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Traditional and interactive display methods: do they increase sensorial shopping experience and purchase intention for luxury e-commerce?

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Dissertation report presented as partial requirement for obtaining the Master's degree in Information Management

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**TRADITIONAL AND INTERACTIVE DISPLAY METHODS: DO THEY
INCREASE SENSORIAL SHOPPING EXPERIENCE AND PURCHASE
INTENTION FOR LUXURY E-COMMERCE?**

by

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Dissertation report presented as partial requirement for obtaining the Master's degree in Information Management, with a specialization Marketing Intelligence.

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February 2022

ABSTRACT

The current research aims to understand if different display methods in luxury e-commerce can increase sensorial shopping experience and purchase intention. In particular, this study is focused on the relationship between three luxury consumers' characteristics (namely hedonic value, risk aversion and product availability), sensorial shopping experience and purchase intention when traditional and display methods are used in luxury online store. The results from the applied questionnaire completed by 200 luxury consumers show that hedonic value, risk aversion and product availability significantly affect sensorial shopping experience for both traditional and interactive display methods. However, they only have a significant effect on purchase intention when sensorial shopping experience mediates the relationships. Furthermore, this research collaborates with literature regarding luxury e-commerce and provides managerial insights on how to optimize online stores. Lastly, this study identifies opportunities for future research.

KEYWORDS

Luxury; e-commerce; purchase intention; sensorial shopping experience; traditional display; interactive display.

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1. INTRODUCTION

In the past years, the online shopping has faced a relevant increase on revenues.

According to a Statista survey, the worldwide e-retail represented 4.9 trillion US dollars in 2021 and it is expected to reach 7.4 trillion US dollars by 2025. In 2021, the online commerce represented 19.6% of the worldwide retail sales. Moreover, the global online sales are forecasted to increase significantly in the next years reaching 21% in 2022, 22.3% in 2023 and 23.4% in 2024.

Apart from that prominent scenario, for a long time luxury companies have questioned the benefits of selling online (Chevalier & Gutsatz, 2012). The companies feared that the e-retail would decrease the brand's exclusivity image and prestige since the internet, opposed to luxury, is accessible to the mass market (Okonkwo, 2007). It was considered that online stores were targeted for consumers that were interested in discounts and sales only, not being a distribution channel for high-end goods (Okonkwo, 2010). Recent studies, however, showed that the online availability of luxury goods does not reduce their perceived scarcity neither the customer's desire for the brand (Brun, Kluge & Fassnacht, 2015).

In order to maintain themselves relevant in the new market landscape, in the last years, luxury companies started to establish their online presence: first with informative-only websites and later with e-commerce. The internet environment allows companies to achieve new markets, widely spread its brand image and, consequently, increase its sales (Okonkwo, 2007). Due to their premium and scarce nature, luxury companies have physical stores in few locations around the world, but their consumers are spread through the globe, and many do not have an easy everyday access to the brand's store. Nowadays, with the advent of internet, the

luxury customer is daily connected and, unlikely before, as soon as the brand releases a new collection or new products, he is aware of it even if he did not visit the store. The consumer, in this scenario, is more tempted to buy the product by impulse and is not willing anymore to wait until having available time to visit a physical store. Thus, in case of inexistent e-commerce for the brand desired, luxury customers would seek for a similar good of another luxury brand (Okonkwo, 2007).

However, in this digital era, having an online store is not enough anymore. The luxury customers are demanding and there are significantly differences between their purchase behaviors (Liu & Burns, 2013). Opposed to other segments, luxury brands have a multisensorial and hedonic appeal, and they establish an emotional bond with their customers (Dion & Arnould, 2011). Thus, luxury goods are considered sensorial since their appreciation is better when customers physically interact with it: it involves the touch, the vision, and the smell for a complete experience (Okonkwo, 2007). But how to transmit sensorial characteristics and aesthetic environment found in bricks-and-mortar stores to an e-commerce? Creating an immersive luxury shopping experience in an online platform is the biggest challenge for the luxury companies that aim to bring traditional in-store customers to the e-retail. Many of those brands have already established an e-commerce; however, do they include the fundamental attributes to get the consumers attention enough to attract the in-store buyer? Thus, this study aims to understand to which extend having different types of display methods in luxury e-commerce increase sensorial experience and, consequently, purchase intention. Moreover, it focuses on comprehending if traditional and interactive display methods are relevant based on consumer behaviors, namely

hedonic value, risk aversion and product availability. To the author's best knowledge, no similar study has been done so far in this subject.

This study contributes both theoretically and practically by verifying the mediation role of sensorial shopping experience for both traditional and interactive display methods on the relationship between consumers' behaviors and purchase intention.

Furthermore, it assesses the significant direct effect of all three consumers' characteristics on sensorial shopping experience, for both display methods.

This paper is organized in the following sections: first, the literature review that gives theoretical support to the subjects being studied, focusing on luxury and online shopping related concepts. Next, the conceptual model and its hypothesis are defined as well as the methodology that is used. Then, the data collected is analyzed and the results, discussed. This paper ends with the conclusion of the research, describing its limitations and recommendations for future research.

2. LITERATURE REVIEW

2.1. LUXURY BRANDS

Consumer behavior theory states that, we are what we have (e.g., Van Esterick, 1986) and that consumers' possessions are parts of themselves, reflecting their identities (Belk, 1988). Over the past decades, extensive literature review show that the consumption behavior of luxury goods has both intrinsic and extrinsic motives (e.g., Vigneron & Johnson, 1999, 2004). The former is related to emotions, internal self-fulfillment and self-perception motives (e.g., Amatulli & Guido 2011, Truong & McColl 2011, Tsai 2005), while the latter considers others' opinion towards the consumer as the main purchase motivation, such as status and social positioning, also known as conspicuous consumption (e.g., Bearden & Etzel 1982, Truong, Simmons, McColl & Kitchen 2008, Truong & McColl 2011).

Luxury brands differentiate themselves from others by providing psychological benefits, such as social recognition and self-esteem (Vickers & Renand, 2003).

Moreover, the consumption of those brands is related to the emotional values and intangible benefits they provide (e.g., Dubois & Laurent 1994, Hagtvedt & Patrick 2009). The delivered strong emotional benefits, such as the hedonic potential, can even transcend to new products categories developed over time, leading to a higher evaluation of brand extension by consumers (Hagtvedt & Patrick 2009).

More than high quality products, luxury brands symbolize and sell dreams (e.g., Chandon, Laurent & Valette-Florence, 2016). They provide hedonic pleasure to their consumers by offering multi-sensory products related to positive feelings and emotions, such as fun and excitement (Dubois & Paternault 1995, Hagtvedt and Patrick

2009, Hirschman & Holbrook, 1982). Vigneron and Johnson (2004) state that those emotional benefits are the main characteristics that differentiates luxury goods from other categories of products, and not the utilitarian benefits that they might have. Due to its hedonic benefits, luxury products are considered sensorial goods, involving the senses of touch, sight and smell to be completely appreciated. (Okonkwo, 2007). For this reason, luxury brands have been intensively investing in a multi-sensory shopping experience in their physical stores, where the consumer can aesthetically and sensorially fully enjoy the product and the store's environment. According to Dubois and Paternault (1995), awareness positively affects the dream potential of a luxury brand, while diffusion has a negative effect, thus, to maintain themselves successful and to keep a high level of the dream factor, luxury companies must have a strong level of awareness and a controlled diffusion (Phau & Prendergast, 2000).

2.2. LUXURY BRANDS' BRICK-AND-MORTAR STORES

The literature regarding stores' aesthetics gives evidence that physical stimuli provided at the environment influences the consumer experience and behaviors (Turley & Milliman, 2000). In the past years, luxury stores have transcended their main objective of selling goods and have become art institutions, having their products displayed alongside art objects, providing an immersive retail experience (Joy, Wang, Chan, Sherry Jr & Cui, 2014). Godey, Lagier and Pederzoli (2009) explore the sensory pleasure obtained through the luxury goods consumption. According to their study, luxury consumers are sensitive regarding the shop aesthetic, resulting in emotions such as joy and energy. Consequently, purchase decisions of luxury products are

intensively influenced by perceived hedonic values that a highly aesthetic shopping environment can provide (Atwal & Williams 2009, Spence, Puccinelli, Grewal & Roggeveen 2014).

Thus, luxury brands must provide a complete retail experience that coordinates the store's aesthetics, such as design and music, with the brand's identity and heritage, to promote their products and reinforce brand image, increasing hedonic pleasure (Dion & Arnould 2011, Dion & Borraz 2015, Hagtvedt & Patrick 2009). Offering a multi-sensory brand experience is a fundamental component for luxury brands' sales strategy (Brakus, Schmitt & Zarantonello 2009, Joy & Sherry Jr 2003).

2.3. ONLINE SHOPPING

According to Dubois and Paternault (1995), awareness increases the dream value of luxury brands, however, an excess of buyers would decrease this effect. So how to properly communicate them without losing their aura of exclusivity? For many years, luxury brands have feared and avoided to enter the online environment (Chevalier and Gutsatz, 2012).

However, being in the online environment became compulsory for luxury brands as customers have a lack of disposable time and aim for convenience (Brun et al., 2015). Nonetheless, even when a purchase does not happen in the online environment, the internet is present in at least one step of the customer's journey: when searching for information regarding the product or when considering the available alternatives, for example (e.g., Häubl & Trifts 2000, Holmes, Byrne & Rowley 2014).

Nowadays, although most of the luxury brands have at least a website, the internet related issues and concerns remain being extremely significant. Questions from how to adequate brand's communication to how to design the e-commerce are still needing a concrete answer for the appropriate definition of managerial actions.

Apart from the large availability of research about luxury and its concept and values, there is a lack of studies with regards to luxury brands in the online environment, specially related to e-commerce. Authors also have different opinions about how the brands should approach this more recent scenario. For example, Chandon, Laurent and Valette-Florence (2016) believe that luxury brands require certain characteristics from the consumers, such as education and developed taste, to be properly appreciated and that the internet is rapidly moving luxury brands to new markets, without considering those required customers' attributes. Okonkwo (2007), on the contrary, believes that expanding the brands' presence to new markets can increase brand awareness, leading to higher sales volume. The author states that consumers that are not able to easily purchase from the luxury brand that they desire, buy from the competitor, instead of waiting the availability. Furthermore, Brun et al. (2015, p. 933) argues that "the internet has the potential to spread the brand's dream and attract new customers but still keep the sense of exclusivity by offering selective online content and services to the brand's loyal customers".

In order to find answers for the internet related issues, some studies have been done in the past years. Brun, Kluge and Fassnacht (2015) focused their study on the effects of online accessibility and price display for luxury brands. Their results indicate that the online availability of luxury goods does not reduce their perceived scarcity neither minimizes the consumers' desire for the brand.

Liu and Burns (2013) described the differences between the online and in-store luxury consumers. It was notice that the two groups of customers value different attributes when purchasing luxury goods. Online consumers use this channel due to its convenience and larger product availability. Furthermore, this type of client has higher online trust and uses the internet to compare prices before buying. The in-store buyers, on the contrary, value store's aesthetic, shopping experience, customer service and trust in the store as important characteristics when buying a luxury good. More than being present in the online environment, luxury brands face the challenge of reproducing the aesthetic store environment and its sensorial attributes to the e-commerce, creating an immersive shopping experience that provides the desired hedonic values for luxury consumers (Okonkwo 2010, Kim, Choi & Lee 2015). One of the most relevant difficulties related to establishing effective luxury brands' e-commerce is the difficulty in bringing the sensorial characteristics of the products and increasing the luxury perception in the online environment. Beuckels and Hudders (2016) studied the impact of image interactivity on the online shopping. The authors found that this telepresence tool increases customers' perceptions of exclusivity and quality, for example, compensating the sensory loss. Furthermore, Altarteer, Charissis, Harrison and Chan (2013) studied the impact of interactive virtual reality shopping for luxury goods. A 3D real-time visualization and interaction system was developed to be used over the traditional 2D images and videos and tested by a group of luxury consumers. It was concluded that the use of a 3D system would increase purchase intention by enabling a better visualization of the functional and aesthetic attributes of the product and reducing the perceived associated risks.

3. CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

3.1. CONSUMERS' SHOPPING BEHAVIOURS: HEDONIC VALUE, PRODUCT AVAILABILITY AND RISK AVERSION

Literature review states that, more than selling products, luxury brands provide psychological benefits to their consumers (Vickers & Renand, 2003) and that, apart from luxury goods' utilitarian features, the delivered emotional benefits are the attributes that differentiate them from other types of products (Vigneron & Johnson, 2004). Thus, the consumption of luxury products is directly associated with hedonic pleasure (Dubois & Paternault, 1995); and hedonic goods are multi-sensory that provide positive emotions, such as joy and pleasure (Hirschman & Holbrook, 1982).

Wiedmann, Hennigs and Siebels (2009) have classified on a value-based segmentation luxury consumers' behaviors and concluded that hedonic value was present in all clusters of consumers, however in different levels.

Apart from having the common trait of valuing hedonic pleasure in the purchase process, luxury consumers can be differentiated from one another and categorized into online and in-store buyer segments. Brun, Liu, Burns and Hou (2013) conducted preliminary studies to comprehend the different behaviour of those two groups of luxury consumers:

Online luxury shoppers are price-conscious, prefer the online product availability and have a higher level of trust towards online customer reviews.

In-store shoppers who are more averse to online risks find it very important to

see the product personally before the purchase and value shopping experience and interactions. (Brun et al., 2013, p. 885)

On the one hand, for the online luxury shoppers that value product availability provided by the ecommerce, Brun, Liu, Burns and Hou (2013) noticed that they prefer the online store since the brick-and-mortar ones are restricted to few geographical locations and have limited offer and variety of products.

On the other hand, the in-store buyers lack of internet trust, refraining them to take advantage of the e-commerce (Chong, Yang & Wong, 2003) and its benefits such as product availability and convenience. Due to their risk aversion, to be able to see and to touch the product in the physical store is highly important to them to minimize their fear (Brun, Liu, Burns & Hou, 2013).

3.2. THE EFFECT OF DIFFERENT DISPLAY METHODS ON SENSORIAL SHOPPING EXPERIENCE AND PURCHASE INTENTION

Luxury goods are known for being fully appreciated when consumers physically interact with them, which explains the importance of the store aesthetic environment for an immersive shopping experience (Okonkwo, 2007).

However, in the online shopping context, there is a loss of sensorial experience, of interaction with the product and of human contact. To gain a better understanding of how to decrease those online issues and improve satisfaction, online trust and purchase process, some studies have been done in the past years, mostly related to product categories in general and not to the luxury market.

As an example, the effect of social presence in e-commerce have been studied as a way of reducing the lack of emotion and social appeal. Hassanein and Head (2005, 2007) have measured the impact of different degrees of social presence in online sales for both apparel and headphones and concluded that an increased level of social presence positively influences usefulness, trust, and enjoyment for apparel websites. Moreover, it was notice that this effect depends on the category of the product, not being noticed for headphones (Hassanein & Head, 2007).

For apparel ecommerce, Kim, Kim and Lennon (2009) concluded that the use of real model as display method leads to higher positive emotional response than when the clothes were presented flat.

For this study “Traditional Display” is defined as the use of photos of a model wearing the product in the luxury online store.

- **H1:** *The higher the hedonic value level of a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

Still regarding social presence, Cyr, Head, Larios and Pan (2009) have studied the effect of human images in website design and concluded that higher perceived social presence will result in higher levels of trust.

- **H2:** *The higher the risk aversion level of a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

Khakimdjanova and Park (2005) analysed visual merchandising practices on existing apparel e-commerce and concluded that only 40% of them used human models to display their products, which was found to be the best display method in previous studies (e.g., Then & DeLong, 1999). For those consumers looking for product availability and the consequent possibility to compare the variety of products in detail, it can be proposed that:

- ◆ **H3:** *The more important product availability is for a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

In terms of visual aspects of a sensorial experience, Kim, Fiore and Lee (2007) “show that respondents exposed to a higher level of image interactivity, in the form of a 3D virtual model, expressed higher levels of shopping enjoyment, shopping involvement, and more positive online store environment perceptions as compared to respondents exposed to a lower level of image interactivity” (p. 104).

Moreover, Beuckels and Hudders (2016) have performed an experimental study regarding the impact of image interactivity on the luxury perception in an e-commerce context. It was concluded that the luxury perception of the product was higher when using interactive image when compared to traditional non-interactive 2-dimensional image.

For this study “Interactive Display” is defined as the use of interactive 3D images of the product in the luxury online store.

Based on those statements, it can be proposed the following hypothesis:

- **H4:** *The higher the hedonic value level of a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

Park, Lennon and Stoel (2005) stated that the use of 3D images for apparel ecommerce reduces the doubts related to the online purchase and associated perceived risk while increasing the purchase intention. Furthermore, Kim and Forsythe (2008) found that apart from increasing hedonic pleasure in the online shopping, 3D images minimize risk perceptions.

- **H5:** *The higher the risk aversion level of a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

On their study, Kim and Forsythe (2008) assess that the use of 3D images for apparel enables the consumer to better visualize the available product options and evaluate their attributes, especially for sensory goods. The use of 3D images also leads to increased consumer's product knowledge, enabling a better comparison between the available options (Li, Daugherty & Biocca, 2002).

- **H6:** *The more important product availability is for a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the*

ecommerce, and this effect is mediated through a higher sensorial shopping experience.

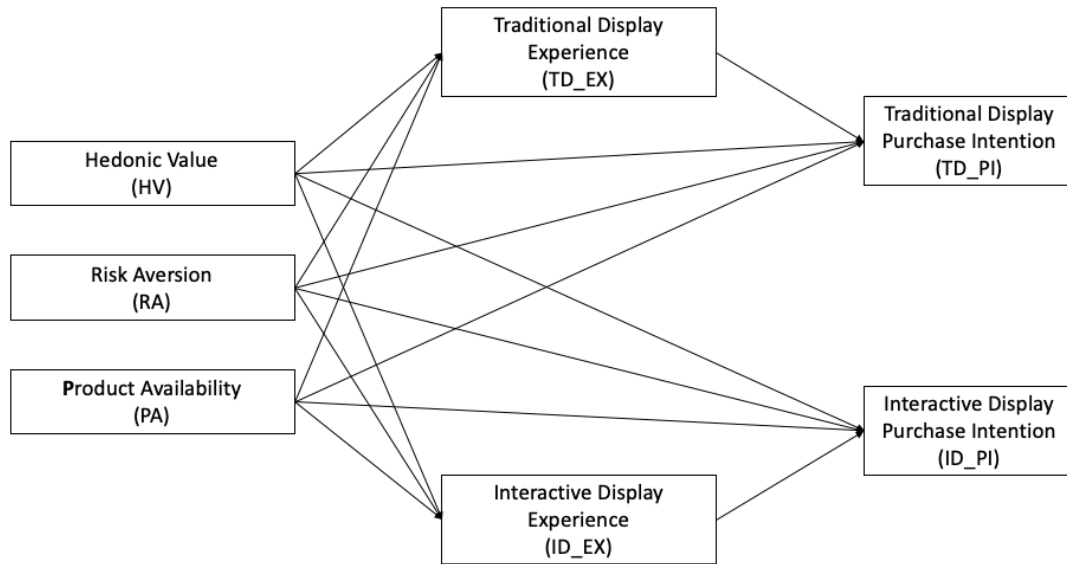


Figure 1. Conceptual Model

Thus, the proposed conceptual model, detailed in Figure 1, aims to understand if different display methods (traditional and interactive) increase purchase intention and sensorial shopping experience, depending on consumer's behaviors.

4. METHODOLOGY

4.1. OBJECTIVES AND STRUCTURE

To test the proposed hypotheses, described in the section above and based on extent literature review, a quantitative and conclusive approach was chosen for this study methodology. It consisted in the development and application of a questionnaire to obtain conclusions by assessing consumers behaviors and perceptions towards different online display methods, sensorial shopping experience and purchase intention. It had the objective of accept or reject the proposed hypothesis by measuring and understanding the effect of traditional and interactive display methods on purchase intention and sensorial shopping experience, depending on consumers' characteristics and behaviors.

The survey consisted of a qualifying question and five blocks of questions (full questionnaire in Appendix 1). Each of the initial two blocks aims to understand how each e-commerce display method influences consumers' sensorial shopping experience and their purchase intention (1. traditional display, 2. interactive display). The third block aims to measure the consumer's hedonic value levels associated to the luxury purchase process. Next, the fourth block of questions is focused on the respondent's shopping characteristics and behaviors, based on previous studied measures used to classify consumers into online or in-store category: for this study, it was selected product availability and risk aversion. Lastly, three demographic questions are proposed.

4.2. SAMPLE

The procedure to collect the data was a questionnaire developed using Qualtrics, and the online link was sent to researcher's personal contacts, NOVA IMS University students and employees from a marketing agency. In order to obtain significant number of valid answers, participants were also selected using Prolific recruitment tool. Since the respondents needed to be luxury consumers, the survey started with a qualifying question to ensure that the participant fulfilled this requirement.

A total of 440 people clicked on the survey link, of which 263 (60%) were qualified for the study since they were classified as luxury consumers by the qualifying initial question (participants responded "Yes" to "In the last three years, have you bought any luxury brand products, such as Louis Vuitton, Rolex, Chanel, BMW, Hermès, Armani, Burberry, Dom Perignon Rose and so on?").

Out of those 263 luxury respondents, 200 completed the survey, leading to a 76% response rate. Among those 200 respondents, the majority were women (57%) and most of the ages ranged from 18 to 34 (76%).

4.3. MEASURES AND SCALES

4.3.1. Display Methods

For each studied display method, similar questions were proposed to measure their impact on the consumers' sensorial shopping experience and purchase intention. To understand if the proposed display methods increase the sensorial shopping experience, existing measurements and scales provided by literature review were adapted to fit the context (e.g., Ghani, Supnick & Rooney 1991, Babin, Darden & Griffin

1994, Hirschman & Holbrook 1982, Vigneron & Johnson 2004, Igbaria, Iivari & Maragahh 1995, Batra & Ahtola 1991). For purchase intention, it was used Taylor and Baker (1994). Further reading was used for the measurement adaption for specific display methods (e.g., Van der Heijden 2004, Kim, Fiore & Lee 2007, Dennis, King, Kim & Forsythe 2007). The items were measured using seven-point Likert scale (from completely agree to completely disagree).

4.3.2. Hedonic Value

For measuring consumers' level of hedonic value in the purchase process of luxury goods, measurements were from or adapted from Choo, Moon, Kim and Yoon (2012), Shukla (2012), Shukla and Purani (2012) and Spangenberg, Voss and Crowley (1997). The statements were measured using seven-point Likert scale (from completely agree to completely disagree).

4.3.3. Customer Characteristics and Behaviors

Also, to assess consumer's characteristics and shopping behaviors, two measurements used to segment buyers into online and in store categories were used: product availability and risk aversion. The adopted measurements were sourced by previous study made by Brun, Liu, Burns and Hou (2013) that used diverse constructs from Darden and Perreault (1976), Donthu and Garcia (1999), Rohm and Swaminathan (2004) and De Wulf, Odekerken-Schroder and Jacobucci (2001). It was used the seven-point Likert scale (from completely agree to completely disagree) to measure variables.

5. DATA ANALYSIS AND RESULTS

5.1. OVERVIEW

This chapter aims to present the data analysis and the findings of this study. The chosen approach used for the data analysis was the structural equation modeling (SEM) using the partial least squares (PLS) to estimate the cause-effect relationship of the path modeling method. It was conducted with Smart PLS software, and it included both PLS algorithm and bootstrapping methods.

The data analysis is divided into two parts: the measurement model and the structural model. First, the measurement model evaluates the quality of the model and establishes the reliability and validity of its constructs. Afterwards, the structural model is validated. It assesses the relationship between variables and provides hypotheses results.

5.2. MEASUREMENT MODEL

5.2.1. Factor Loadings

Factor loadings indicate the correlation between a construct and its indicators, measuring the importance of the indicator on representing the construct, and they can vary from -1.0 to +1.0. According to Vinzi, Chin, Henseler and Wang (2010), the desirable value should be greater than 0.7; however, the recommended threshold varies by writer and for Hair, Black, Babin and Anderson (2009), for example, any value above 0.5 is significant.

Factor loadings are presented in table 1. As it can be noticed, four out of 23 factor loadings were below the minimum value of 0.7; however, they are greater than 0.6.

Thus, they do not significantly impact the model overall reliability and validity, as it is shown in the next sections. Nevertheless, HV1, for being below 0.6 was deleted to improve the model.

Table 1. Factor Loadings

	Hedonic Value	Interactive Display - Purchase Intention	Interactive Display - Experience	Product Availability	Risk Aversion	Traditional Display - Purchase Intention	Traditional Display - Experience
HV1	0.556						
HV2	0.715						
HV3	0.685						
HV4	0.807						
HV5	0.672						
HV6	0.756						
HV7	0.633						
ID_EX1			0.908				
ID_EX2			0.917				
ID_EX3			0.885				
ID_PI1		0.942					
ID_PI2		0.936					
PA1				0.835			
PA2				0.875			
PA3				0.827			
RA1					0.879		
RA2					0.856		
RA3					0.628		
TD_EX2							0.890
TD_EX3							0.871
TD_PI1						0.939	
TD_PI2						0.944	
TD_EX1							0.876

5.2.2. Collinearity

Multi-collinearity in the indicators can be measured by Variance Inflation Factor (VIF) and the usual recommended threshold is 5 (e.g., Craney & Surles, 2002).

The table below presents the VIF values for the indicators. As it can be seen, all values are less than 5, meaning the indicators are within the recommended threshold.

Table 2. VIF

		VIF
Hedonic Value	HV2	1.936
	HV3	1.539
	HV4	1.796
	HV5	1.466
	HV6	2.270
	HV7	1.560
Interactive Display - Experience	ID_EX1	2.679
	ID_EX2	2.769
	ID_EX3	2.322
Interactive Display - Purchase Intention	ID_PI1	2.397
	ID_PI2	2.397
Product Availability	PA1	1.814
	PA2	2.035
	PA3	1.542
Risk Aversion	RA1	1.574
	RA2	1.559
	RA3	1.264
Traditional Display - Experience	TD_EX1	2.147
	TD_EX2	2.214
	TD_EX3	1.971
Traditional Display - Purchase Intention	TD_PI1	2.482
	TD_PI2	2.482

5.2.3. Reliability

Construct reliability can be determined by Cronbach's Alpha and Composite Reliability and their values need to be higher than 0.7 to assess reliability (e.g., Nunnally & Bernstein 1994, Hair, Black, Babin, Anderson & Tatham 2010).

As it can be noticed in table 3 below, each construct has Cronbach's Alpha ranging from 0.719 to 0.887 and Composite Reliability from 0.835 to 0.940, all above the recommended value of 0.7; thus, the model has no reliability issues.

Table 3. Reliability (Cronbach's Alpha and Composite Reliability)

	Cronbach's Alpha	Composite Reliability
Hedonic Value	0.825	0.871
Interactive Display - Purchase Intention	0.866	0.937
Interactive Display - Experience	0.887	0.930
Product Availability	0.801	0.883
Risk Aversion	0.719	0.835
Traditional Display - Purchase Intention	0.872	0.940
Traditional Display - Experience	0.853	0.910

5.2.4. Validity

Construct validity in a PLS-SEM analysis is defined by both convergent validity and discriminant validity, as described below:

Convergent Validity

Convergent validity is assessed when the Average Variance Extract (AVE) is greater than 0.5 (Fornell & Larcker, 1981). Table 4 presents the AVE values for each of the constructs, and it can be noticed that all constructs have values above the cut-off value of 0.5, assessing convergent validity.

Table 4. Convergent Validity (AVE)

	Average Variance Extracted (AVE)
Hedonic Value	0.530
Interactive Display - Purchase Intention	0.882
Interactive Display - Experience	0.816
Product Availability	0.715
Risk Aversion	0.633
Traditional Display - Purchase Intention	0.886
Traditional Display - Experience	0.772

Discriminant Validity

To establish discriminant validity for the model, three methods were used:

- *Fornell-Larcker Criterion*

According to this technique, discriminant validity is established when the square root of AVE for a specific construct is greater than its correlation with the other constructs (Fornell & Larcker, 1981). The values in the diagonal, in bold, represent the square root of AVE, while the remaining values represent the correlation between the constructs. In table 5, it can be seen that all values underneath the square roots are smaller than the ones in bold, as required to assess validity.

Table 5. Fornell-Larcker Criterion

	Hedonic Value	Interactive Display - Purchase Intention	Interactive Display - Experience	Product Availability	Risk Aversion	Traditional Display - Purchase Intention	Traditional Display - Experience
Hedonic Value	0.728						
Interactive Display - Purchase Intention	0.276	0.939					
Interactive Display – Experience	0.329	0.795	0.903				
Product Availability	0.177	0.300	0.306	0.846			
Risk Aversion	0.158	0.190	0.278	0.114	0.796		
Traditional Display - Purchase Intention	0.313	0.275	0.209	0.159	0.106	0.941	
Traditional Display - Experience	0.385	0.289	0.328	0.215	0.217	0.723	0.879

- Cross Loadings

Another technique to assess discriminant validity, cross loadings verify if the individual items of a construct have greater loadings values on its parent construct than in other constructs. If the particular item has lower loading in its parent construct than in another construct, there are issues related to discriminant validity.

Table 6 provides the cross loadings of each item per construct, and it can be noticed that discriminant validity is established.

Table 6. Cross Loadings

	Hedonic Value	Interactive Display - Purchase Intention	Interactive Display - Experience	Product Availability	Risk Aversion	Traditional Display - Purchase Intention	Traditional Display - Experience
HV2	0.715	0.126	0.164	0.047	-0.017	0.200	0.246
HV3	0.707	0.106	0.197	0.034	0.148	0.288	0.318
HV4	0.812	0.352	0.352	0.174	0.162	0.250	0.314
HV5	0.699	0.252	0.318	0.213	0.106	0.232	0.302
HV6	0.768	0.125	0.163	0.130	0.133	0.194	0.268
HV7	0.660	0.148	0.147	0.134	0.127	0.179	0.199
ID_EX1	0.255	0.744	0.908	0.248	0.228	0.120	0.234
ID_EX2	0.390	0.729	0.917	0.333	0.235	0.278	0.363
ID_EX3	0.240	0.678	0.884	0.244	0.295	0.163	0.288
ID_PI1	0.243	0.941	0.762	0.272	0.172	0.270	0.279
ID_PI2	0.276	0.936	0.730	0.291	0.186	0.245	0.263
PA1	0.139	0.270	0.233	0.835	0.090	0.094	0.166
PA2	0.182	0.246	0.264	0.875	0.163	0.143	0.170
PA3	0.128	0.246	0.277	0.827	0.040	0.163	0.206
RA1	0.137	0.174	0.271	0.151	0.879	0.098	0.212
RA2	0.129	0.191	0.256	0.101	0.856	0.077	0.154
RA3	0.114	0.046	0.078	-0.053	0.628	0.084	0.152
TD_EX2	0.422	0.262	0.285	0.219	0.184	0.614	0.890
TD_EX3	0.320	0.274	0.327	0.198	0.281	0.638	0.871
TD_PI1	0.307	0.254	0.196	0.123	0.106	0.939	0.665
TD_PI2	0.282	0.263	0.198	0.176	0.094	0.944	0.695
TD_EX1	0.269	0.224	0.251	0.146	0.101	0.656	0.876

- Heterotrait-Monotrait Ratio (HTMT)

The third technique to establish discriminant validity and to complement the previous analysis is the Heterotrait-Monotrait Ratio (HTMT) which measures the correlation between the constructs. The most commonly used limit values for HTMT are 0.85 or 0.9, depending on how different constructs' concepts are from each other (Henseler, Ringle & Sarstedt, 2015). Nonetheless, table 7 shows that, except from "Interactive Display – Purchase Intention" versus "Interactive Display – Experience" which is slight above the threshold (similar constructs), all values are lower than 0.9, assessing discriminant validity.

Table 7. Heterotrait-Monotrait Ratio (HTMT)

	Hedonic Value	Interactive Display - Purchase Intention	Interactive Display - Experience	Product Availability	Risk Aversion	Traditional Display - Purchase Intention	Traditional Display - Experience
Hedonic Value							
Interactive Display - Purchase Intention	0.299						
Interactive Display - Experience	0.354	0.906					
Product Availability	0.207	0.361	0.360				
Risk Aversion	0.213	0.217	0.317	0.174			
Traditional Display - Purchase Intention	0.361	0.316	0.235	0.188	0.136		
Traditional Display - Experience	0.446	0.335	0.375	0.257	0.273	0.839	

5.3. STRUCTURAL MODEL

Having the measurement model validated, the structural model assesses the relationship between variables, testing the proposed hypotheses.

H1: *The higher the hedonic value level of a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

- **H1a:** *Hedonic value has a significant impact on purchase intention when traditional display is used*
- **H1b:** *Hedonic value has a significant impact on sensorial shopping experience when traditional display is used*
- **H1c:** *Sensorial shopping experience mediates the relationship between hedonic value and purchase intention when traditional display is used*

In table 8, it can be noticed that Hedonic Value does not affect Traditional Display – Purchase Intention ($\beta=0.045$, $t=0.887$, $p=0.375$), but that Hedonic Value affects Traditional Display – Experience ($\beta=0.337$, $t=5.721$, $p=0.000$). Thus, **H1a** is not supported, however **H1b** is supported.

Also, by analyzing the specific indirect effect on table 9, Traditional Display – Experience has a significant mediation effect over the relationship Hedonic Value -> Traditional Display – Purchase Intention ($\beta=0.242$, $t=5.551$, $p=0.000$). Thus, it can be affirmed that there is a complete mediation effect and that **H1c** is supported.

Table 8. H1 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Hedonic Value -> Traditional Display – Purchase Intention	0.045	0.046	0.051	0.887	0.375
Hedonic Value -> Traditional Display – Experience	0.337	0.344	0.059	5.721	0.000
Traditional Display – Experience -> Traditional Display – Purchase Intention	0.717	0.715	0.051	14.116	0.000

Table 9. H1 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Hedonic Value -> Traditional Display – Experience -> Traditional Display – Purchase Intention	0.242	0.245	0.044	5.551	0.000

H2: *The higher the risk aversion level of a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

- **H2a:** *Risk aversion has a significant impact on purchase intention when traditional display is used*
- **H2b:** *Risk aversion has a significant impact on sensorial shopping experience when traditional display is used*
- **H2c:** *Sensorial shopping experience mediates the relationship between risk aversion and purchase intention when traditional display is used*

In table 10, it can be noticed that Risk Aversion does not affect Traditional Display – Purchase Intention ($\beta=-0.057$, $t=1.039$, $p=0.299$), however it does affect Traditional Display – Experience ($\beta=0.148$, $t=2.183$, $p=0.029$). Thus, it can be concluded that **H2a** is not supported; however, **H2b** is supported.

The mediation role of Traditional Display – Experience in the relationship was confirmed ($\beta=0.106$, $t=2.168$, $p=0.030$), supporting **H2c** with a complete mediation.

Table 10. H2 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Risk Aversion -> Traditional Display – Purchase Intention	-0.057	-0.052	0.055	1.039	0.299
Risk Aversion -> Traditional Display – Experience	0.148	0.148	0.068	2.183	0.029
Traditional Display – Experience -> Traditional Display – Purchase Intention	0.717	0.715	0.051	14.116	0.000

Table 11. H2 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Risk Aversion -> Traditional Display – Experience -> Traditional Display – Purchase Intention	0.106	0.105	0.049	2.168	0.030

H3: *The more important product availability is for a consumer, the higher it is his purchase intention of luxury goods when a traditional display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

- **H3a:** *Product availability has a significant impact on purchase intention when traditional display is used*
- **H3b:** *Product availability has a significant impact on sensorial shopping experience when traditional display is used*
- **H3c:** *Sensorial shopping experience mediates the relationship between product availability and purchase intention when traditional display is used*

In table 12, it can be noticed that Product Availability does not affect Traditional Display – Purchase Intention ($\beta=0.004$, $t=0.065$, $p=0.948$), however it does affect Traditional Display – Experience ($\beta=0.138$, $t=2.134$, $p=0.033$). Thus, while **H3a** is not supported, **H3b** is.

The indirect effect analysis shows that Traditional Display – Experience has a significant impact on Product Availability -> Traditional Display – Purchase Intention ($\beta=0.099$, $t=2.111$, $p=0.035$), supporting **H3c** due to a complete mediation effect.

Table 12. H3 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Product Availability -> Traditional Display – Purchase Intention	0.004	0.004	0.061	0.065	0.948
Product Availability -> Traditional Display – Experience	0.138	0.140	0.065	2.134	0.033
Traditional Display – Experience -> Traditional Display – Purchase Intention	0.717	0.715	0.051	14.116	0.000

Table 13. H3 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Product Availability -> Traditional Display – Experience -> Traditional Display – Purchase Intention	0.099	0.100	0.047	2.111	0.035

H4: *The higher the hedonic value level of a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

- **H4a:** *Hedonic value has a significant impact on purchase intention when interactive display is used*
- **H4b:** *Hedonic value has a significant impact on sensorial shopping experience when interactive display is used*
- **H4c:** *Sensorial shopping experience mediates the relationship between hedonic value and purchase intention when interactive display is used*

For H4, the results in table 14 shows that Hedonic Value does not influence Interactive Display – Purchase Intention ($\beta=0.013$, $t=0.243$, $p=0.808$), however it does affect Interactive Display – Experience ($\beta=0.254$, $t=4.034$, $p=0.000$). Thus, it can be concluded that **H4a** is not support but that **H4b** is supported.

Also, by analyzing the specific indirect effect in table 15, Interactive Display – Experience has a mediation effect over the relationship Hedonic Value -> Interactive Display – Purchase Intention ($\beta=0.199$, $t=3.888$, $p=0.000$). Thus, it can be affirmed that there is a complete mediation effect and that **H4c** is supported.

Table 14. H4 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Hedonic Value -> Interactive Display – Purchase Intention	0.013	0.014	0.055	0.243	0.808
Hedonic Value -> Interactive Display – Experience	0.254	0.259	0.063	4.034	0.000
Interactive Display – Experience -> Interactive Display – Purchase Intention	0.781	0.780	0.040	19.692	0.000

Table 15. H4 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Hedonic Value -> Interactive Display – Experience -> Interactive Display – Purchase Intention	0.199	0.202	0.051	3.888	0.000

H5: *The higher the risk aversion level of a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.*

- **H5a:** *Risk aversion has a significant impact on purchase intention when interactive display is used*
- **H5b:** *Risk aversion has a significant impact on sensorial shopping experience when interactive display is used*
- **H5c:** *Sensorial shopping experience mediates the relationship between risk aversion and purchase intention when interactive display is used*

In table 16, it can be noticed that Risk Aversion does not affect Interactive Display – Purchase Intention ($\beta=-0.036$, $t=0.548$, $p=0.584$), however it does affect Interactive Display – Experience ($\beta=0.211$, $t=3.263$, $p=0.001$); thus, not supporting **H5a** and supporting **H5b**.

The indirect effect analysis shows that Interactive Display – Experience has a significant impact on Risk Aversion -> Interactive Display – Purchase Intention ($\beta=0.165$, $t=3.205$, $p=0.001$), leading to a complete mediation effect and supporting **H5c**.

Table 16. H5 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Risk Aversion -> Interactive Display – Purchase Intention	-0.036	-0.034	0.066	0.548	0.584
Risk Aversion -> Interactive Display – Experience	0.211	0.211	0.065	3.263	0.001
Interactive Display – Experience -> Interactive Display – Purchase Intention	0.781	0.780	0.040	19.692	0.000

Table 17. H5 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Risk Aversion -> Interactive Display – Experience -> Interactive Display – Purchase Intention	0.165	0.165	0.051	3.205	0.001

H6: The more important product availability is for a consumer, the higher it is his purchase intention of luxury goods when an interactive display is used in the ecommerce, and this effect is mediated through a higher sensorial shopping experience.

- **H6a:** Product availability has a significant impact on purchase intention when interactive display is used
- **H6b:** Product availability has a significant impact on sensorial shopping experience when interactive display is used
- **H6c:** Sensorial shopping experience mediates the relationship between product availability and purchase intention when interactive display is used

For H6, the results in table 18 shows that Product Availability does not have a significant effect on Interactive Display – Purchase Intention ($\beta=0.062$, $t=1.329$, $p=0.184$), however it have a significant effect on Interactive Display – Experience ($\beta=0.237$, $t=4.083$, $p=0.000$). Thus, **H6a** is not supported but **H6b** is supported.

The mediation role of Interactive Display – Experience in the Product Availability -> Interactive Display – Purchase Intention was assessed ($\beta=0.185$, $t=4.053$, $p=0.000$) and **H6c** is supported having a complete mediation effect.

Table 18. H6 - Direct Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Product Availability -> Interactive Display – Purchase Intention	0.062	0.063	0.047	1.329	0.184
Product Availability -> Interactive Display – Experience	0.237	0.237	0.058	4.083	0.000
Interactive Display – Experience -> Interactive Display – Purchase Intention	0.781	0.780	0.040	19.692	0.000

Table 19. H6 - Indirect Effects

	Beta Coefficients	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Product Availability -> Interactive Display – Experience -> Interactive Display – Purchase Intention	0.185	0.185	0.046	4.053	0.000

6. DISCUSSION

6.1. THEORETICAL IMPLICATIONS

Vast is the existent literature review regarding luxury concepts and values; however, few are the available research done so far when it comes to the online environment for luxury goods. Thus, theoretically, this study contributes on providing better understanding on how different display methods, namely traditional and interactive ones, can affect sensorial shopping experience and purchase intention depending on consumers' traits, such as hedonic value, risk aversion and product availability.

Firstly, considering traditional display method, this work corroborates with Hassanein and Head (2007) study that showed that the higher the social presence level in an ecommerce, the higher the enjoyment the consumer would have towards the website.

Also, it can give support to Kim et al. (2009) that stated that photos of a model wearing the product can lead the higher levels of positive emotional response. When it comes to risk aversion, it can be said that this research complements Cyr et al. (2009) work which concluded that the higher the social presence in a website the higher the trust levels for the consumer; since this work showed that the higher the risk aversion of a consumer, the higher it is his sensorial experience when traditional display is used.

Secondly, regarding interactive display method, this study supports the findings of Kim et al. (2007) that assessed that the use of 3D images increases shopping enjoyment.

However, although Park et al. (2005) stated that the use of 3D images would increase purchase intention by reducing associated risk perceptions, this research could not confirm this assessment: no significant effect was noticed of risk aversion on purchase intention when interactive display was used, only through the mediation effect of sensorial shopping experience.

Lastly, this study contributes to the literature by assessing the mediation effect of sensorial shopping experience for both display methods in the relationship between consumers' behaviors (hedonic value, risk aversion and product availability) and purchase intention. Furthermore, it verifies the none of the studied consumers' characteristics direct influence purchase intention, neither for traditional display nor for interactive display – the significant influence only happens when sensorial shopping experience mediates the relationships.

6.2. MANAGERIAL IMPLICATIONS

According to Bain & Company, in 2021, the estimated value of online personal luxury good market worldwide was 62 billion euros and, it faced a growth of 27% from 2020 to 2021. Moreover, it is expected that by 2025 one-third of all personal luxury purchases will happen in the online environment. Considering this growing market, it is fundamental that luxury brands put effort on improving their e-commerce knowing which features indeed are accountable for enhancing consumers' experience and leading to higher purchase intention.

Firstly, this study has shown that sensorial shopping experience has a mediation role on the relationship between luxury consumers' behaviors and purchase intention, for both traditional and interactive display methods, when analyzing hedonic value, risk aversion and product availability traits, leading to a significant effect on purchase intention. Furthermore, it was assessed that the increasing effect of sensorial shopping experience occurred for both traditional and interactive display methods.

Thus, it can be suggested that companies should adopt the use of photos of models wearing the product (traditional display) and of interactive 3D images (interactive

display) as effective ways to increase consumers' sensorial shopping experience, allowing them to have an experience closer to what they encounter in bricks-and-mortar stores.

Considering Brun et al. (2013) study that showed that in-store buyer tends to have higher level of risk aversion and that online luxury shopper values product availability, the findings also suggest that the implementation of those different display methods can effectively enhance sensorial experience for both in-store and online luxury buyers.

Lastly, as a conclusion, not only the implementation of traditional and interactive display methods would provide a higher sensorial shopping experience for luxury consumers but also it could lead to higher revenues for the brand due to increased purchase intention.

6.3. LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this study has limitations that can be taken into consideration for future research. First, this study focused on luxury consumers as a whole, not targeting on a specific product sector, such as apparel or jewelry and watches. Do luxury bags and accessories buyers behave the same as fine wine and champagne consumers? For future research, studies should examine the impact of different display methods also based on product sector to better understand on how to specifically improve the online store based on those unique consumers' behaviors. Furthermore, this study analyzed the impact of traditional and interactive display methods on sensorial shopping experience and purchase intention for three consumers' traits: hedonic value, risk aversion and product availability. Future

research could consider other behaviors, as previously studied by Brun et al. (2013), such as price consciousness, shopping interaction and online trust, and could also be done by segmenting consumers as online or in-store luxury buyers to comprehend which are the best e-commerce improvements for each category of consumer. Finally, future works could also analyze the impact of other e-commerce features, such as the use of video ads and online customer assistance, as tools to increase sensorial shopping experience and purchase intention.

APPENDIXES

APPENDIX 1: Survey Structure

Group of Questions	Subgroups	Question	Scale
Qualifying		"In the last three years, have you bought any luxury brand products, such as Louis Vuitton, Rolex, Chanel, BMW, Hermes, Armani, Burberry, Dom Perigno Rose and so on?"	Yes, no.
Traditional Display Method		Photos of models displaying the products makes the shopping experience of luxury goods more enjoyable. Luxury online shopping with photos of models displaying the products is exciting. I experience fun when online shopping for luxury goods with photos of models wearing the product. Photos or videos of a model wearing the product would increase my purchase intention of luxury goods. I would be likely to purchase luxury goods from a site providing photos or videos of a model wearing the product.	Seven-point Likert scale (from completely disagree to completely agree).
Interactive Display Method		The use of interactive images makes the shopping experience of luxury goods more enjoyable. Luxury online shopping with interactive images is exciting. I experience fun when online shopping for luxury goods with interactive images. The use of interactive images would increase my purchase intention of luxury goods. I would be likely to purchase luxury goods from a site providing 3D / 360° interactive images.	Seven-point Likert scale (from completely disagree to completely agree).
Hedonic Value		While shopping for luxury goods, I feel the excitement of the hunt. When shopping for luxury goods, I am able to forget my problems. When in bad mood, shopping for luxury goods enhances my mood. Buying luxury products gives me a lot of pleasure. The products offered by luxury brands have strong sensory appeal. I get so involved when I shop for this luxury products that I forget everything else. I shop from luxury brands for the pure enjoyment of it.	Seven-point Likert scale (from completely disagree to completely agree).
Customer Segmentation	Product availability Risk aversion	I like to try different things. I like a great deal of variety. I like new and different styles. I would rather be safe than sorry. I want to be sure before I purchase anything. I avoid risky things.	Seven-point Likert scale (from completely disagree to completely agree).
Demographics	Gender Age Education Level	What is your gender? How old are you? What is your level of education?	Female, male, prefer not to answer. 18-24, 25-34, 35-44, 45-54, 55-64, 65+ High school or less, Bachelor's degree, Master's degree, Doctorate's degree, Other.

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