

Is collaborative consumption a remedy for sustainability? A cross-cultural investigation on branded second-hand online shopping

Abstract

Purpose- The rise of the Internet has facilitated the emergence of sustainable consumption, enabling consumers to easily purchase second-hand products through online platforms. Research on branded second-hand online shopping is limited, and as a cross-cultural study, this research investigates the circumstances under which customers buy branded second-hand products in an online environment via websites and apps.

Design/methodology/approach- Fuzzy TOPSIS was applied to a set of factors by seven marketing professors to rank the most crucial variables associated with branded second-hand online shopping behavior (Study 1). Moreover, to explore customers' perspectives on the extracted factors, this study employed a survey approach with a sample of 261 Malaysian participants (Study 2) and 317 French participants (Study 3) who had experience with branded second-hand online shopping. Covariance-based structural equation modeling was utilized to assess the measurement, structural, and rival models.

Findings- The results of Study 1 identified the need for uniqueness, price, brand involvement, brand nostalgia, and eco-consciousness as the primary variables influencing branded second-hand online shopping behavior. The findings from Study 2 and Study 3 indicate that price, eco-consciousness, and brand involvement are the key factors contributing to branded second-hand online shopping behavior in both Malaysian and French samples. **Research implications-** The findings also suggest that the need for uniqueness and brand nostalgia is not relevant to branded second-hand online shopping in either cultural setting. Multi-group analysis reveals no significant differences across gender groups in both samples. The low price of branded second-hand products is more important for Malaysian online shoppers than their French counterparts. Interestingly, the choice of platform (apps vs. websites) indicates that French app users are more committed to brands, while French website users are more eco-conscious.

Originality/value- Research on branded second-hand online shopping is scarce, and as a cross-cultural study, this research showed under what circumstances customers

purchase branded second-hand products in online environment through websites and apps.

Keywords: Branded second-hand products; online shopping; sustainable shopping behaviour; cross-cultural study

1. Introduction

Buying and selling used goods is not a new practice. Second-hand consumption declined during the twentieth century but regained popularity in the early 21st century (Ferraro et al., 2016), becoming a notable segment in several markets. Previous studies identified the 2008 financial crisis as one of the motivations for second-hand shopping (Ferraro et al., 2016). However, this trend is fueled by more than pure economics, as previous researchers highlighted four significant motivations for offline second-hand shopping: critical motivation (Guiot and Roux, 2010), recreational motivation, economic motivation (Roux and Guiot, 2008), and fashion motivation (Ferraro et al., 2016). Additionally, advancements in social media and mobile apps have provided opportunities for online retailers (Ng et al., 2022), such as Amazon and eBay, to establish new sections on their platforms for selling second-hand products (Parker and Weber, 2013). Stemming from the concept of a sharing economy and enabled by the consumer-to-consumer business model (also known as the peer-to-peer business model) (Davidson et al., 2018; Davlembayeva et al., 2020), online second-hand shopping is rapidly proliferating in the global market.

Research on “second-hand shopping is limited” (Padmavathy et al., 2019: , p. 20). Previous investigations have been published on the field of purchasing second-hand goods (Cervellon et al., 2012) and the motivations for second-hand fashion shopping (Xu et al., 2014; Ferraro et al., 2016) in offline markets. Studies have also identified several driving forces in second-hand consumption behavior, such as price or frugality (Liang and Xu, 2018; Sihvonen and Turunen, 2016; Paras et al., 2018; Fernando et al., 2018; Guiot and Roux, 2010), nostalgia (Cervellon and Brown, 2018; Lasaleta et al., 2014), eco-consciousness (Cervellon et al., 2012; Yan et al., 2015; Liang and Xu, 2018; Xu et al., 2014), need for uniqueness (Liang and Xu, 2018; Guiot and Roux, 2010), hedonic value (Liang and Xu, 2018; Yeap et al., 2024), brand involvement (Cervellon et al., 2012), need for status (Cervellon et al., 2012), style (Sihvonen and Turunen, 2016; Cho et al., 2015), community belonging (Abbes et al.,

2020), descriptive and moral norms (Koay et al., 2022). These studies were conducted in an offline environment, and a few were published on online second-hand shopping in general (for example, Padmavathy et al., 2019; Turunen and Pöyry, 2019; Ki et al., 2024) and branded products in particular. Therefore, there is an empirical gap in the literature (an evaluation void gap) on rigorous research to investigate why customers buy branded second-hand products through online platforms, namely websites and apps?

While online second-hand shopping offers a sustainable alternative, it is essential to recognise that unsustainable consumption patterns persist, driving environmental and social concerns. Unsustainable consumption behaviour has resulted in several catastrophes worldwide in recent years. The world has witnessed the consequences of global warming, pollution, and waste production, with the fast fashion industry (Ivanova et al., 2016) and the Information Communication (ICT) industry (Ma, 2021) being major contributors to these issues. The sudden changes in the climate have prompted research on green consumer behavior (Jaiswal and Kant, 2018). A sustainability report by Nielsen revealed that global warming concerns vary across nations and regions (Nielsen, 2011). The report surveyed 25,000 online users from 51 countries, with European (68%) and Asia Pacific (72%) regions showing high concerns about climate change. A report in LeMonde (2024) indicated that France is implementing measures to reduce greenhouse gas emissions. In addition, the second-hand market in France is substantial, valued at approximately €7 billion. In 2023, over 61% of French consumers purchased at least one second-hand or refurbished item (InteriorDaily, 2023). In addition, the Ipsos report found that 69% of Malaysians believe climate change will have negative impact within their lifetime and the Malaysian government is committed to a net zero policy by 2050 (Ipsos, 2022). This study selected two concerned nations from these regions, namely Malaysia (a developing country in the Asia Pacific region) and France (a developed country in the EU region), to examine the circumstances under which online users purchase branded second-hand goods (See Appendix A). As an emerging trend, branded second-hand retailing has been largely ignored by researchers (Turunen and Leipämaa-Leskinen, 2015). Choosing a developed country and a developing country provide comparison on how economic status influences second-hand branded goods purchases. Little is known about customer profiles and motivations to buy branded second-hand products

in an online environment as an alternative to conventional options. In a comparative study of a Western country (France) versus an Eastern country (Malaysia), and to address the population gap, this research provides a better understanding of online customer motivations to buy branded second-hand products in a cross-cultural setting.

As a bottom-up approach, this study suggests that consumers could play a role in addressing global warming challenges. Therefore, this research proposes branded second-hand online shopping behaviour as a small remedy to global warming and sustainable consumption behaviour. In Study 1, based on previous theories and a rigorous literature review, this research identified the main factors relevant to second-hand online shopping: brand involvement, brand nostalgia, price, need for status, need for uniqueness, eco-consciousness, hedonic value, and style. Seven marketing professors ranked the most important variables related to branded second-hand online shopping behavior, with the following order of importance: need for uniqueness, price, brand involvement, brand nostalgia, and eco-consciousness.

In Study 2, this research found that low price, brand involvement, and eco-consciousness are significant variables related to branded second-hand online shopping. In contrast, the need for uniqueness and brand nostalgia were irrelevant among Malaysian online shoppers. Surprisingly, the findings of Study 3 in France also showed similar results. The multigroup analysis across types of platforms (websites vs. apps) among French shoppers indicated that brand involvement is higher for app users, and website users are more eco-conscious. The multigroup analysis across cross-cultural settings showed that Malaysians are more price-sensitive than French shoppers.

The structure of the rest of this paper is as follows: Section 2 provides an overview of the literature and develops the hypotheses. Section 3 presents an overview of the research methodology. Section 4 presents the results of the conducted studies followed by a conclusion, discussion, theoretical and practical implications (Section 5). Finally, the last section highlights limitations and future research directions.

2. Literature review

Individuals' consumption habits have considerable effects on the environment and society. Second-hand consumption could be one form of sustainable consumption that

minimises the carbon footprint (Peña-Vinces et al., 2020). Roux and Guiot (2008) define second-hand shopping as the purchase of products formerly owned by others. In recent years, there has been a high demand for second-hand goods across various industries, including electronics, books, cars, fashion clothes, furniture, and instruments. Today, the value of second-hand products is recognised by online retailers, luxury stores, and thrift stores, all of which have launched their vintage collections. Moreover, advances in digital technologies and the growth of sharing economy platforms have facilitated connections between providers and consumers in this market (Styven et al., 2020). We can distinguish between offline and online shopping behaviour in terms of second-hand shopping. The trend of shopping for second-hand products is well-established in the traditional market. In addition to the general online marketplace, a few niche platforms, such as Luxe Digital, The RealReal, and Vestiaire Collective, have emerged to present luxury second-hand products.

Overall, the study aims to transfer ownership primarily in three formats: through swapping, donating, or purchasing used goods (Hamari et al., 2016) which targets people with different demographics. Previous studies provide various determinants that motivate customers to purchase second-hand goods in offline shopping (Padmavathy et al., 2019). For instance, price and economic reasons are highlighted as the main factors for second-hand shopping (Prieto and Caemmerer, 2013). In addition to the economic dimension, studies show other factors such as uniqueness and pleasure (Turunen and Leipämaa-Leskinen, 2015); environmental concerns (Yan et al., 2015); trust, social interaction, and social influence (Ertz et al., 2015); as well as fashion motivation in the context of fashion (Ferraro et al., 2016).

Following the trend of second-hand shopping in the traditional market, several studies continue to identify what persuades customers while shopping for second-hand goods in an online environment (Ferraro et al., 2016; Xu et al., 2014). Advances in the Internet and the use of smartphones and social media have fundamentally changed the global second-hand market. There is no doubt that electronic Word-of-Mouth (eWOM) plays a vital role in this context to accelerate consumer engagement (Mohammad et al., 2021). It is important to note the role of the COVID-19 pandemic in imposing restrictions on physical second-hand shops, consequently leading to a

higher growth rate in online second-hand shopping (Kim et al., 2021). Previous studies considered new business models such as the circular economy (Machado et al., 2019; Valor et al., 2022), sharing economy, and collaborative consumption (Abbes et al., 2020) to explain online second-hand shopping.

2.1 Collaborative consumption

According to Belk (2014), collaborative consumption markets are characterised by individuals coming together to organise the procurement and sharing of resources in exchange for a fee or compensation. Botsman and Rogers (2010) categorised collaborative consumption into three classes: product service system, redistribution market, and collaborative lifestyle. The product service system refers to companies that offer goods such as cars. The redistribution market pertains to goods whose ownership moves from one individual to another, such as second-hand goods, while a collaborative lifestyle involves exchanging intangible assets such as skills, time, and space with other people (Gopalakrishnan and Matthews, 2018).

In the redistribution market of collaborative consumption, products are redistributed by consumers until they are no longer usable. Various forms of product distribution exist, including consumer-to-consumer, social networks, online websites, flea markets, and thrift stores (Abbes et al., 2020). Collaborative consumption manifests in different forms, such as car sharing, travel and tourism, and apparel. While economic considerations and cost savings are significant drivers for consumers, other factors come into play for apparel products, including environmental consciousness, time-saving, ease of online platform use, and enjoyment (Iran et al., 2019; Park and Joyner Armstrong, 2019).

One of the collaborative consumption markets that have emerged in recent decades is collaborative fashion consumption, which provides consumers with alternative fashion options. Collaborative fashion consumption encompasses various activities, including borrowing, buying second-hand clothes, swapping, and renting (Iran et al., 2019). The literature suggests that consumer behaviour poses barriers to collaborative fashion consumption in the market (Becker-Leifhold and Iran, 2018). Different cultural mindsets influence consumers' decisions to engage with second-hand products, particularly apparel items. Iran et al. (2019) found that in cultures with

high power distance, the outer style reflects individuals' societal status, whereas, in cultures with low power distance, individuals are less concerned about others' judgment of their appearance. Consequently, acceptance of collaborative fashion consumption is generally easier and more acceptable in low power distance cultures. Therefore, previous research has mainly focused on the cultures in which collaborative fashion consumption is more accepted by people.

Due to the development of social media and new technologies over the past few years, the second-hand market has gained tremendous attention from consumers. Gopalakrishnan and Matthews (2018) conducted a study in the USA and found that second-hand products have a diverse market among women who are looking for a reasonable price. Also, second-hand fashion products are popular among college students who frequently purchase from second-hand shops. Mohammad et al. (2020) studied the effect of e-WOM on the consumption of second-hand clothing products. The result of the study shows that e-WOM impacts directly the consumer's attitude toward purchasing and consuming second-hand products. The results of their research are in line with past research in the field (Bedard and Tolmie, 2018; Devigili et al., 2020). Kim and Jin (2021) discuss that second-hand product consumers have concerns about contamination of the product. However, they found that in both rental and second-hand purchase contexts, the consumers prefer to purchase from the business-to-customer setting rather than customer-to-customer and it is considered as one of the collaborative consumption barriers, particularly on the products which have a high degree of physical contact.

While acknowledging previous research on offline second-hand shopping, it is essential to pay attention to consumer motivation for online shopping in the second-hand market. In the last three years, we have witnessed increased attention to online second-hand shopping that values the consumer perspective. Online second-hand shopping has two visible impacts on society. First, it redistributes used products (Fernando et al., 2018), and second, online platforms facilitate waste reduction and nurture sustainable consumption in society. Previous studies have examined the role of perceived risk, value, and trust in relation to the online used product market (Chen et al., 2015). Factors such as website functionality and design (Peng and Kim, 2014); perceived ease of use and perceived usefulness (Gong et al., 2013; Chiu et al., 2009)

as well as a payment system, and security (Shin et al., 2013) are essential motivations in online second-hand shopping.

Even though a few studies have provided insights into offline and online second-hand shopping behavior, research is scarce on branded second-hand online shopping. When it comes to buying luxury products, the price could be the main motivation to consider the luxury resale market (Kessous & Valette-Florence, 2019). The study conducted by Kessous & Valette-Florence (2019) compared motivations for first-hand and second-hand luxury product purchases and revealed that psychological and fulfillment needs (social climbing), eco-friendly consumption, brand heritage and vintage fashion, and windfall are the main motivations.

One advantage of luxury second-hand products is that, unlike previous research, discussing the negative effects of contamination (related to dirtiness/hygiene issues) (Bardhi and Eckhardt, 2012), it is not the case for luxury products. Researchers found that in sharing luxury products, the owner's positive personality traits and attractive physical appearance are transferred (Loussaïef et al., 2019). Turunen and Leipämaa-Leskinen (2015) identified the drivers of purchasing second-hand luxury objects: sustainable choice, a real deal, pre-loved treasure, risk investment, and a unique find. Amatulli et al. (2018) revealed the instrumental (social acceptance) and terminal values (self-identification, self-confidence, and self-fulfillment) of purchasing luxury vintage products. Therefore, more is required to understand branded second-hand online shopping behavior in different cultures. This research conducted its first study through a rigorous literature review to examine the underpinning factors associated with branded second-hand online shopping.

2.2. Study 1

To conduct the literature search, this study utilised the following keywords: “second-hand,” “second-hand purchase,” “branded products,” “reused products,” “used products,” “thrift shopping,” “online shopping,” “online shopping behavior,” “second-hand online shopping,” “second-hand buying behavior,” “sustainable consumption,” “collaborative consumption,” “sustainability,” and “sustainable buying behavior”. Furthermore, the study accessed the following databases: Emerald Insight,

ScienceDirect, Taylor & Francis, Sage Journals, JSTOR, EBSCO, ProQuest, SpringerLink Journals, Wiley Online Library, Web of Science, and Scopus.

To ensure comprehensive coverage, the study also conducted a backward search by cross-checking the references of seminal works and a forward search by identifying times cited by other researchers through Google Scholar. This rigorous approach aimed to include all relevant studies. Finally, based on the research question of this study, eight variables are proposed: price, brand nostalgia, need for status, eco-consciousness, hedonic value, need for uniqueness, brand involvement, and style (See Table 1).

Table 1: Proposed factors associated with branded second-hand online shopping
(Insert Here)

Since the purpose of this research was a cross-cultural examination, studying all the variables shown in Table 1 was not feasible due to the potential non-response bias of a lengthy survey questionnaire. Therefore, seven marketing professors were chosen to rank the principal factors associated with branded second-hand online shopping behaviour. In the first stage, we used fuzzy TOPSIS (Chen, 2000) on a set of variables to rank the factors identified in Table 1. Fuzzy TOPSIS is “one of the methods which is more capable of capturing a human’s appraisal of ambiguity” (Tan et al., 2010: , P. 308). This method relies on comparisons related to the negative and positive ideal solution benchmarks, incrementing its susceptibility to the weights allocated to each factor (Tavana et al., 2021). The steps of conducting the fuzzy TOPSIS and the details of mathematical equations are beyond the scope of this research. The results of fuzzy TOPSIS (See Table 2) show that the need for uniqueness, price, brand involvement, brand nostalgia, and eco-consciousness are the five high-ranked factors, respectively. The following section of this paper describes in more detail the theories and hypothesis development for the aforementioned variables.

Table 2: Identifying d_i^+ , d_i^- , ranking order, and closeness coefficient by fuzzy TOPSIS (Insert Here)

2.3. Hierarchical theory of shopping motivation

Consumer decision-making is a complex process (Ajzen, 1991). Two main theories underpin second-hand consumption, namely consumer theory (McCracken, 1986) and motivation theory (Wagner and Rudolph, 2010). Second-hand consumption is grounded in consumer theory (McCracken, 1986) providing perspectives about the individual and societal levels of consumption. It is relevant to constructing individual identity and aligning the self with others (Ferraro et al., 2016). Consumption can become a vehicle for the transcendent experience; that is, consumer behaviour exhibits certain aspects of the sacred (Belk et al., 1989). Consumers themselves sacralise consumption objects and thereby create transcendent meaning in their lives (Belk et al., 1989, P. 33). Previous studies (Na'amneh and Al Husban, 2012; Turunen and Leipämaa-Leskinen, 2015) draw on consumption theory to understand second-hand offline consumption. There is a need to investigate the motivational factors underlying this type of behaviour, particularly considering the advent of different types of online platforms (website vs. app).

Shopping motivation has high theoretical and practical relevance in shopping behaviour. Wagner and Rudolph (2010) developed a theory on the hierarchy of shopping motivations as purpose-fulfilment (Barbopoulos and Johansson, 2017; Michaud Trevinal and Stenger, 2014), demand-fulfilment (Kollmann et al., 2012), and activity-fulfilment (Parguel et al., 2017; Gullstrand Edbring et al., 2016). The current study examines the notion of branded second-hand online shopping behaviour from the motivation theory perspective.

Purpose-fulfilment indicates recreation and task-fulfilment, where hedonic value, style, and the need for status fall under this category. Activity-fulfilment refers to economic shopping, bargain hunting, and gratification, where price and eco-consciousness fall under this category. Demand-fulfillment refers to convenience, where brand involvement, brand nostalgia, and the need for uniqueness are categorised under this typology.

2.4. Hypothesis development

2.4.1. Price

Prior research on second-hand shopping identified two primary drivers; environmental and economic factors (Xu et al., 2014; Cervellon et al., 2012). As an economic factor and an important element of the marketing mix, price conveys an important piece of information, which could directly affect consumer behaviour. According to Williams and Paddock (2003), price plays a central role in second-hand shopping due to its economic benefits for consumers. While customers generally prefer high-value products, it does not necessarily mean they are willing to pay a high price for them (Achabou and Dekhili, 2013). Especially for low-income consumers, second-hand consumption is a way to efficiently utilise resources (money) (Chancellor and Lyubomirsky, 2011) enabling them to address distressing debts and satisfy their basic needs (Ferraro et al., 2016). Guiot and Roux (2010) highlight economic motivations such as the desire to buy at a lower price, search for fair prices, and the gratification of paying a bargained price as the main reasons for second-hand consumption. On the other hand, Tan et al. (2022) indicate that economic value weakens customer engagement in sustainable resale behaviour. Additionally, customers consider the price as an indicator of product quality (Huang and Sarigöllü, 2012; Gultinan, 2011). Therefore, online shopping platforms are likely to motivate customers to purchase second-hand products where they can find fair prices (Guiot and Roux, 2010) and more information (Wu et al., 2011). Comparing second-hand clothing consumption between American and Chinese young consumers, the findings of Xu et al. (2014) showed significant differences, where American consumers exhibited a higher acceptance in second-hand shopping influenced by environmental concerns and the thrill of finding lower prices. However, cultural differences in price sensitivity may affect the strength of the relationship between price and branded second-hand shopping, with consumers from cultures that prioritise cost savings showing a stronger preference for low prices.

H1: Low price has a positive impact on purchase behaviour towards branded second-hand online shopping.

2.4.2. Need for uniqueness

Second-hand shoppers are often referred to as connoisseurs and collectors (Palmer and Clark, 2005). Tian et al. (2001, p. 52) define the need for uniqueness as “the trait of pursuing differentness relative to others through the acquisition, utilisation, and

disposition of consumer goods to develop and enhance one's social and self-image". Snyder (1992) states that the need for uniqueness arises when customers seek to differentiate themselves from others, resist conformity, and appreciate unique and special items. Cervellon et al., (2012) also consider creating a unique identity and avoiding similarity as the need for uniqueness. In collectivist cultures, consumers might have a lower need for uniqueness compared to individualistic cultures, where differentiation and self-expression through second-hand shopping might be more pronounced. Satisfaction is attained when customers' need for uniqueness allows them to counteract conformity with others around them and meet appeals related to product scarcity (Tian et al., 2001). Consumers of second-hand products can create a unique style to differentiate themselves from others (Yan et al. 2015). Additionally, consumers with the need for uniqueness are likely to explore non-traditional options, such as buying products through second-hand channels rather than normal channels (Guiot and Roux, 2010).

H2: The need for uniqueness has a positive effect on the purchase behaviour toward branded second-hand online shopping.

2.4.3. Brand nostalgia

Nostalgia is typically defined as a positive influence triggered by a person's past, and according to Holbrook and Schindler (1991), it is the preference for things that were more popular when one was younger. In consumption studies, no unanimity has been reached on the definition of nostalgia (Hartmann and Brunk, 2019). Nostalgia is a desire to find an old product belonging to a way of life, type of manufacture, bygone tradition, attachment to a company, or historical period (Guiot & Roux, 2010). Consumers from different cultural backgrounds may have different relationships with nostalgia, with some cultures placing a greater emphasis on historical connections and past products, while others may be more focused on the present. As a post-modern condition, such as "structure counterbalancing anti-structure in lived experience" (Cantone et al., 2020: p. 481), there is a possibility that second-hand shopping would link the present to the past. Guiot and Roux (2010) indicate that French second-hand shoppers are nostalgic hedonists. Nostalgia is one of the driving forces of re-consumption (Cervellon and Brown, 2018), and consumers perceive nostalgia as a value that triggers moral dilemmas (Södergren, 2022). This lack of consensus

highlights the complexity of this variable and indicates gaps in the research that require further investigation. Therefore, it is hypothesised that:

H3: Brand nostalgia has a positive effect on purchase behaviour towards branded second-hand online shopping.

2.4.4. Brand involvement

Hollebeek et al. (2014) define brand involvement as the level of a customer's interest in a particular brand and it reflects his/her degree of brand commitment. Brand involvement is a way of eliminating the demand for counterfeit goods (Bian and Haque, 2020). It also indicates the extent to which the product/brand is personally relevant to the customer and the higher the importance of the brand in the customer's life, the higher the degree of involvement, according to O'Cass (2004). Bian and Haque (2020, p. 438) indicate that "brand involvement with consumers has become a strategic marketing endeavour of luxury brands". In some cultures, brand involvement could be crucial to consumer decisions, while in others, consumers may prioritise functional over emotional ties to brands. For example, Lee et al. (2020) find that the cultural factor of power distance could affect customers' brand involvement. The degree of involvement ascertains the complexity and depth of behavioural and cognitive processes (Stewart et al., 2019). Schwob et al. (2022) indicate that casual selling will lead to the collective involvement of sellers in social commerce platforms. In addition, customers with a high level of brand involvement have a high level of personal relevance (Gligor and Bozkurt, 2022). As a limitation of their study, Jaiswal and Kant (2018) highlight that future research needs to consider brands' role in green purchase behaviour. It is likely that the notion of brand involvement will contribute to increasing brand patronage (Yoo and Lee, 2012) and brand attachment (Shimul et al., 2019) toward branded second-hand products, purchased both online and offline. Therefore, this study hypothesises that:

H4: Brand involvement has a positive effect on purchase behaviour towards branded second-hand online shopping.

2.4.5. Eco-consciousness

Eco-conscious consumption is defined as behaviours of acquisition, storage, use, and maintenance of products in such a way that has less waste and/or consumes fewer resources (Connell, 2010). After the financial crisis in 2008, many companies sought to incorporate sustainability and social responsibility initiatives within their business processes (Giesler and Veresiu, 2014). Consequently, environmental concerns and ethical issues gained public awareness (Morgan and Birtwistle, 2009). Consumers realised that overconsumption is harming the environment and the economy, drawing attention from companies (Chancellor and Lyubomirsky, 2011; Yeow et al., 2014). Consumers began purchasing environmentally friendly goods and paying attention to sustainable practices (Parguel et al., 2017). Second-hand shopping enables consumers to be conscious of the environment by engaging in collaborative consumption practices (Ferraro et al., 2016). Environmentally conscious consumers prefer purchasing less hazardous goods and choose second-hand items that do not harm the environment (Papaioikonomou et al., 2011; Szmigin et al., 2009). In a qualitative investigation by Karimzadeh and Boström (2024) comparing ethical consumption behaviours between Swedish and Iranian citizens, they found that Swedish participants are more environmentally responsible in terms of buying second-hand goods and using electric cars while for Iranian consumers philanthropy reasons are prioritised. Consumers in countries with stronger environmental regulations or public awareness about sustainability might have a greater tendency to purchase second-hand items than those in regions where such concerns are less prominent. Consumers believe that recycling or reusing products is a practical method to limit waste and reduce negative impacts on the environment (Bianchi and Birtwistle, 2010) and society as a whole. If conscious behaviour translates into consumer purchase decisions, it could be argued that customers are inclined toward sustainable consumption (Jaiswal and Kant, 2018).

H5: Eco consciousness has a positive impact on purchase behaviour toward branded second-hand online shopping.

3. Method

The “Technique for Order Preference by Similarity to Ideal Solution” or TOPSIS method is one of the classic methods for solving “Multiple Criteria Decision Making” (MCDM) which is proposed by (Hwang and Yoon, 1981) to find out a solution from a

finite set of options (Tavana et al., 2021). As shown in Section 2.1, we used fuzzy TOPSIS (Chen, 2000) on a set of variables to rank the factors identified in Table 1. This study applied covariance-based structural equation modelling, using AMOS software version 25 (for assessing the measurement, structural, and rival models), on two samples with different cultural backgrounds to examine the output of fuzzy TOPSIS.

To assess sample size efficiency and perform power analysis, this study employed the “inverse square root” and “gamma-exponential” methods as outlined by Kock and Hadaya (2018). Following the guidelines of Kock and Hadaya (2018) and considering the minimum absolute significant path coefficient in the theoretical model, $B=0.12$ (representing the Eco Consciousness \rightarrow Branded Second-hand Online Shopping Behaviour path coefficient), and a significance level of $P\text{-value}=0.05$, a sample size of $N=205$ (using the inverse square root method) or $N=187$ (utilising the gamma-exponential method) is necessary to achieve a high power level of 95% (see Appendix B). Therefore, the sample sizes of 261 in Study 2 and 317 in Study 3 are deemed sufficient for further analysis. In addition, this research also utilised “a priori sample size calculator” for SEM (Soper, 2023). With a statistical power level of 80%, a probability level of 0.05, 6 constructs, 26 indicators, and anticipated effect sizes of 0.35 (high), and 0.25 (medium) (Dattalo, 2007; Westland, 2010), the calculator recommended sample sizes of 110 and 246. Therefore, given that the sample size for this research is 261 for Study 2 and 317 for Study 3, this requirement is met.

Pilot testing ($n=30$) was conducted before the main data collection in Malaysia and France to ensure the reliability of the measurement items. This multimethod research employed purposive sampling, a non-probability sampling technique (Barratt et al., 2015) The study population includes individuals from Malaysia ($n=261$) and France ($n=317$) given the unavailability of the population of Malaysian and French branded second-hand online shoppers. For measurement, following the norm in latent variable measurement (Westland, 2015), items for price (Kim et al., 2012), need for uniqueness (Wu et al., 2012), brand nostalgia (Fritz et al., 2017), brand involvement (O’Cass, 2000), and eco-consciousness (Roberts and Bacon, 1997) were adopted from established research. Qualtrics online platform was used for both Malaysia and France samples. Only participants responding “Yes” to the preliminary question, “Do you

purchase branded second-hand products through online platforms or apps?” were included in the data analysis. A 7-level Likert scale was used, anchored from “1: strongly disagree” to “7: strongly agree”.

To ensure that the collected data is free from common method variance, Harman’s one-factor test (Podsakoff et al., 2003) was applied, and findings of the principal component analysis of a single factor were below the threshold of 50% for both samples of Malaysia (24%) and France (28%). Furthermore, based on Bagozzi’s general rule of thumb (Bagozzi et al., 1991), the highest correlation between variables in Malaysia sample is 0.545 (the correlation between brand involvement and behavioural intention towards branded second-hand online shopping, in Table 3), and the highest correlation between variables in France sample is 0.381 (the correlation between brand involvement and behavioural intention towards branded second-hand online shopping, in Table 5). This is below the threshold of 0.9. Therefore, common method variance is not a concern in this multimethod research. Finally, this research used an “expectation-maximization algorithm” (Little, 1988) to address missing data and to randomness.

4. Results

4.1. Study 2

A total of 261 valid responses were collected from Malaysia. Of the respondents, 52.5 percent are male, with 53.3 percent using websites and 46.7 percent using apps for their purchases. The primary platforms for acquiring branded second-hand products were Carousell (34.5 percent), Facebook (31.4 percent), Mudah (16.5 percent), Lelong (11.5 percent), and others. The results of Confirmatory Factor Analysis (CFA) (see Table 3) demonstrate high confirmatory values. Table 3 presents Alpha, CR, and MaxR(H) values used to assess the internal consistency of the measured constructs. The results indicate that these values for each unobserved construct surpass the threshold, confirming the reliability of the measurement items.

To assess construct validity, both convergent and discriminant validities were examined. Convergent validity is achieved when the AVE value exceeds 0.50, according to Hair et al. (2010). Table 3 indicates that the lowest AVE is 0.65 for eco-consciousness, affirming convergent validity. For discriminant validity, the MSV and

the Fornell and Larcker (1981) criterion were employed. As shown in Table 3, MSV values are lower than AVEs, and the square roots of AVEs surpass the inter-correlations of constructs, confirming discriminant validity.

Having confirmed reliability and validity, the hypotheses were tested using the maximum likelihood technique (see Table 4). The results of hypothesis testing for the Malaysian sample indicate that three hypotheses are supported. The positive relationship between low price and branded second-hand online shopping behaviour (H1: Standardized Path Coefficient (SPC) = 0.55, p-value = 0.00), brand involvement and branded second-hand online shopping behaviour (H4: SPC = 0.23, p-value = 0.00), and eco-consciousness and branded second-hand online shopping behaviour (H5: SPC = 0.23, p-value = 0.00) are supported. The findings indicate that the need for uniqueness (H2) and brand nostalgia (H3) are not relevant to branded second-hand online shopping (with p-values of 0.335 and 0.883, respectively). Finally, as shown in Table 4, the structural model indicated acceptable fits with the data ($\chi^2 = 451.66$ with 260 df, $\chi^2/df = 1.737$, CFI = 0.96, AGFI = 0.90, TLI = 0.96, GFI = 0.90, and RMSEA = 0.05).

Table 3: Reliability and validity of Malaysia sample (Insert Here)

Table 4: Results of hypothesis testing for Malaysia sample (Insert Here)

4.2. Study 3

A total of 317 valid responses from France were also collected, of which 55.2 per cent of respondents are female. The majority of respondents used websites (67.5 per cent) for their branded second-hand online purchases. They mainly purchased their branded second-hand products from platforms such as Leboncoin (58 per cent), Amazon (12 per cent), eBay (7.2 per cent), Vinted (7 per cent), Priceminister (4.7 per cent), and others. The participants for both Malaysia and France samples were recruited via online surveys and university databases. Recruitment was conducted through mailing lists ensuring that the sample was representative of consumers who purchase second-hand branded goods online. As tabulated in Table 3, the results of CFA indicate high confirmatory values. The threshold of 0.7 is achieved for Alpha, CR, and MaxR(H) values, thereby confirming the reliability of the constructs. To examine the validity, the AVE values are also above the threshold of 0.50. MSV values are lower than

AVEs, and the Fornell and Larcker (1981) criterion is also met, showing the discriminant validity of constructs.

Surprisingly, the results of hypothesis testing for the French sample are identical to the Malaysian sample, with three hypotheses supported. Regarding H1, there is a positive relationship between low prices and branded second-hand online shopping behavior (SPC = 0.23, p-value = 0.04). The relationship between brand involvement and branded second-hand online shopping behavior (H4: SPC = 0.32, p-value = 0.00) is also supported. Additionally, the results support H5, indicating a positive relationship between eco-consciousness and branded second-hand online shopping behavior (SPC = 0.12, p-value = 0.05). Similar to the Malaysian sample, the findings show that the need for uniqueness and brand nostalgia is not relevant to branded second-hand online shopping (with p-values of 0.854 and 0.871, respectively), rejecting H2 and H3. Finally, Table 6 shows that the structural model has a good fit with the data ($\chi^2 = 400.83$ with 215 df, $\chi^2/df = 1.864$, CFI = 0.95, AGFI = 0.90, TLI = 0.95, GFI = 0.90, and RMSEA = 0.05).

Table 5: Reliability and validity of France sample (Insert Here)

Table 6: Results of hypothesis testing for France sample (Insert Here)

4.3. Results of multigroup analysis

This study also tested the multigroup analysis across the types of platforms (website vs. app), gender groups (male vs. female), and cultural settings (Malaysia vs. France) to examine the extent to which the proposed relationships may differ across both countries. AMOS software is applied for multigroup analysis. Using 2000 bootstrap sampling and a bias-correlated confidence interval of 90 per cent (Hair et al., 2010), the CFA of the rival model showed high confirmatory values. The results of multigroup analysis are tabulated in Tables 7 and 8. Regarding the types of platforms, there were no differences in the Malaysia sample. However, in the France sample, the path coefficient difference of -0.534 indicates that the relationship between brand involvement and branded second-hand online shopping behaviour is stronger for French app users. It is essential to note that the negative path coefficient difference of -0.534 is simply the difference between groups (websites vs. apps) assigned in the AMOS software and doesn't signify a negative relationship. Interestingly, the path

coefficient difference of 0.143 shows that French website users are more eco-conscious. Furthermore, there were no differences across gender groups in both the Malaysian and French samples.

Based on the rival model, this study examined whether the results of hypothesis testing differ across Malaysia and France samples. The path coefficient difference of 0.381 in Table 8 suggests that the low price of branded second-hand products is more important for Malaysian online shoppers than for French counterparts. Finally, the path coefficient difference of 0.146 indicates that Malaysians are more eco-conscious than French-branded second-hand online shoppers which is potentially related to the collectivistic nature of Eastern culture.

In addition, this research tested the unobserved heterogeneity in collected samples. To examine the unobserved heterogeneity, we followed the guidelines of Sarstedt et al. (2022) and considering the sample size efficiency to estimate the power analysis in terms of “inverse square root” and “gamma-exponential” suggested by Kock and Hadaya (2018), our sample sizes for both studies allowed us to consider four segments to test the heterogeneity. Based on the results of the latent class analysis and the fit indices tabulated in Appendix C, the AIC3, CAIC, and BIC values are consistent, and the EN has a minimum value of 0.5. Therefore, we found no hidden heterogeneity groups, and unobserved heterogeneity is not a concern in our study. The next section discusses the findings and highlights the implications of this study.

Table 7: Multi-group analysis across the type of platforms and gender groups (Insert Here)

Table 8: Multi-group analysis across cultural settings (Insert Here)

5. Discussion and conclusion

Nowadays, the notion of collaborative consumption (Zhang et al., 2019; Ruiz-Alba et al., 2021) holds greater significance, especially as consumers can easily purchase branded second-hand goods through websites and apps. E-commerce giants have established their online platforms and apps for second-hand transactions, responding to the growing acceptance of such products (Luo et al., 2020). Studies on online

second-hand shopping are still limited. While previous research extensively covered traditional second-hand shopping, fewer studies delved into online second-hand shopping in general (for instance, Padmavathy et al., 2019; Turunen and Pöyry, 2019) and none have explored motivational factors toward branded second-hand online shopping thus far. Furthermore, a multimethod cross-cultural investigation is necessary to examine the purchase behavior of nations concerned about climate change toward branded second-hand products through websites and apps. This research conducted three studies to illuminate our understanding of this phenomenon, as collaborative consumption behavior toward branded goods becomes a norm in the global market (Choi and He, 2019; Park and Armstrong, 2019).

There is no consensus on the positive outcomes of economic values and second-hand online shopping behavior. The results of the study by Fernando et al. (2018) indicate that second-hand online shoppers are less frugal. Tan et al. (2022) also demonstrated that the economic value of second-hand online shopping reduces customer engagement in sustainable resale behavior. Contrary to the findings of Fernando et al. (2018) and Tan et al. (2022), the results of this cross-cultural study showed that a low price (in line with Ferraro et al., 2016; Sihvonen and Turunen, 2016; Paras et al., 2018) is conducive to branded second-hand online purchase behavior, where the price had the highest impact among Malaysian online buyers (path coefficient of 0.55). Perhaps, Eastern culture is more economical (Pae, 2020) compared to French branded second-hand online shoppers. Furthermore, shoppers prefer spending less to purchase products due to economic and psychological reasons (Sihvonen and Turunen, 2016). The economic recession of 2008 was pivotal in propelling consumers toward second-hand shopping at a lower price. Therefore, low-income shoppers are more likely to buy second-hand products at a lower price from thrift stores online (Seo and Kim, 2019). The findings of both studies indicated that brand involvement is conducive to branded second-hand online purchase behaviour where brand involvement had the highest effect on French online shoppers (path coefficient of 0.32). Western culture likely has a stronger commitment to brands (Zhang et al., 2014) while shopping for second-hand products through online platforms and apps.

The results of the current study confirmed that eco-consciousness is one of the pivotal factors that motivate shoppers in both countries to purchase branded second-hand products via websites and apps. Previous researchers introduced several methods through returning used products into the supply chain loop, such as reducing reuse, recycling, remanufacturing, refurbishing, and repairing (Sharma et al., 2021; Kabirifar et al., 2020), to prevent landfills and mitigate negative environmental impacts of products on the planet. Consumers play a key role in these processes, and based on the results of this study, it appears that they are becoming more environmentally conscious (Golob and Kronegger, 2019; Lin and Niu, 2018).

Contrary to the studies by Xu *et al.* (2014), Yan et al. (2015), and Padmavathy et al. (2019), the hypothesis on the need for uniqueness and branded second-hand online shopping is rejected. Surprisingly, contrary to the findings of Cervellon and Brown (2018), the results of both samples also implied that brand nostalgia is not relevant to customer behaviour towards branded second-hand online shopping. Perhaps, the need for uniqueness and the effect of brand nostalgia have more significance in vintage clothing or antique goods, and they appear to be less relevant in the context of branded second-hand online shopping

The findings of the multi-group analysis highlight the significance of apps and websites in collaborative consumption behavior. Branded second-hand online shoppers are more likely to prefer anonymity when purchasing used products, compared to traditional second-hand buying. Hence, technology plays a stimulating role in this online behavior (Mulcahy et al., 2020). Similarly, the results indicate that French app users exhibit a higher level of commitment to brands, aligning with Fang (2019) suggestion that apps foster greater brand involvement. Moreover, French website users demonstrate a higher level of eco-consciousness. This may suggest that website users, potentially those in the early stages of technology adoption (such as elderly individuals who value the environment), are not as tech-savvy as millennials.

The results of a multi-group analysis in both cultural settings suggest that Malaysian online shoppers are more price-sensitive when it comes to branded second-hand products, potentially reflecting cultural differences between Eastern and Western societies (Westjohn et al., 2017). Additionally, Malaysians exhibit a higher

level of eco-consciousness compared to French-branded second-hand online shoppers. This aligns with the findings of a sustainability reports by Nielsen and Ipsos on global warming concerns (Nielsen, 2011; Ipsos, 2022) indicating that the Asia Pacific regions, including Malaysia, express greater concern than their European counterparts about climate change. This difference might also be influenced by the collectivistic nature of Eastern culture (Pae, 2020).

5.1. Theoretical Implications

This study extends consumer theory (McCracken, 1986) by demonstrating how branded second-hand online shopping aligns with identity construction and self-expression, especially in a cross-cultural context. This study also shed light on motivation theory (Wagner and Rudolph, 2010) by categorising shopping motivations into purpose-fulfilment, demand-fulfilment, and activity-fulfilment, showing how these drive consumers to engage in branded second-hand online shopping. The findings also advances collaborative consumption framework (Belk, 2014) by identifying price sensitivity, eco-consciousness, and brand involvement as key determinants of consumer participation in second-hand markets. Our cross cultural research contributes to digital transformation in second-hand shopping highlighting the role of online platforms in facilitating sustainable consumption. In addition, the cultural variations in price sensitivity and eco-consciousness revealed that Malaysian consumers are more price-sensitive and environmentally aware compared to their French counterparts. The results refine the understanding of brand involvement across cultures, showing that French app users are more committed to brands, while website users are more eco-conscious. Finally, contrary to previous literature, the need for uniqueness and brand nostalgia do not significantly impact branded second-hand online shopping, suggesting that these factors may be more relevant to vintage or luxury segments rather than general branded second-hand markets.

5.2. Practical Implications

Any small decision by consumers that will lead to waste reduction and help in any stage of reverse logistics should be welcome. Due to the global warming challenges and the high degree of pollution, this study asserts that it is time for a bottom-up approach where consumers play a significant role in sustainable practices and contribute to waste reduction and circular economy initiatives. The results of the

current study are valuable to retailers as well. Since price plays a dominant role, online second-hand retailers should highlight price advantages in their marketing campaigns, especially targeting price-sensitive consumers in Malaysia.

Retailers should comprehend the importance of branding in sustainable consumption behaviour in general (Bocken, 2017) and luxury products in particular (Osburg et al., 2021). Platforms should reinforce the eco-friendly benefits of second-hand shopping, particularly for environmentally conscious consumers in both regions. The findings of this multimethod research highlighted the importance of brand involvement in branded second-hand online shopping in both cultural settings. Given that app users in France have higher brand involvement, retailers should enhance mobile app experiences and invest more in their branding initiatives with loyalty programs and brand-focused engagement features to improve their brand image and boost brand attachment. This would have psychological impacts on consumers to re-purchase the products and participate in collaborative consumption (da Silveira et al., 2022). Finally, since website users tend to be more sustainability-driven, platforms can integrate carbon footprint tracking, sustainability certifications, and green incentives on their websites.

6. Limitations and future directions

This study focused on specific determinants of branded second-hand online shopping, primarily to mitigate the risk of non-response bias associated with lengthy survey questionnaires. Future research should explore additional variables identified in the initial study, such as hedonic value, style, and the need for status. Moreover, there is a need for inductive investigations to identify other driving forces related to collaborative consumption and understand the cross-cultural triggers of such behaviors for the betterment of our environment and planet Earth. Potential factors like social motivations, materialism, and variety-seeking could be explored as additional triggers for branded second-hand online shopping.

Notably, this research did not consider the type of products involved. Future studies should assess the extent to which purchase decisions vary across different product types. Additionally, more cross-cultural studies are essential to corroborate findings from multigroup analyses across cultural settings. Methodologically, this

research contributes valuable insights. Future studies undertaking longitudinal or cross-cultural investigations should consider adopting the methodological structure applied in this research.

Appendix A: An example of branded second-hand online shopping (Insert Here)

Appendix B: Sample size efficiency (Insert Here)

Appendix C: Fit indices for one- to four-segment solutions (Insert Here)

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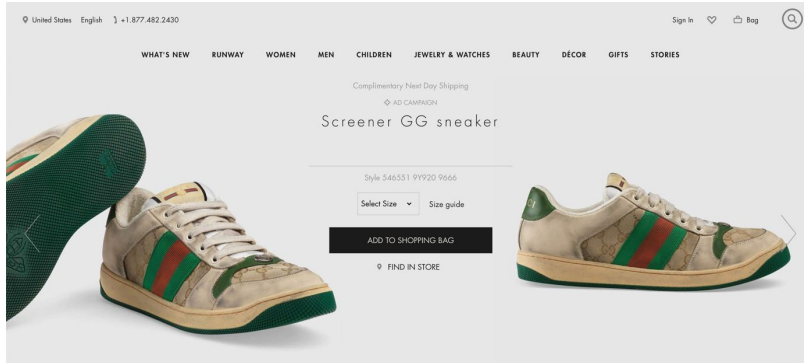
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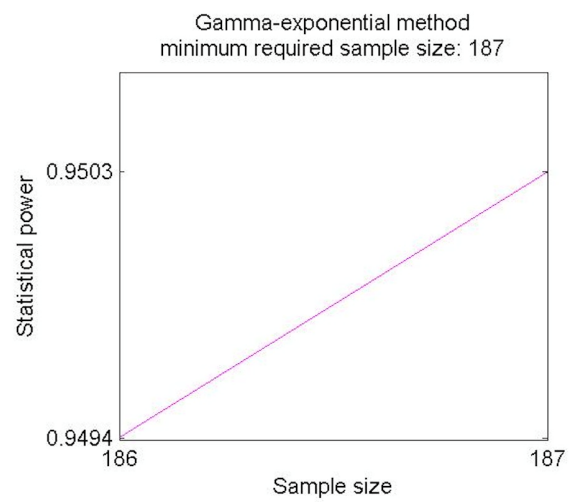
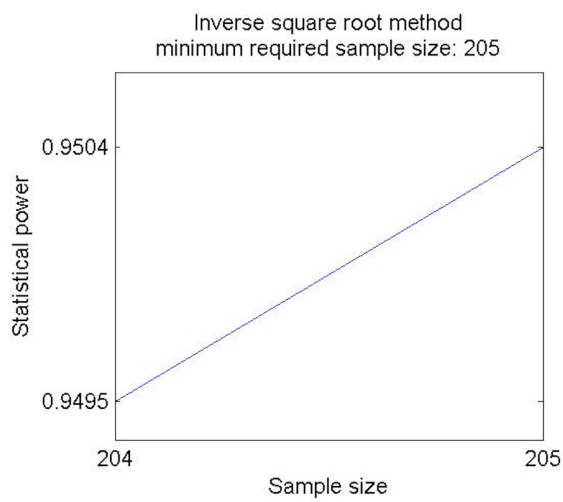
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Appendix A: An example of branded second-hand online shopping



Appendix C: Sample size efficiency



List of Tables

Table 1: Proposed factors associated with branded second-hand online shopping

No.	Factors	References
1	Price	(Guiot and Roux 2010; Cervellon et al. 2012; Carrigan et al. 2013; Turunen and Leipämaa-Leskinen 2015; Sihvonen and Turunen 2016; Fernando et al. 2018; Liang and Xu 2018; Paras et al. 2018; Padmavathy et al., 2019)
2	Brand nostalgia	(Guiot and Roux 2010; Lasaleta et al. 2014; Cervellon and Brown 2018)
3	Eco-consciousness	(Cervellon et al. 2012; Xu et al. 2014; Yan et al. 2015; Liang and Xu 2018)
4	Need for uniqueness	(Guiot and Roux 2010; Liang and Xu 2018; Padmavathy et al., 2019)
5	Hedonic value	(Liang and Xu 2018)
6	Brand involvement	(Cervellon et al. 2012)
7	Need for status	(Cervellon et al. 2012)
8	Style	(Cho et al. 2015; Sihvonen and Turunen 2016)

Table 2: Identifying d_i^+ , d_i^- , ranking order and closeness coefficient by fuzzy TOPSIS

Factors	d_i^+	d_i^-	CC_i	Ranks
Price (C1)	1.828528	5.546636	0.752070	2
Brand Nostalgia (C2)	1.955201	5.454708	0.736137	4
Eco-consciousness (C3)	2.309705	5.168045	0.691123	5
Need for uniqueness (C4)	1.800609	5.557791	0.755299	1
Hedonic value (C5)	2.733138	4.599736	0.627276	6
Brand involvement (C6)	1.920091	5.472414	0.740265	3
Need for status (C7)	3.610149	3.701435	0.506243	8
Style (C8)	3.545613	3.789002	0.516592	7

Notes: CC: Closeness Coefficient

Table 3: Reliability and validity of Malaysia sample

Constructs	CR	AVE	MSV	Cr. Alpha	MaxR(H)	EcoCons	Price	NFU	Brand Nostalgia	BrandInv	BehInt
EcoCons	0.936	0.649	0.165	0.935	0.944	0.806					
Price	0.918	0.789	0.496	0.918	0.923	0.226	0.888				
NFU	0.927	0.761	0.217	0.926	0.929	0.191	0.286	0.872			
Brand Nostalgia	0.888	0.666	0.144	0.884	0.899	0.323	0.137	0.379	0.816		
BrandInv	0.948	0.859	0.297	0.948	0.949	0.278	0.498	0.466	0.341	0.927	
BehInt	0.891	0.732	0.496	0.888	0.895	0.406	0.704	0.256	0.214	0.545	0.856

Notes: EcoCons: Eco-consciousness; NFU: Need for Uniqueness; BrandInv: Brand Involvement; BehInt: Behavioural Intention. CR: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Variance; MaxR(H): Maximum Reliability.

Table 4: Results of hypothesis testing for Malaysia sample

Hypothesis	Path	Malaysia	
		SPC	P-Value
H1	Low Price → Branded Second-hand Online Shopping Behaviour	0.55	0.00**
H2	Need for Uniqueness → Branded Second-hand Online Shopping Behaviour	-0.06	0.335 ^{ns}
H3	Brand Nostalgia → Branded Second-hand Online Shopping Behaviour	0.01	0.883 ^{ns}
H4	Brand Involvement → Branded Second-hand Online Shopping Behaviour	0.23	0.00**
H5	Eco Consciousness → Branded Second-hand Online Shopping Behaviour	0.23	0.00**
Model Fit Indices			
	X ²	451.66	
	DF	260	
	CFI	0.96	
	GFI	0.90	
	AGFI	0.90	
	TLI	0.96	
	RMSEA	0.05	

Notes: SPC: Standardized Path Coefficient; CI: Confidence Interval; ns: Not Significant; CFI: Comparative Fit Index; GFI: Goodness of Fit Index; AGFI: Adjusted GFI; TLI: Tucker Lewis index; RMSEA: Root Mean Square Error of Approximation; *P<0.05; **P<0.00

Table 5: Reliability and validity of France sample

Constructs	CR	AVE	MSV	Cr. Alpha	MaxR(H)	EcoCons	Price	NFU	Brand		
									Nostalgia	BrandInv	BehInt
EcoCons	0.936	0.675	0.017	0.928	0.940	0.822					
Price	0.742	0.574	0.037	0.670	0.743	0.009	0.612				
NFU	0.824	0.617	0.044	0.806	0.926	0.055	0.172	0.785			
Brand Nostalgia	0.881	0.653	0.045	0.879	0.910	-0.095	0.192	0.207	0.808		
BrandInv	0.902	0.754	0.145	0.901	0.910	0.007	0.163	0.210	0.212	0.868	
BehInt	0.772	0.536	0.145	0.757	0.807	0.130	0.101	0.087	0.101	0.381	0.732

Notes: EcoCons: Eco-consciousness; NFU: Need for Uniqueness; BrandInv: Brand Involvement; BehInt: Behavioural Intention. CR: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Variance; MaxR(H): Maximum Reliability.

Table 6: Results of hypothesis testing for France sample

Hypothesis	Path	France	
		SPC	P-Value
H1	Low Price → Branded Second-hand Online Shopping Behaviour	0.23	0.04**
H2	Need for Uniqueness → Branded Second-hand Online Shopping Behaviour	0.01	0.854 ^{ns}
H3	Brand Nostalgia → Branded Second-hand Online Shopping Behaviour	0.01	0.871 ^{ns}
H4	Brand Involvement → Branded Second-hand Online Shopping Behaviour	0.32	0.00**
H5	Eco Consciousness → Branded Second-hand Online Shopping Behaviour	0.12	0.05*
Model Fit Indices			
	χ^2	400.83	
	DF	215	
	CFI	0.95	
	GFI	0.90	
	AGFI	0.90	
	TLI	0.95	
	RMSEA	0.05	

Notes: SPC: Standardized Path Coefficient; CI: Confidence Interval; ns: Not Significant; CFI: Comparative Fit Index; GFI: Goodness of Fit Index; AGFI: Adjusted GFI; TLI: Tucker Lewis index; RMSEA: Root Mean Square Error of Approximation; *P<0.05; **P<0.00

Table 7: Multi-group analysis across the types of platforms and gender groups

Relationships	Groups	Type of platforms (Website vs. App)		Gender groups (Male vs. Female)	
	Path	PC difference (Malaysia)	PC difference (France)	PC difference (Malaysia)	PC difference (France)
Price → Branded Second-hand Online Shopping Behaviour		0.073 _(CI, -0.15: 0.28)	0.033 _(CI, -0.34: 0.62)	-0.074 _(CI, -0.32: 0.14)	0.054 _(CI, -0.25: 0.40)
Need for Uniqueness → Branded Second-hand Online Shopping Behaviour		-0.181 _(CI, -0.35: 0.03)	0.231 _(CI, -0.13: 0.86)	0.140 _(CI, -0.39: 0.31)	0.079 _(CI, -0.22: 0.45)
Brand Nostalgia → Branded Second-hand Online Shopping Behaviour		-0.095 _(CI, -0.30: 0.10)	0.085 _(CI, -0.13: 0.29)	-0.074 _(CI, -0.27: 0.12)	0.063 _(CI, -0.11: 0.25)
Brand Involvement → Branded Second-hand Online Shopping Behaviour		0.187 _(CI, -0.06: 0.47)	-0.534 _{(CI, -0.82: -0.27)**}	0.040 _(CI, -0.19: 0.31)	0.110 _(CI, -0.11: 0.35)
Eco Consciousness → Branded Second-hand Online Shopping Behaviour		-0.001 _(CI, -0.22: 0.21)	0.143 _{(CI, -0.00: 0.32)*}	0.112 _(CI, -0.09: 0.32)	0.075 _(CI, -0.04: 0.21)

Notes: PC: Path Coefficient; CI: Confidence Interval; *P<0.05; **P<0.00

Table 8: Multi-group analysis across cultural settings

Path	PC difference (Malaysia vs. France)
Price → Branded Second-hand Online Shopping Behaviour	0.381 _{(CI, 0.20: 0.57)*}
Need for Uniqueness → Branded Second-hand Online Shopping Behaviour	-0.066 _(CI, -0.24: 0.12)
Brand Nostalgia → Branded Second-hand Online Shopping Behaviour	-0.010 _(CI, -0.14: 0.11)
Brand Involvement → Branded Second-hand Online Shopping Behaviour	-0.038 _(CI, -0.20: 0.13)
Eco Consciousness → Branded Second-hand Online Shopping Behaviour	0.146 _{(CI, 0.03: 0.27)*}

Notes: PC: Path Coefficient; CI: Confidence Interval; *P<0.00

Appendix C: Fit indices for one- to four- segment solutions

Malaysia Sample	Number of Segments			
Criteria	Segment 1	Segment 2	Segment 3	Segment 4
AIC (Akaike's Information Criterion)	561.181	524.447	521.276	493.368
AIC3 (Modified AIC with Factor 3)	567.181	537.447	541.276	520.368
AIC4 (Modified AIC with Factor 4)	573.181	550.447	561.276	547.368
BIC (Bayesian Information Criteria)	582.568	570.785	592.566	589.61
CAIC (Consistent AIC)	588.568	583.785	612.566	616.61
HQ (Hannan Quinn Criterion)	569.777	543.073	549.932	532.054
MDL5 (Minimum Description Length with Factor 5)	716.116	860.14	1037.728	1190.578
LnL (LogLikelihood)	-274.59	-249.223	-240.638	-219.684
EN (Entropy Statistic (Normed))	NA	0.83	0.488	0.696
NFI (Non-Fuzzy Index)	NA	0.84	0.447	0.641
NEC (Normalized Entropy Criterion)	NA	44.277	133.683	79.402

France Sample	Number of Segments			
Criteria	Segment 1	Segment 2	Segment 3	Segment 4
AIC (Akaike's Information Criterion)	854.988	840.286	805.189	790.766
AIC3 (Modified AIC with Factor 3)	860.988	853.286	825.189	817.766

AIC4 (Modified AIC with Factor 4)	866.988	866.286	845.189	844.766
BIC (Bayesian Information Criteria)	877.541	889.152	880.367	892.256
CAIC (Consistent AIC)	883.541	902.152	900.367	919.256
HQ (Hannan Quinn Criterion)	863.997	859.805	835.219	831.306
MDL5 (Minimum Description Length with Factor 5)	1015.755	1188.615	1341.079	1514.218
LnL (LogLikelihood)	-421.494	-407.143	-382.594	-368.383
EN (Entropy Statistic (Normed))	NA	0.567	0.787	0.745
NFI (Non-Fuzzy Index)	NA	0.626	0.774	0.695
NEC (Normalized Entropy Criterion)	NA	137.367	67.631	80.853