BARRIERS TO ONLINE SECOND-HAND PURCHASE BEHAVIOUR

Authors: Calvo-Porral, C., Orosa-González, J, & Viejo-Fernández, N.

ABSTRACT

Introduction: The second-hand online market has experienced a rapid growth due to the great penetration of the internet. However, although previous studies examine the consumer purchase behaviour in second-hand stores, the great majority focuses on offline shopping, and little is known about the barriers that consumers experience in the online second-hand market.

Purpose: In this context, the aim of the present research is to examine what factors determine that consumers restrain from shopping used products through the internet. So, this research aims to analyse what makes consumers prevent from shopping second-hand products online.

Methodology: For this purpose, we propose and empirically test a conceptual model of the barriers towards online second-hand shopping behaviour. Drawing on a sample of 405 consumers data was analyzed through Structural Equation Modelling (SEM).

Findings: Our findings reveal that contamination effects and the lack of trust towards the online store, followed by the low perceived product reliability and the poor product perceived quality prevent consumers from shopping used products online. Conversely, consumer embarrassment for shopping second-hand products and the purchase uncertainty do not influence consumers' second-hand shopping behaviour.

Value: This study contributes to the marketing literature on second-hand shopping, being an attempt to explore the factors that prevent consumers from purchasing used products through the internet.

Keywords*: Second-hand products, Barriers, Purchase behaviour, Online shopping.*

1. INTRODUCTION

Second-hand markets have existed in the past in the form of thrift shops, flea markets, car boot or garage sales; but nowadays, the second-hand online market is experiencing a rapid growth due to the great penetration of the internet. The reason may be that today consumers' have changed their perception towards second-hand products, which have been traditionally considered as inferior by consumers (Norum and Norton, 2017). More precisely, the motives for buying second-hand products have changed from such goods for the poor or the needy (Mukherjee et al., 2020) to savvy-smart consumers who also want to contribute to the environmental sustainability (Evans, 2012). Therefore, it can be stated that consumers select second-hand products by choice, rather than out of economic necessity (Guiot and Roux, 2010).

Even though studies that analyse consumer behaviour in second-hand retail exist, the great majority are developed in the context of offline shopping, such as the research

conducted by Bardhi and Arnould (2005) or by Guiot and Roux (2010). Similarly, previous studies report that the purchase and use of used products -which have been previously owned by strangers- acts as a major barrier for many consumers (Wang et al., 2022), but only a few studies have focused on the factors that prevent consumers from adopting this consumption behaviour through the internet (Edbring et al., 2016; Silva et al., 2021). However, online second-hand retailers need to overcome the negative image and perceptions associated with second-hand items, such as product contamination (Argo et al., 2006; Gautami et al., 2018), perceived low product reliability, personal embarrassment (Silva et al., 2021), purchase uncertainty (Dimoka et al., 2012; Gautami et al., 2018); or even the lack of trust towards the online retailer (Flavián et al., 2006).

Considering that little is known about the barriers that consumers experience when shopping second-hand products online; this study aims to examine what factors prevent consumers from the purchase of second-hand products through the internet. In fact, the purchase of second-hand products in the online market differs from the offline context. The second-hand online markets offer consumers a vast array of used products in a convenient way (Saarijärvi et al., 2018), making it possible the price comparison between products, providing great information about product characteristics (Sihvonen and Turunen, 2016), and allowing consumers the purchase of second-hand items with anonymity (Parker and Weber, 2013). Conversely, the online shopping markets for used products entail some drawbacks like the fact that consumers cannot physically check and inspect the used items before the purchase (Padmavathy et al., 2019), or the physical distance between the buyer and the seller (Chang et al., 2013).

Accordingly, the present study aims to answer the following research questions: *"what makes consumers prevent from shopping second-hand products online?"*; and further *"what are the variables with greater influence on consumers' restrain from shopping used products through the internet?"*. In this context, this study contributes to the literature on second-hand shopping behaviour through the proposal of a conceptual model of the barriers towards the purchase of used products online. Further, the present research contributes to the marketing literature through the empirical examination of the factors acting as a barrier towards the purchase of used products through the internet; and in turn, showing what factors make consumers restrain from the purchase of used items online. Similarly, the present research provides second-hand retailers and online stores with useful insights in order to overcome these barriers. More precisely, this study proposes and empirically tests a conceptual model to examine the factors that prevent consumers from buying second-hand products online.

The structure of the research paper is as follows. In the first place, the paper provides a review of the conceptual framework and the variables to be studied. This is followed by a review of the methodology developed; and finally, research results, conclusions and implications of the study are discussed.

2. LITERATURE REVIEW

2.1. The phenomenon of online second-hand shopping

Second-hand shopping refers to the purchase of a used product that have been previously owned and used by other individuals (Gautami et al., 2018; Padmavathy et al., 2019) being their price often lower than that of new items (Guiot and Roux, 2010; Cervellon et al., 2012; Koay et al., 2022).

The sales of second-hand products have been increasing in the past years (Park and Martinez, 2020), being the most conventional explanation of second-hand shopping economic reasons: consumers confronted by economic constraints and with low income turn into second-hand shopping to obtain goods that they would be otherwise unable to obtain (Williams and Windebank, 2000; Hur et al., 2020; Mukherjee et al., 2020; Koay et al., 2022). More precisely, the purchase of second-hand products could be considered a complex phenomenon with many factors influencing the purchase of second-hand products, such as the concern with the environment and environmental issues (Cervellon et al., 2012; Park and Lin, 2020; Borusiak et al., 2021), ethical or moral reasons, the excitement and fun of bargain hunting (Guiot and Roux, 2010) or hedonic motivations (Parguel et al., 2017; Tang et al., 2020).

The determinants of second-hand shopping could be examined both in the online and the offline markets, such as brick-and-mortar or physical stores. Prior studies note that second-hand purchase motivations are different for online and offline shopping (Ferraro et al., 2016; Parguel et al., 2017). For example, the purchase of second-hand products online gives access to consumers to a great array of used products (Saarijärvi et al., 2018), provides relevant information about used products (Sihvonen and Turunen, 2016), makes it possible the price comparison between product alternatives (Reichheld et al., 2000), being a convenient shopping. However, some purchase motivations, such as the economic or the hedonic motivations relate to both offline and online second-hand markets (Parguel et al., 2017).

The great penetration of the internet has greatly facilitated exchanges and purchases of used goods among consumers, and today second-hand online websites and retailers serve as intermediaries for the commercialization of second-hand goods (Cameron and

Galloway, 2005; Gautami et al., 2018). Accordingly, the online second-hand market could be described as a redistributive market that includes the activities of giving away and selling second-hand products in an effective way (Liu et al., 2021). Second-hand online retailers use the Internet as an effective way to offer consumers an enjoyable and convenient shopping experience (Beckers et al., 2018), whereby consumers can compare product attributes and prices easily and conveniently (Chetioui et al., 2021). Likewise, second-hand online stores offer consumers a quick home delivery, convenience, website attractiveness or easy payments (Sheehan et al., 2019). Further, situational factors such as time pressure, lack of mobility, geographical distance from the store or need for special items and the attractiveness of alternatives are also advantages of online shopping (Brusch et al., 2019).

Therefore, online second-hand stores and retailers provide numerous benefits for consumers such as the shopping convenience -meaning the reduction in shopping time and less shopping effort-, the thrift and the economic benefit, or even the consumer anonymity for second-hand shopping (Parker and Weber, 2013). However, online second-hand retailers still need to overcome negative perceptions associated with the purchase of second-hand products, as suggested in prior studies (Edbring et al., 2016; Silva et al., 2021).

2.2. Barriers to the online purchase behaviour of second-hand products

The present study aims to understand which of the consumer characteristics leads them to prevent from purchasing used products. For this purpose, this research is based on the influence of social motives (Styvèn and Mariani, 2020), being the stigma and embarrassment of shopping second-hand items the major barriers for the purchase of second-hand products (Gregson and Crewe, 2003; Lo et al., 2019; Hur, 2020). Similarly, prior literature has identified factors such as low hygiene conditions (Argo et

al., 2006), product unknown origins and condition (Kim et al., 2021) as barriers influencing consumers' purchase behaviour. Finally, the present study incorporates three additional variables which may also influence consumer purchase behaviour of used products online, namely the purchase uncertainty, the lack of trust towards the online store and the product poor perceived quality.

2.2.1. Contamination effects

One reason that prevents consumers from purchasing and using second-hand products is their perception of a greater contamination risk from used items (Yan et al., 2015); and in addition, the hygiene or sanitary condition is also a significant reason why some consumers are unwilling to purchase second-hand products (Silva et al., 2021). In the first place, the contamination theory proposed by Argo et al. (2006) suggests that individuals could perceive previously touched products as "contamined" and evaluate them less favourably compared to new items. Similarly, the contamination effect has been reported as a major concern for individuals when they notice that a product they are using has been touched by other individuals they do not know (Argo et al., 2006). Consequently, the contamination effect influences consumers' second-hand purchases, since second-hand products are considered as tainted by the person who has used them before.

The contamination effect is somehow related to the sanitary risk and hygiene conditions associated with second-hand products. On one hand, sanitary risk refers to consumers' perceptions of used products as being harmful to their health or life (Kim et al., 2021). More precisely, the sanitary risk has been well-documented in prior research as a significant impediment to the purchase and usage of second-hand products, since some consumers have serious concerns about the sanitary conditions of used products, based

on the difficulty of determining whether the previous owner suffered from any diseases (Kim et al., 2021); and fear the possibility of contamination through these used products (Edbring et al., 2016). On the other hand, the perception of second-hand products as unhygienic is a major obstacle for some consumers in the purchase of used items. Likewise, some consumers associate adjectives such as unhygienic, unfresh, dirty, disgusting and afflicting to second-hand products, reflecting their reluctance to the purchase and used of second-hand goods (Edbring et al., 2016). Accordingly, consumers will form positive attitudes towards second-hand products when they perceive them as being hygienic (Kim et al., 2021).

Current literature does not provide much empirical evidence on the contamination effects in second-hand online shopping (Gautami et al., 2018). In this context, this study proposes that some consumers are very concerned about the sanitary and health risks associated with second-hand products (Armstrong et al., 2015), and this acts as a barrier to purchase second-hand items online. So, the following hypotheses are presented:

H_1: Second-hand product contamination effects will negatively influence online second-hand products' purchase intention

H_7: Second-hand product contamination effects will negatively influence online second-hand products' loyalty

2.2.2. Purchase uncertainty

Second-hand product shopping suffers from a number of online purchase uncertainties. More precisely, the purchase uncertainty of used products refers to the "*difficulty in predicting the outcome of a transaction due to seller and product related information asymmetry*" (Dimoka et al., 2012). In fact, consumers purchase decisions involve risk, since purchase actions will produce consequences that consumers cannot anticipate,

being uncertainty one dimension of this purchase risk (Cunningham, 1967). Purchase related uncertainties are more prominent in the online second-hand market compared to new product transactions (Gautami et al., 2018), due to hidden information regarding the product and retailer quality and post-purchase behaviour.

The are several factors that create this purchase uncertainty. In the first place, in online shopping temporal and spatial separation between the online retailer and the consumer creates uncertainty regarding the commercial transaction (Bock et al., 2012). In the second place, this type of purchases are characterized by information asymmetry, meaning that consumers have less information about the product than retailers, which strongly influences the level of consumer uncertainty (Shen et al., 2011). In the third place, on second-hand online shopping there is pronounced hidden information, given that both the product-related and retailer-related information cannot be gauged easily by consumers (Gautami et al., 2018). In the fourth place, in the second-hand online market, consumers cannot inspect the products physically or examine their quality, or inspect their sensory attributes (Yen and Lu, 2008), and cannot ascertain whether the product is worth the price charged online. So, consumers are dependent on the description of the used item provided by the online store or the explanation provided by the online retailer through written communication (Moriuchi and Takahashi, 2022). And retailers should focus on reducing the perceived uncertainties of potential buyers (Gautami et al., 2018). Finally, authors like Guiot and Roux (2010) identified the lack of purchase and product guarantees as one important barrier for second-hand online shopping. So, considering that uncertainty arises from the purchase of second-hand products online, the following research hypotheses are posed:

H2: Second-hand product uncertainty will negatively influence online second-hand products' purchase intention

H8: Second-hand product uncertainty will negatively influence online second-hand products' loyalty

2.2.3. Low product reliability

Second-hand products had previous owners; and in turn, some consumers perceive low reliability and risk towards second-hand items (Lang and Zhang, 2019; Kim et al., 2021). Accordingly, second-hand products are often perceived as inferior by consumers (Norum and Norton, 2017).

This perceived risk entails ambiguity regarding the performance and quality of the used products, as well as concerns about their durability and conditions (Schaefers et al., 2016). Second-hand or used products may not be flawless, but their price is often lower than that of new items (Denegri-Knott and Molesworth, 2009); and for this reason, second-hand products have long been associated with being defective, damaged, worn-out, soiled, malodorous (Zaman et al., 2019) or otherwise not working as they should be (Ross et al., 2022).

Similarly, the second-hand product reliability is somehow related with product performance and functional risk. On one hand, the product performance risk indicates the ambiguity about the level of product quality and performance (Schaefers et al., 2016). On the other hand, the functional risk has been traditionally associated with the product lack of durability, and occurs when the second-hand product fails to perform its intended function adequately (Kim et al., 2021).

Regarding the purchase of second-hand products through online stores, the buyer may not be able to inspect the product before purchase (Yen and Lu, 2008). In this context,

prior research highlights that intrinsic product cues -such as colour, shape, product design or style- cannot be easily evaluated online (Weathers, et al., 2007), as they may be inferred on the information provided by the online retailer (Gautami et al., 2018). Likewise, extrinsic product cues -such as brand name and product warranty- may become irrelevant as the second-hand product may suffer from use because of previous ownership (Gautami et al., 2018). Accordingly, the following hypotheses are presented:

H_3: Second-hand product perceived low reliability will negatively influence online second-hand products' purchase intention

H_9: Second-hand product perceived low reliability will negatively influence online second-hand products' loyalty

2.2.4. Embarrassment of second-hand shopping

In the last years, second-hand shoppers may have felt embarrassed to admit they shop second-hand products. The reason could be that second-hand stores were considered as being used by disadvantaged consumers out of economic necessity and with a low socioeconomic status and suffering from financial insecurity (Hur, 2020). Accordingly, some consumers may refrain from purchasing and using second-hand products in order to preserve their personal image (Rulikova, 2020), since some individuals may feel that the purchase of second-hand products will damage their personal image.

Another reason to avoid the purchase of second-hand products could be the social disapproval or the social humiliation (Silva et al., 2021), as other individuals may look down on those who purchase and use second-hand products due to their notoriety as a symbol of poverty (Hur, 2020). That is, through the purchase of used items, some consumers may have concerns about that others will think they cannot afford new

products (Kang and Kim, 2013); and consequently, being seen or known by others as a second-hand shopper could represent a motive for embarrassment, preventing the purchase of second-hand goods. So, when consumers believe that their peers would judge them due to the purchase of second-hand products, they are less inclined to purchase them (Xu et al., 2014). Therefore, it can be stated that the purchase of second-hand products is related to a social stigma of being associated with individuals of lower socioeconomic status (Sihvonen and Turunen, 2016).

Interestingly, recent research indicates that consumers' perception about second-hand shopping has shifted today. In this vein, authors like Herjanto and Hendriana (2020) and Wang et al. (2022) report that the old mentality associating the purchase of second-hand products with poor economic conditions has shifted and the majority of consumers disagree that their purchase of second-hand items is related with a low income. So, the motives for the purchase of second-hand items have changed from being goods for the poor or the need, to being perceived as products to the savvy and smart consumers.

Considering that previous research supports the considerable detrimental effect of embarrassment on consumer purchase behaviour of second-hand products, and that embarrassment is the factor that most negatively influences second-hand purchases (Silva et al., 2021), the following hypotheses are proposed:

H_4: The embarrassment for second-hand shopping will negatively influence online second-hand products' purchase intention

H_{10}: The embarrassment for second-hand shopping will negatively influence online second-hand products' loyalty

2.2.5. Poor product quality

Some consumers may perceive second-hand goods that were previously owned and used by unknown individuals to be inferior in quality (Guiot and Roux, 2010; Hur, 2020), and maybe also concerned about the uncertainty of product conditions and product nature (Sihvonen and Turunen, 2016; Schaefers et al., 2016). Further, the product perceived quality is an important antecedent of the perceived value of the used product, referring to product attributes and condition, being a key factor in the second-hand sales (Sihvonen and Turunen, 2016).

Currently, the second-hand market remains unregulated with little control over the quality of the products that are traded online (Williams and Windebank, 2000); so second-hand products commercialized online present an additional level of concern about the product quality uncertainty (Moriuchi and Takahashi, 2022). The reasons are that purchasing second-hand products through online channels does not provide consumers with the opportunity to touch and physically interact with the used products they are seeking to purchase (Eastlick and Lotz, 2011), and the online retailer may not provide a guarantee for the used product; thus, being important barriers. Accordingly, second-hand products offered online need other cues for quality evaluation (Gabbot, 1991), such as for example a product picture and product descriptions (Sihvonen and Turunen, 2016).

Therefore, second-hand online stores and retailers face the key challenge of product quality control (Moriuchi and Takahashi, 2022), as well as the large variability of product assortment and varying quality of second-hand products sold online. However, the particular functioning of some second-hand online stores whereby the consumers browse and negotiate prices online, the closing of the commercial transaction often

entails a face-to-face meeting, allowing the potential buyer to check the quality and conditions of the used product (Hinojo et al., 2022). Due to the need-for-touch barrier in the online shopping, consumers may show a greater preference for shopping second-hand products in physical stores (Silva et al., 2020). Finally, regarding the quality of used products, the increasing offer of refurbished certified products should be mentioned. In fact, refurbished certified products could provide consumers with a high degree of environmental aspects, while their certification can be a trustworthy signal of their quality as "*like-new products*" (Berghoef and Dodds 2013).

Considering that second-hand products are often perceived as having inferior quality by some consumers, the following research hypotheses are posed:

H_5: The perceived poor quality of second-hand products will negatively influence online second-hand products' purchase intention

H_{11}: The perceived poor quality of second-hand products will negatively influence online second-hand products' loyalty

2.2.6. Lack of trust towards the online store

Trust is an important factor under conditions of purchase uncertainty, since it helps ensure that one party will not take advantage of the vulnerability of the other during or after a commercial transaction (Lee and Turban, 2001). In this context, the concept of trust could be defined as a psychological state that allows an individual to accept vulnerability based upon positive expectations of the intentions or behaviour of others (Chang et al., 2013). Accordingly, the absence or lack of trust is a critical factor to the success of commercial transaction; being this obstacle especially relevant in the context of online shopping (Lee and Turban, 2001). The reasons are that in online shopping there may be a large physical distance between the buyer and the seller, consumers cannot physically check and personally examine the product quality and characteristics

before making the purchase decision, or examine the safety and security of their personal information or credit card numbers (Chang et al., 2013), when often consumers are required to share sensitive personal and financial information (Bhattacherjee, 2002). In addition, consumers do not know what the online store or retailer will do with the information collected during the purchasing process (Grabner-Kräuter and Kaluscha, 2003).

All these factors make trust an important variable in online shopping, but the importance of trust towards the online store increases in the purchase of second-hand products (Lang and Zhang, 2019) given that buyers cannot physically examine, inspect and touch the used products before the purchase decision (Padmavathy et al., 2019). Therefore, online stores should provide adequate information to the potential customers, trying to reduce customers' perception of uncertainty and risk (Mayer, 1995), such as for example product information, price information, product descriptions and evaluations, and service information, including ordering and delivery information (Park and Kim, 2003). Likewise, online stores should increase their service quality, referring to the overall customer services (DeLone and McLean, 2003), as well as develop a reliable and timely product delivery service and ease of products' return (Ahn et al., 2004), since these actions significantly affect consumers' positive experience and satisfaction (Tzeng et al., 2021).

Finally, Javenpaa et al. (2000) found that trust in online stores influences individuals' willingness to purchase; and in this vein Yoon (2002) reports that trust in a particular online store influences consumers' intention to purchase online. So, the greater the

consumers trust on online stores, the more they will shop online. Thus, considering all the explained above, we propose the following hypotheses:

H6: The lack of trust towards the second-hand online store will negatively influence online second-hand products' purchase intention

H12: The lack of trust towards the second-hand online store will negatively influence online second-hand products' loyalty

(Figure 1. *Barriers towards online second-hand shopping)*

3. METHODOLOGY

3.1. Variables and measurement scale development

The variables and measurement scale are based on the previous literature on the topic (Table 1). In the first place, contamination effects were measured adopting five items proposed by Parguel et al. (2017), Lang and Zhang (2019) and by Wang et al. (2022); while to measure the purchase uncertainty a three-item scale was adopted from Pavlou et al. (2007). Likewise, the product reliability was gauged with a five-item scale adapted from Park and Sohn (2015) and from Baqal and Abdulkhaleq (2018). Similarly, embarrassment was measured using five items adopted from Harris et al. (2016); Lang and Zhang (2019) and Wang et al. (2022); whereas the lack of trust towards the online retailer was examined through a four-item scale adopted from Flavián et al. (2006). In addition, perceived quality was measured using a four-item scale from Kukar and Chang (2011); while the purchase intention was through assessed a three-item scale adapted from Van der Heijden et al. (2003) and Lu et al. (2014). Finally, the loyalty was measured using a four-item scale adapted from Srinivasan et al. (2002). In the research questionnaire participants were asked to rate their level of agreement with particular

items using a 7-point Likert-type scale, anchored with "1=*strongly disagree*" and "7=*strongly agree*".

(Table 1. *Measurement scale and indicators)*

3.2. Sampling and fieldwork

The sampling and fieldwork were conducted in January 2023. Research data was collected through an online self-administered web-based structured questionnaire prepared using Qualtrics software, and the questionnaire was distributed among consumers residing in Spain on a random basis inviting them to complete the questionnaire. In order to examine the barriers towards online second-hand purchase behaviour, we required a sample of consumers who had purchased second-hand or used products through an online store or retailer. The reason is that the authors wanted to gather information from consumers with awareness and knowledge about the online second-hand market; and we assume that consumers who never purchased used items online may have a poor knowledge of this market. In addition, participants were asked about the purchase of second-hand products through online stores or retailers; thus, comprising business-to-consumer and consumer-to-consumer second-hand markets. So, this research considers any type of second-hand online stores that commercialize used products (Parguel et al., 2017; Ross et al., 2022) to allow a broader generalization of the obtained results.

The questionnaire consisted of three sections. The first section included an introduction to explain the main purpose of the research. Then, because the purpose of the research was to gather information regarding the purchase of second-hand products through the internet, one "*yes/no*" pre-screening question was included in the questionnaire, and

participants were asked the following question: "*Do you ever purchase second-hand or used products through online stores or online retailers?".* So*,* those participants answering "yes" were then routed to complete the full questionnaire. Then, the second part of the questionnaire gathered demographic and socioeconomic information; and the third part included questions in order to measure the participants' assessment of the different variables. Similarly, ethical issues are not relevant in the present study, given that the questionnaire was completely anonymous, and all the research participants gave their consent to participate in the study. Finally, participants were not remunerated for their participation.

All responses were collected on a 7-point Likert scale, ranging from "*strongly disagree*" (1) to "*strongly agree*" (7). The 7-point rating scale was selected for this study following the criteria proposed by McKelvie (1978) and Nunnally (1967) who reported the highest internal reliability and validity of the 7-point measurement scales, compared to 5-point response scales. A total amount of 405 valid questionnaires were obtained, yielding a sampling error of 4.73% at a confidence level of 95%. Finally, regarding the sample profile, the 46.2 of the participants were female, while the 53.8% were male. Likewise, the majority of respondents (35.2%) were aged between 31 and 40 years old, followed by consumers who are between 21 and 30 years old (27.4%). Regarding the education level 38.2% of participants have a university degree; whereas the 26.4% have secondary education. In terms of the average household monthly income, the majority of the participants reported 2,200-2,700 EUR/month (31.2%). Interestingly, the great majority of the participants report a frequency of purchasing second-hand products online of "*several times a year*" (27.2%).

4. RESULTS

4.1. Analysis of the measurement model

The statistical analysis was developed through Structural Equation Modelling (SEM) using the Amos 18.0 software. A confirmatory factor analysis tested the discriminant validity. The items Cont4, Rel2 and Loy3 were removed from the initial measurement model, given that their standardized loadings were below the minimum recommended threshold of 0.50 (Anderson and Gerbing, 1988). Having removed these indicators, the measurement scale was tested for validity and reliability. Regarding the analysis of the scale reliability, Cronbach's alpha values were calculated, showing satisfactory values exceeding the threshold of 0.70 or close values (Hair et al., 2006). In terms of construct reliability, research constructs exhibit an adequate composite reliability (CR), achieving values higher than 0.70 (Bagozzi, 1994); and thus, confirming the internal reliability of the constructs. Similarly, the standardized lambda coefficients show values higher than the commonly accepted threshold level of 0.70 (Hair et al., 2006), indicating the convergent validity of the scale. Finally, the average variances extracted (AVE) achieve values above 0.50; thus, indicating internal consistency and reliability (Hair et al., 2006) (Table 2).

(Table 2. *Validity and reliability of the measurement scale*).

The common method variance bias was measured through the Harman's one factor test, showing that the total variance extracted by one factor is 33.82%; thus, being below the recommended threshold of 0.50 (Hair et al., 1998).

Similarly, in order to examine the discriminant validity among the constructs, the AVE values were compared to the squared inter-construct correlation estimates of the paired constructs of the model (Fornell and Larcker, 1981). Our results indicate that the AVE

values were greater than the squared correlations, suggesting discriminant validity (Table 3). Finally, the HTMT ratios were analyzed between each pair of constructs, showing adequate values below the commonly accepted threshold of 0.90 (Hair et al., 1998).

(Table 3. *Discriminant validity, matrix of correlations and HTMT ratios)*

4.2. Analysis of the structural model

The analysis of the structural model was developed through the Maximum Likelihood estimation, and results indicate that the model fits the data adequately. The obtained results show the significancy of the Chi-Square value (X^2=680.896; df=296); and the significance level of coefficients (p<0.000) meets the recommended criteria to be considered adequate (Hair et al., 1998). Similarly, the incremental and parsimony fit indices achieve adequate values (CMIN/DF=2.300, AGFI=0.861; GFI=0.891; RMSEA=0.057; IFI=0.957; TLI=0.949; CFI=0.957); thus, reporting the adequacy of the model fit (Hair et al., 1998), as shown in Table 4.

(Table 4. *Model fit indices*)

4.3. Relationships among variables

The obtained results support the conceptual proposed model, given that only five out of the twelve research hypotheses were not identified. More precisely, regarding the influence of barriers on consumers' purchase intention of second-hand products online, findings provide support for four of the proposed hypotheses –H_1, H_3, H_5 and H_6-; while, regarding the influence of barriers on consumers' loyalty towards the purchase of used products online, the results provide evidence for hypotheses H_7, H_9, and H_{12} (Table 5).

(Table 5. *Structural model estimates and hypotheses test)*

Regarding the barriers towards second-hand online purchases, one important finding is that the main factor preventing consumers from this purchase behaviour are the *contamination effects* (β_1=-0.565**), followed by the *perceived low reliability* of the used products (β_3=-0.513**), and by the consumers' *lack of trust* towards the online store (β_6=-0.493**); being the used products' *poor perceived quality* the factor that exerts the lower influence on consumers' purchase intention (β_4=-0.415**). Therefore, in terms of effect size, the potential contamination effects seem to contribute the most to the consumer reluctance to purchase used products online. One potential explanation is that consumers perceive second-hand products -that have been previously used by other individuals- as characterized by uncertain conditions and uncertain quality.

Likewise, the perceived low product reliability and the lack of trust towards the online store also prevent consumers from the purchase of second-hand products through the internet. One possible explanation would be that as reported by Hur (2020) some consumers may perceive the difficulty in obtaining a purchase refund if the second-hand product they purchase gets spoiled or damaged after being used, or if the product performance and conditions are not the expected. In this context, second-hand stores and retailers may introduce and develop a product-returns policy.

On the other hand, the variables *purchase uncertainty* (β_2=-0.067[ns]) and consumer *embarrassment* (β_4=-0.017[ns]) showed not influence on the purchase intention of second-hand products online, since these relationships were in the expected direction, but failed to reach statistical significance. One reason could be that nowadays consumers do not feel that the purchase of second-hand products is related with poverty, or low social

status, but related to other factors such as developing a sustainable consumption and the enlargement of the product lifecycle.

Similarly, and regarding the factors influencing consumers' loyalty towards the purchase of used products online, results highlight a significant negative influence of potential *contamination* effects (β_7=-0.633**), being this influence greater than the influence of the *lack of trust* towards the online store (β_{12}=-0.445**), and the negative impact of the *low product reliability* (β_9=-0.392**). So it can be stated that consumers' perception of the potential contamination effects, the lack of trust towards the second-hand retailer and the product reliability contribute to decrease consumers' loyalty to this type of purchases. One potential explanation may be that the purchase of used items entails social and financial risks since the product potential defects, stains or outdated products, will often not be covered by product-return policies or product warranties, as suggested by Seo and Kim, 2019. Similarly, the low product reliability and the lack of trust towards the online store could be enhanced due to the minimal customer services offered by second-hand online retailers. Conversely, our findings indicate the no significant influence of *purchase uncertainty* (β_8=0.002^{ns}), consumers' *embarrassment* (β_{10}=0.058^{ns}) and the poor product perceived quality (β_{11}=0.011^{ns}) on the loyalty towards the purchase of second-hand products online, contrary to our initial expectations.

5. CONCLUSIONS

This research seeks to extend previous research on second-hand shopping in the specific context of online stores or online retailers, by examining the barriers consumers face in the purchase of used items online. More precisely, this study aims to examine what factors make consumers prevent from shopping second-hand products online; and based

on the research findings the answer would be that contamination effects, the low perceived reliability of the used products, the lack of trust towards the online store and perceived poor product quality are the main barriers towards the purchase of used items online; while consumer embarrassment or the purchase uncertainty does not seem to prevent consumers from the purchase of second-hand products online. Similarly, regarding the question of which variable exerts the greatest influence on consumers' restrain from shopping used products through the internet; the answer would be the perceived contamination effects; since our findings report that consumers' concerns about sanitation conditions are the major barriers for second-hand purchase behaviour.

Similarly, our research gives support to the influence of the low perceived reliability of the used products, the lack of trust towards the online store and low perceived quality as barriers that consumers experience in the purchase of used products through the internet. So, it seems that consumer perceptions regarding the conditions and characteristics of used products, as well as regarding the online stores are strongly negatively influencing their actual purchase behaviour. On the other hand, our results do not provide support of the consumer embarrassment and the purchase uncertainty acting as barriers that prevent consumers from purchasing used products online. So, contrary to our initial expectations, our findings are not aligned with Silva et al. (2021) who noted that consumer embarrassment was the most influencing factor that negatively prevents the purchase of second-hand goods. Therefore, the research major contribution is to empirically show the factors that act as barriers and prevent consumers from the purchase of used products online. So, this study proposes and empirically tests a conceptual model to explore the barriers that prevent consumers from buying second-hand products online.

5.1. Theoretical and managerial contributions

The present study is based on the influence the social motives (Styvèn and Mariani, 2020) to propose a conceptual model of the barriers towards the purchase of used products online, and then develops an empirical examination. Some interesting theoretical contributions could be derived from the research carried out.

In the first place, the present study contributes to the literature on second-hand shopping behaviour providing an empirical examination of the motives acting as a barrier towards consumers' purchase behaviour of second-hand products through the internet. More precisely, this study highlights the potential contamination effects, the perceived low reliability of the used products, the lack of trust towards the online store and the poor product perceived quality as the major barriers in the online second-hand market.

More precisely, our results indicate that contamination effects are the main factor preventing consumers from the purchase of used products through the internet, being consistent with those studies of Argo et al. (2006) or Kim et al. (2021) that emphasize the role of contamination effects as a major barrier among consumers. In the second place, this research shows that social motives alone are not determinant for preventing the purchase of used products online, since factors such as the product low perceived quality or lack of reliability act as important barriers, being in line with authors such as Schaefers et al. (2016), Lang and Zhang (2019); Hur (2020) or Kim et al. (2021). Similarly, it can be noted that the results derived from our research contrast with those studies that report the influence of consumer embarrassment (Hur, 2020; Rulikova, 2020; Silva et al., 2021) or the purchase uncertainty (Gautami et al., 2018; Moriuchi and Takahashi, 2022) to prevent consumers from the purchase of used products through the

internet. In the third place, the present study contributes to the literature by extending the second-hand shopping research to the context of the online market, focusing on the purchase behaviour through the internet, in online stores and retailers. Likewise, this research provides a deeper understanding of the factors that prevent consumers from purchasing used products online, revealing the factors that make consumers restrain from shopping second-hand items through the internet. Finally, this study provides empirical evidence of the factors that do not act as a barrier in second-hand markets when shopping used products online. More precisely, the present research demonstrates the non-significant influence of factors such as consumer feeling of embarrassment or the purchase uncertainty.

Some managerial contributions and practical implications could be derived from our study in order to mitigate the purchase barriers. Accordingly, second-hand online stores and retailers may be able to formulate and develop strategies to lower the barriers that prevent consumers from the purchase of used products online. In the first place, considering the importance of the contamination effect or the product sanitary condition as a barrier, online retailers and stores could provide a more detailed information on the sanitary methods and cleaning process used for second-hand items being commercialized or the source of each product. Similarly, another way to reduce the perceived sanitary risk associated with used items sold online would be to educate consumers about the process by which these products are handled prior to the online sale. Therefore, retailers should ensure that the used products being sold online are clean and decent. In the second place, in order to enhance the product reliability, online store could provide a comprehensive description about the product functionality, durability and even provide product certifications. Similarly, in order to reduce the lack

of trust towards second-hand stores, greater product information should be made available to the consumers from online retailers. Likewise, the second-hand store could provide and facilitate all relevant information about the product delivery, and ensuring that the product purchased arrives at the agreed time and place.

Further, second-hand online retailers could create and develop marketing strategies to educate consumers to make them feel that used products are a valuable purchase option. Likewise, managers could implement some strategies in order to increase consumer awareness that the purchase of second-hand products is more sustainable that the purchase of new items. For example, second-hand retail companies could carry out a creative campaign to enhance consumers' pride in their purchase option that increases sustainability.

In the third place, and taking into account the barrier of low product reliability, second-hand managers could provide potential customers a guarantee or an assurance regarding the conditions and performance of the used product. Finally, second-hand retailers could implement a second-hand product quality control, and offer reassurances such as that the product original accessories are unused to improve consumers' product quality perceptions. Likewise, to improve the perceived product quality, second-hand stores and retailers could correctly describe the product characteristics and features on their websites, providing pictures and images of the items, as well as reviews and recommendations from other customers.

On the other hand, to alleviate consumers' perception of purchase uncertainty, retailers should consider the development and improvement of product return policies, providing consumers with an explicit warranty from the second-hand store regarding the ability to return the used goods under certain conditions, as suggested by Wood (2001) and by

Ross et al. (2022). So, this specific action enables consumers to receive a compensation if the used product is not in good condition. Likewise, second-hand retailers could provide quick product delivery and exchange to consumers to enhance their future purchase intentions of second-hand products online. Similarly, derived from our findings second-hand stores and retailers should bear in mind the importance of answering promptly the questions of the potential customers, and making sure that their queries are answered satisfactorily. Finally, this study supports that the lack of trust towards the online retailer and the contamination are the most important barriers for loyalty to the purchase of used items online. So, if second-hand stores want their customers to purchase from them more than once, they should offer a trustworthy service, and make consumers perceive that no contamination effect could be derived from the purchases of used items.

5.2. Limitations and future research guidance

The present study is not exempt from limitations which present the venues for further research. In the first place, future studies could examine the different barriers towards second-hand shopping considering the different product categories that are commercialized online; since barriers may be different when purchasing clothes and jewelry than when purchasing used home appliances or books. In the second place, an analysis of the drivers of consumer purchase behaviour in the online second-hand market would be advisable to understand whether first-hand and second-hand consumption are substitutes or complements. In the third place, this study has been conducted in one specific market, which is Spain; and consequently, different results may arise in different markets and geographical locations. Accordingly, future studies could develop further analysis incorporating other variables that may influence the

reluctance of consumers to purchase second-hand products online, such as individual, socio-demographic or situational factors. Finally, further research could examine the potential differences of the barriers towards second-hand shopping comparing the online and the offline markets.

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