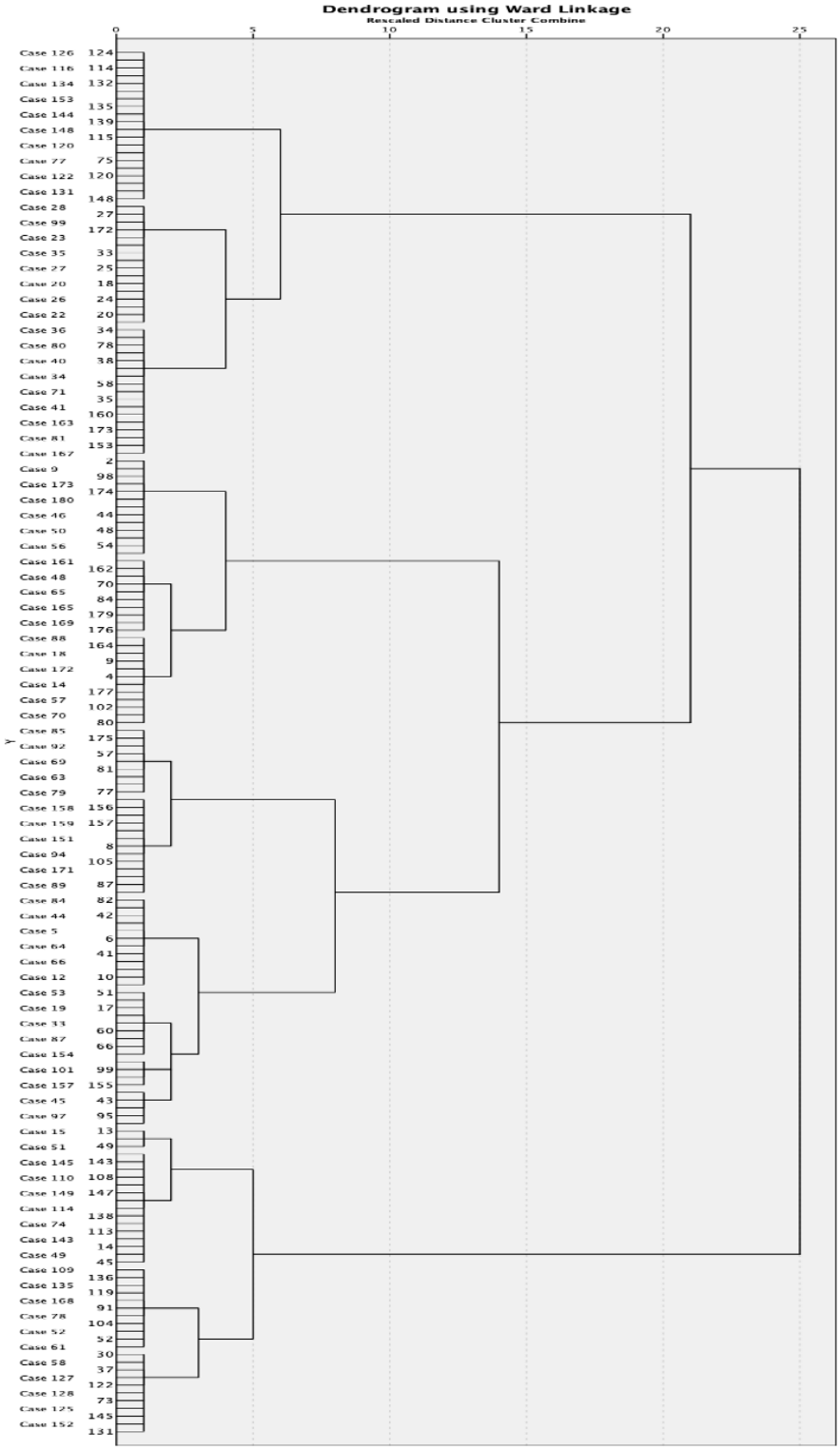
		Gender	ID
Gender	Pearson Correlation	1	.046
	Sig. (2-tailed)		.543
	N	178	178
ID	Pearson Correlation	.046	1
	Sig. (2-tailed)	.543	
	N	178	178

Appendix 38:Preliminary Analysis: Gender impact on results

Correlations

		participant_id	Age
participant_id	Pearson Correlation	1	.035
	Sig. (2-tailed)		.639
	N	177	177
Age	Pearson Correlation	.035	1
	Sig. (2-tailed)	.639	
	N	177	177

Appendix 39:Preliminary Analysis: Age impact on results



Appendix 40:Hierarchical Cluster Analysis: Dendrogram

ANOVA

	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
V2	22.180	2	.816	177	27.189	<.001
V3	2018.522	2	10.997	177	183.556	<.001
V4	2914.228	2	13.270	177	219.613	<.001
V5	4.849	2	.220	177	22.093	<.001
V6	6.009	2	1.143	177	5.256	.006
V7	4.547	2	.383	177	11.858	<.001
V8	17.191	2	1.085	177	15.843	<.001
V9	.098	2	.273	177	.357	.700
V10	5.824	2	.424	177	13.725	<.001
V11	34.444	2	.713	177	48.289	<.001
V12	28.508	2	.266	177	107.249	<.001
V13	320.466	2	1.489	177	215.270	<.001
V14	194.328	2	2.926	177	66.406	<.001
V15	884.681	2	6.435	177	137.469	<.001
V16	657.529	2	5.438	177	120.907	<.001
V17	205.031	2	2.733	177	75.020	<.001
V18	216.120	2	2.424	177	89.152	<.001
V19	1025.173	2	10.017	177	102.347	<.001
V20	418.065	2	6.378	177	65.549	<.001
V21	204.963	2	2.548	177	80.438	<.001
V22	74.742	2	.979	177	76.374	<.001

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Appendix 41:K-means cluster analysis: ANOVA

Number of Cases in each Cluster

Cluster	1	80.000
	2	54.000
	3	46.000
Valid		180.000
Missing		2.000

Appendix 42:K-means cluster analysis: Clusters total number of cases

	Cluster 1	Cluster 2	Cluster 3
Age			
Less than 18	13	1	0
[18,25]	42	10	5
[26,35]	24	20	30
[36,45]	1	19	7
Above 45	0	4	2
Gender			
Male	29	6	1
Female	51	48	43
Social Status			
Student	38	11	6
Unemployed	7	5	1
Worker	35	33	36
Pensioner	0	5	1
Country			
Portugal	18	12	6
France	16	8	8
Italy	29	12	18
Germany	12	14	8

Appendix 43:Step 3: Segmentation using Excel function "COUNTIFS"

Attribute	Trendsetter	Status Seeker	Luxury Enthusiast
Design	12%	15%	6%
Platform for transparency & product details	60%	53%	51%
Certification for authenticity & ownership	28%	32%	43%

Appendix 44:Clusters' attributes preferences for Hermès

Attribute	Trendsetter	Status Seeker	Luxury Enthusiast
Design	7%	11%	7%
Price	28%	11%	11%
Platform for transparency & product details	42%	54%	47%
Certification for authenticity & ownership	22%	24%	36%

Appendix 45:Clusters' attributes preferences for Louis Vuitton

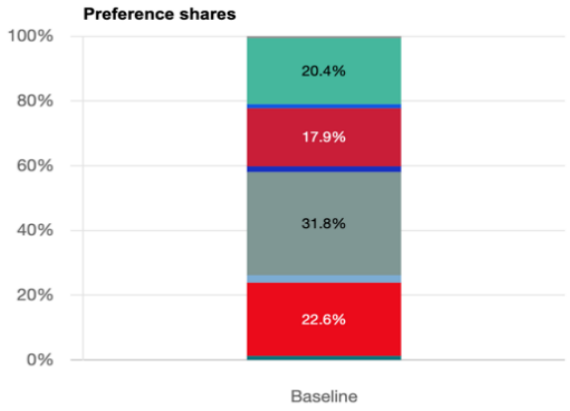
Attribute	Trendsetter	Status Seeker	Luxury Enthusiast
Design	12%	10%	9%
Price	19%	21%	15%
Blockchain platform for transparency & product details	41%	50%	51%
Certification for authenticity & ownership	28%	19%	25%

Appendix 46:Clusters' attributes preferences for Jacquemus

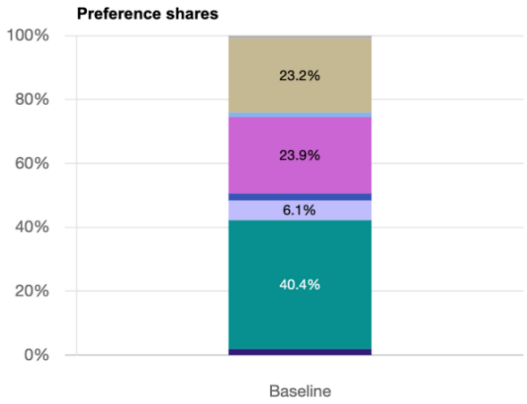
Attribute	Trendsetter	Status Seeker	Luxury Enthusiast
Design	19%	25%	14%
Platform for transparency & product details	57%	60%	61%
Certification for authenticity & ownership	24%	15%	26%

Appendix 47:Clusters' attributes preferences for Furla

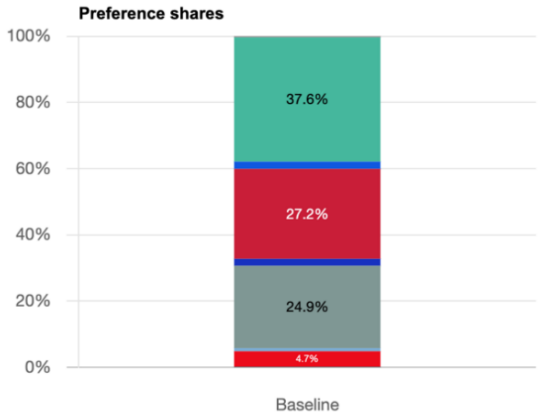
Conjoint Analysis Simulations appendix:



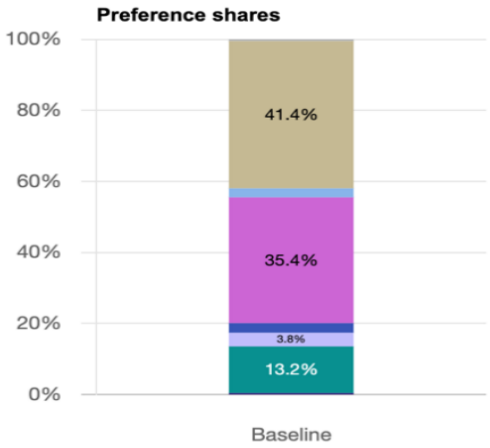
Appendix 48:Baseline All Respondents Preference Shares



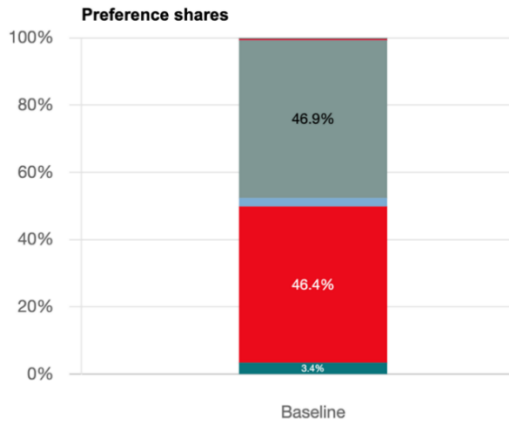
Appendix 49:Removal of most valued bag All Respondents



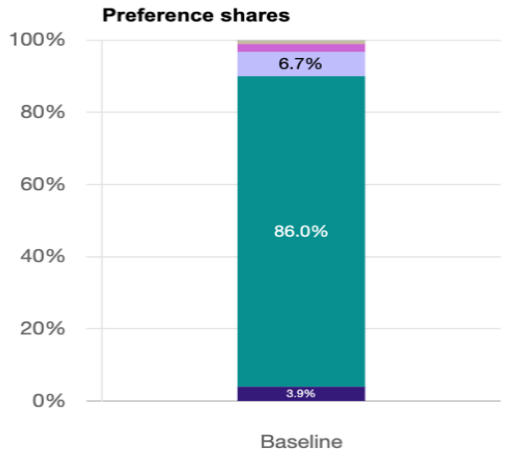
Appendix 50:Baseline Cluster 1



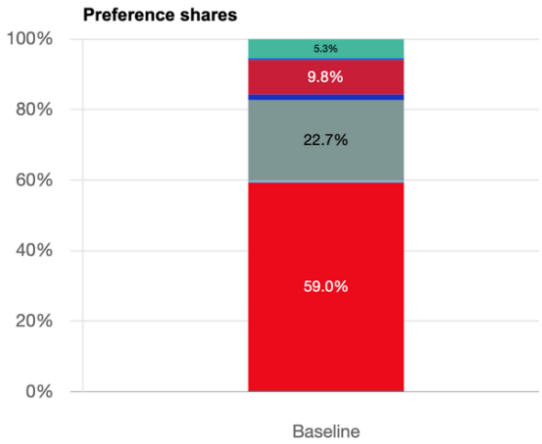
Appendix 51:Removal of most valued bag Cluster 1



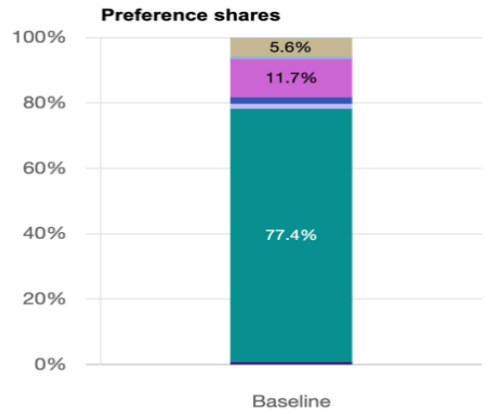
Appendix 52:Baseline Cluster 2



Appendix 53:Removal of most valued bag Cluster 2



Appendix 54:Baseline Cluster 3



Appendix 55:Removal of most valued bag Cluster 3