



I heard that a second-hand product was co-created. Shall I buy it?

The role of customer trust and personal norms in
the purchase intentions of second-hand products

Maria Filomena Martins de Brito

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Abstract

Title: I heard that a second-hand product was co-created. Shall I buy it? The role of customer trust and personal norms in the purchase intentions of second-hand products

Author: Maria Filomena Martins de Brito

It is urgent to adopt sustainable practices to answer the environmental consequences we are now facing. Therefore, it is crucial to understand the product and individual characteristics that lead customers' positive attitudes toward sustainability to concrete actions. The novelty of this research comes from the perspective of how co-creation fosters purchase intentions of second-hand products.

Two studies were developed based on the second-hand furniture market and using the furniture retailer IKEA. The first aimed to understand the users' preferences and motivations to choose second-hand. The second study followed an experimental design in which second-hand products were redesigned and co-created with the community or only redesigned by the company.

Along with the higher preference for first-hand products, in the first study, we show that purchase intentions for second-hand products are indirectly affected by the perceived quality and social norms through customer trust and personal norms, respectively.

From study 2, we concluded that co-creation moderates the effect of customer trust and personal norms on purchase intentions, and that different collaborators in the co-creation process influence the results. Co-creation promotes higher purchase intentions for customers with lower levels of customer trust and/or personal norms.

The research results give relevant insights for strategies to increase the purchases of second-hand products, highlighting mediators and moderators who play a role in customer decision-making.

Keywords: sustainability, second-hand products, co-creation, purchase intentions, perceived quality, customer trust, social norms, personal norms

Resumo

Título: Ouvi dizer que um produto em segunda mão foi cocriado. Devo comprá-lo? O papel da confiança do consumidor e de normas pessoais nas intenções de compra de produtos em segunda mão

Autor: Maria Filomena Martins de Brito

É urgente adotar comportamentos mais sustentáveis para responder às consequências ambientais que enfrentamos. Assim, é crucial entender as características dos produtos e individuais que levam as atitudes positivas dos consumidores em relação à sustentabilidade a traduzir-se em ações. A novidade deste estudo vem com a perspectiva de como a cocriação pode moderar as intenções de compra de produtos em segunda mão.

Dois estudos foram desenvolvidos tendo por base o mercado de mobiliário e o IKEA. O objetivo do primeiro estudo foi perceber as preferências dos consumidores e as motivações para escolherem produtos em segunda mão. O segundo foi um estudo experimental onde os produtos em segunda mão eram redesenhados e cocriados por profissionais e a comunidade, ou apenas por profissionais.

Para além da preferência por produtos em primeira mão, no primeiro estudo, reparamos que a intenção de compra por produtos em segunda mão depende indiretamente da perceção de qualidade, através da confiança que transmite ao consumidor, e de normas sociais, através das normas pessoais.

No segundo estudo concluímos que o processo de cocriação modera o efeito da confiança do consumidor e das normas pessoais nas intenções de compra, e os diferentes colaboradores envolvidos têm impacto nos resultados. Cocriação promove intenções de compra superiores quando a confiança do consumidor e/ou as normas pessoais são inferiores.

Os resultados obtidos dão pontos de abordagem relevantes para estratégias de incentivo de mercados em segunda mão, elencando os mediadores e moderadores que influenciam a decisão do consumidor.

Palavras-chave: sustentabilidade, produtos em segunda mão, cocriação, intenções de compra, qualidade, confiança do consumidor, normas sociais, normas pessoais

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Chiara Luce

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1. Introduction

1.1. Contextual Framework

According to the World Health Organization (WHO), in 2019, 99% of the world's population was living below the recommended air quality guidelines (World Health Organization, 2021). Carbon dioxide measured at Mauna Loa Observatory (MLO) peaked in 2022 at levels not seen for millions of years (Bressan, 2022). Moreover, the Intergovernmental Panel on Climate Change (IPCC) reported that the past decade is likely to have been the hottest period in the last 125,000 years (Mulhern, 2022). Other studies found that oceans absorbed 20 sextillion joules of heat in 2020, and since the mid-1990s, our planet has lost around 28 trillion tons of ice (Mulhern, 2022).

These unsettling effects are the consequences of years of undervaluing the environmental impact of modern societies based on manufacturing and excessive consumption rates. For this reason, a crucial question for academic research, governments, policymakers, companies, and consumers is how to enforce the adoption of more sustainable consumer behaviors to diminish the negative environmental footprint of the current consumption pattern (Gonzalez-Arcos et al., 2021).

White, Habib, and Hardisty (2019) define sustainable consumer behaviors as “actions that result in decreases in adverse environmental impacts as well as decreased utilization of natural resources across the lifecycle of the product, behavior, or service” (White et al., 2019). In this research, sustainability will be tested as waste prevention through product reuse with second-hand products. Product reuse is associated with increasing material efficiency and reducing environmental impacts (Thomas, 2003) since it is the practice of returning a discarded product to active use (Fortuna & Diyamandoglu, 2017).

Consumers are increasingly encouraged to be ethically concerned and engage in sustainable practices (Wiederhold & Martinez, 2018). Despite consumers' positive attitudes concerning sustainability, behaviors do not always reflect that intention. Prior studies support the gap between attitudes and behaviors, showing that consumers do not regularly behave according to their views, failing to turn sustainability priorities into purchasing decisions (Heiny et al., 2021).

Research has been developed to understand the barriers and driving forces of sustainable behaviors for ethically concerned consumers, their purchase intentions, actual conduct, and how to decrease the attitude-behavior gap (Wiederhold & Martinez, 2018).

Bray et al. (2011) identified factors constraining ethical consumption, such as price sensitivity, lack of information, personal experiences, quality perception, cynicism, inertia in purchasing behavior, and suppression of ethical obligation and guilt (Bray et al., 2011). Barriers against second-hand products are not generally associated with the price, typically lower, but mostly with perceived quality and the risks associated with purchasing a previously used product (Edbring et al., 2016).

To understand the purchase intentions of sustainable products, authors suggest the importance of considering the product and individual characteristics in the analysis (Park & Lin, 2020) and the role of perceived quality and customer trust, and social and personal norms as driving forces of sustainable consumer behaviors. Marakanon and Panjakajornsak (2017) showed that, for environmentally friendly electronic products, quality perception indirectly affects customer loyalty through customer trust (Marakanon & Panjakajornsak, 2017). Kim and Seock (2019) propose that personal norms mediate the relationship between social norms and environmentally friendly apparel purchasing behavior (Kim & Seock, 2019).

Considering the market push for sustainability while considering the barriers and drivers of sustainable consumption behaviors, companies rely on innovations to implement more sustainable products and processes (Saunila et al., 2018).

Customer co-creation is an open innovation strategy in which companies engage with users in the innovation process, providing a platform for collaboration (Bogers et al., 2010). As global digital adoption increased, the position of consumers has shifted from mere spectators to actors with leading roles, enabling unique value co-creation between companies and collaborating users. (Prahalad & Ramaswamy, 2004a).

Co-creation is believed to influence sustainable consumer behaviors (Liu et al., 2022). Researchers have explored the positive role of co-creation on the relationship between corporate social responsibility (CSR) and customer behaviors (Liu et al., 2022). Nevertheless, it remains to be studied how customer co-creation can be employed as an innovative approach to uncover purchase intentions of second-hand products.

According to the interpersonal influence theory, in a social environment, individuals' influence on others can be informational and normative (Zadeh et al., 2019). Informational influence refers to the individual's agreement with information provided by others as evidence of reality (Zadeh et al., 2019). The normative influence refers to pressure to behave according to the expectations of others (Zadeh et al., 2019). The inclusion of customers in the innovation process provides a source of information and expectations for society. Therefore, the marketing communication of co-created products promotes higher spread and acceptance in the marketplace (Arnold, 2017).

Iglesias et al. (2020) showed that co-creation enhances customer trust (Iglesias et al., 2020). Dahl et al. (2015) showed that the preference for customer co-created products is higher than for company-designed products due to market affinity and identification with the individuals that collaborate in the design process (Dahl et al., 2015).

Because it urges to close the sustainability gap and lead sustainable positive attitudes to behaviors, we will investigate how co-creation can instill customer trust and influence personal norms for higher market acceptance of second-hand products.

1.2. Research Questions

To better answer the problem stated before, this study will raise three questions to untangle the consumer behavior mechanisms that foster or hinder the purchase intentions of second-hand products:

RQ1: What is the role of perceived quality and social norms on purchase intentions of second-hand products? Is the effect mediated by customer trust and personal norms, respectively?

RQ2: Can co-creation influence purchase intentions towards second-hand products? If so, how?

RQ3: What is the impact on purchase intentions of second-hand products of different collaborators' profiles in the co-creation process?

1.3. Scope and Relevance

This research offers relevant points of understanding for the academic community, governments, managers, and firms on how co-creation communication promotes higher purchase intentions regarding second-hand products.

Communication is recognized to activate engagement and attitudes toward a product or behavior. This study identifies co-creation as a meaningful and innovative tool to promote more sustainable purchase intentions.

1.4. Structure Outline

The research has four parts, the first being this brief introduction. The second is the theoretical discussion, where the available literature is explored to support the hypothesis developed and the conceptual framework. The third section details the methodology and data collection process, followed by the analysis and presentation of the results. Finally, in the general discussion part, the main conclusions are highlighted, as well as the limitations of this research and suggestions for future ones.

2. Literature Review

2.1. Sustainability over time

Sustainability was first introduced in the 17th and 18th centuries in response to dwindling forest resources across Europe (Purvis et al., 2018). After 1960, research on sustainable consumption started in industrialized countries (Vu et al., 2021). The concept of sustainability was formulated in 1987 with the Brundtland Report asserting that “the goal of sustainability is to meet the needs of the present generation without compromising the ability of future generations to meet their own needs” (Arena et al., 2009).

From the firm perspective, sustainability has evolved from Friedman's view that the responsibility of a business is only to increase profits to Freeman's Stakeholders Theory, in which companies should consider stakeholders in drawing future strategies to gain their support (Chang, 2019). More recently, Corporate Social Responsibility principles stated that companies should not only do good but also do better (Lindgreen & Swaen, 2010). Business results are no longer based entirely on economic performance but also consider the two other pillars of sustainable development goals (SDG), the social and environmental repercussions (Purvis et al., 2018).

The circular economy is a trending research topic among sustainability-related concepts (Geisendorf & Pietrulla, 2018) since it is discussed as a practical solution to the sustainability claim (Corvellec et al., 2022). The circular economy is defined as a “regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops thanks to long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling” (Geissdoerfer et al., 2017).

Second-hand consumption emerged as a product reuse model, for reducing resource usage and waste management, through selling used products instead of new ones. Products with significant environmental impact during extraction or production phases, such as furniture and cars, respectively, are especially suitable for adopting this model (Edbring et al., 2016). IKEA is one of the companies already engaged with the second-hand furniture market and highlights the importance of repairing and adapting the furniture to increase the useful life and efficiency of the product (IKEA, 2021).

Used books and apparel are other examples of second-hand markets increasing consumption relevance, mainly due to online market growth (Thomas, 2003).

Sales in second-hand markets are expected to grow significantly in the coming years, not only in the already mentioned ones but also in other products, such as mobile phones, small domestic appliances, and home furnishing accessories (Hristova, 2019; Research Nester, 2023a, 2023b, 2023c, 2023d). Therefore, we aim to understand the drivers that lead consumers to buy second-hand products to meet the projected increase scenarios.

2.2. The attitude-behavior gap in sustainable consumption

Sustainable consumption has been studied from the standpoint of purchase intentions (Vu et al., 2021). The intention is the state of cognition immediately before a behavior and represents the motivation to proceed in a certain way (Vu et al., 2021).

Intentions are the central variable in the Theory of Planned Behavior (TPB) model (Vu et al., 2021), which has been applied to understanding the decision-making process concerning ethical behaviors (Kumar et al., 2017). According to the model, the intention is predicted by attitudes toward the behavior, subjective norms, and perceived behavioral control (Vu et al., 2021). However, despite positive attitudes toward sustainability, few consumers translate that attitude into regular buying behaviors, giving rise to attitudes, intentions, and behavior inconsistencies (Park & Lin, 2020). For this reason, the TPB approach fails to explain the consumer decision-making process for sustainable products (Joshi & Rahman, 2015).

The attitude-behavior gap suggests the presence of barriers against sustainable consumption in the decision-making process (Skard et al., 2021). The most mentioned barriers to the adoption of sustainable consumers behaviors are related to a lack of knowledge and information, lifestyle, perceived behavioral control, cynicism about retailers' claims (from the idea that sustainability is a marketing strategy to increase profits), inertia in purchasing behavior, suppression of ethical obligation and guilt (from the feelings and doubts of making a difference), situational factors, such as promotions, and consumers reluctance driven by the perception of having increased costs and effort, inferior quality perception, poorer aesthetics,

and dissimilar functionality (Bray et al., 2011; Ozaki, 2011; Park & Lin, 2020; White et al., 2019).

Other barriers are added when considering second-hand products, such as the risk associated with purchasing a used product instead of a brand-new one, the lack of information regarding the product state and quality, the durability, the confidence in the seller, and the lack of guarantees (Edbring et al., 2016).

While numerous barriers can be identified as reasons behind the discrepancies between attitudes and behaviors, past scholars have divided these factors into those related to the product and those unique to the individual (Joshi & Rahman, 2015; Park & Lin, 2020). Product functional attributes, personal perspectives, and socio-demographic variables emerged as the key triggers of sustainable consumer behaviors (Park & Lin, 2020).

This research focuses on the product and individual characteristics as the drivers for decreasing the attitude-behavior gap by increasing the purchase intentions for second-hand products. Price incentives will not be considered.

2.2.1. Decreasing the gap through product characteristics

Product characteristics highlight to a great view the utilitarian value for the consumer. Utilitarian value comes from tangible and functional benefits from the capacity to fulfill performance needs through, for example, product quality and usability (Lin et al., 2018; Park & Lin, 2020).

Past researchers examined the sustainable liability argument, which stated that consumers believe that the sustainable value added to a product comes at the expense of performance, so products with sustainable benefits would have lower performance (Chernev & Blair, 2021), leading consumers to trade-offs evaluations between sustainability and utilitarian benefits (Skard et al., 2021).

Luchs et al. (2010) tested that when strength-related attributes are more valued than gentleness, there is a greater preference for less sustainable options (Luchs et al., 2010). Lin and Chang (2012) evidenced that consumers translate the belief of less effectiveness from sustainable

products by increasing the amount of product used to compensate for the perceived lower performance (Lin & Chang, 2012). Other studies showed that consumers are less likely to purchase a sustainable product when they perceive that the company intentionally made the product better for the environment than when the same benefits occur as an unintentional side effect (Newman et al., 2014).

However, the lack of product benefits for sustainable goods is not verified in all product categories. Organic products, for example, are associated with higher quality because of the perception of being healthier and tastier (Magnier et al., 2016).

In the case of second-hand products, products can be distinguished by unique and vintage qualities, increasing interpersonal differentiation, and self-expressiveness values (Park & Lin, 2020). Despite that, second-hand products are more related to a perception of insufficient quality (Pretner et al., 2021). These negative associations with product quality come from previous usage marks and the perception of reduced durability compared to a new product, although products may be improved and repaired before being resold (Pretner et al., 2021).

After testing that the willingness to pay (WTP) for circular products (both recycled and reused) was lower than for a new one, Pretner et al. (2021) showed that when there is information on the package about the environmental benefits, WTP increases and more significantly when that information is certified by a third-party (Pretner et al., 2021). Approval from an external entity lowers the risk perception and reassures customers that their functional needs will be met (Pretner et al., 2021). Therefore, along with perceptions of quality, customers need confidence that their expectations will be fulfilled.

Trust is defined as a “state that exists when one party has confidence in an exchange partner’s reliability and integrity” (Randall et al., 2011). Trust reflects the needed customer’s confidence that the company will provide a satisfactory product/service in a transaction that involves uncertainty (Franklin & Marshall, 2019; Randall et al., 2011)

Marakanon and Panjakajornsak (2017) propose the importance of developing positive quality perceptions and customer trust in the marketing strategies of sustainable products, showing that for environmentally friendly electronic products, customer trust have a positive direct effect on loyalty, while quality perceptions have a positive indirect effect on loyalty through the mediation of customer trust (Marakanon & Panjakajornsak, 2017).

Prior research has studied the relationship between customer trust and loyalty (Iglesias et al., 2020; Sarwar, 2012). When a trusting relationship connects a customer and a product/service of a company, the customer is likely to have positive purchase intentions and build a lifetime commitment of loyalty towards that company (Iglesias et al., 2020; Sarwar, 2012).

As such, we suggest that second-hand products with higher quality perceptions will trigger customer trust, resulting in greater purchase intentions. Thus, it is expected that perceived quality of second-hand products has a positive indirect effect on purchase intentions of second-hand products through the mediation of customer trust.

H1: The positive effect of perceived quality of second-hand products on purchase intentions is mediated by customer trust.

2.2.2. Decreasing the gap through individual characteristics

Social identity theory suggests that individual identity includes personal and social identity, meaning the person's sense of self and the groups to which a person belongs, respectively (White & Simpson, 2013).

While addressing the sustainability gap, researchers have highlighted the role of social influence, discussing that social factors are important drivers of sustainable consumer behaviors (Raven, 1964; White et al., 2019). Social influence is seen as a change in a person's attitude or behavior driven by external actors, such as another person or a group (Raven, 1964).

Thus, a person's actions can be explained by normative influence, which comprises the burden of expectations people feel when adopting a behavior (Miniard et al., 1983; Park & Lin, 2020).

White et al. (2019) proposed a framework to SHIFT consumer behaviors to be more sustainable. The research identified social norms as a variable of social influence (White et al., 2019), proposing that social norms can be a powerful mechanism for persuading and encouraging prosocial meanings and behaviors (Nolan et al., 2008; White et al., 2019).

Individuals are exposed to two types of social norms during social interactions, descriptive and injunctive norms. Descriptive norms set “what is typically done in a given setting” (Reno et al., 1993), and injunctive norms define “what is typically approved in society” (Reno et al., 1993).

As descriptive norms refer to what other people are doing, these norms provide clues to what will be the most effective and adaptive action (Cialdini et al., 1990). Thus, descriptive norms are strong predictors of sustainable consumer behaviors being most effective in similar contexts (White et al., 2019). Descriptive norms as a source of information are likely to be used when the situation is novel, ambiguous, or uncertain (Goldstein et al., 2008; White & Simpson, 2013).

Instead of orienting individuals for how others are behaving, injunctive norms align people toward what is socially approved or disapproved (Reno et al., 1993). Injunctive norms are most efficient when the applicability of interpersonal rewards and punishments can be activated, therefore mainly possible when combined within a culture, group, or community (Cialdini et al., 2006; Reno et al., 1993; White et al., 2019).

The actions and opinions of others, if accepted by the individual, become internalized into the personal value system (Miniard & Cohen, 1983). Thøgersen (2006) called personal norms to “internalized norms” and pointed to the importance of social norms to be integrated into the self, as it leads to behavior persistence (Thøgersen, 2006). According to the Norm Activation Model, personal norms are felt as moral obligations, translating into ethical behavioral intentions and self-expression of morality (Kim & Seock, 2019).

Past researchers have tested the relationship between personal and social norms on sustainable practices. Han et al. (2018) showed that the positive effect of social norms on vacationers’ waste reduction and recycling was mediated by personal norms (Han et al., 2018). Kim and Seock (2019) also indicated the mediation of personal norms in the positive relationship between social norms and the purchase of sustainable apparel (Kim & Seock, 2019).

Accordingly, we expect high agreement with social norms to promote greater personal internalization of sustainable consumer behavior. So, social norms will have a positive indirect effect on purchase intentions of second-hand products through the influence (mediation) of personal norms on purchase intentions.

H2: The positive effect of social norms on purchase intentions of second-hand products is mediated by personal norms.

2.3. Co-creation as an innovative solution

To address a trend of growing consumer demand for more sustainable consumption, companies are embracing green innovations. Green innovations differ from the traditional approach in the explicit purpose of generating new products that focus on sustainable characteristics or emphasizing the sustainability of the development process (Saunila et al., 2018). Green innovations respond to the external pressures for legitimacy and are positively correlated with a corporate competitive advantage (Chen et al., 2006, 2012; Li et al., 2017). Therefore, promoting green innovations is crucial to increase attractiveness and valuable solutions (Saunila et al., 2018).

An approach to green innovations can emerge from open innovation. In this research, the role of customer co-creation in promoting sustainable behaviors will be developed and tested.

Open innovation emerged as a novel approach that integrated external stakeholders into firms' innovation processes and competitive strategies (Laursen & Salter, 2006). As such, internal and external stakeholders interact with new ideas, interests, and expertise that can encourage companies to adopt new products and processes for more sustainable behaviors (Chang, 2019). Relevant external stakeholders with valuable inputs are often suppliers, customers, competitors, or universities (West & Bogers, 2014).

Customers are one of the most important stakeholders due to the tacit knowledge gained through product usage (Bogers et al., 2010). As such, customer co-creation emerged as an open innovation strategy whereby the firm interacts with customers in a fully open and transparent process to develop new products. For Prahalad and Ramaswamy (2004), co-creation is “about joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit the context; a joint problem definition and problem-solving” (Prahalad & Ramaswamy, 2004b). In other words, the customers become part of the value-creation network of the firm (Corsaro, 2019).

Giving freedom for individuals to play a role in product development increases the potential for consumer-focused solutions, overcoming the challenge of transferring tacit knowledge and articulating needs, wants, and desires into the firm innovation process (Gemser & Perks, 2015; von Hippel, 2005). Firms with a co-creation approach exhibit higher product novelty, user value, and efficiency driven by consumer focus, diminishing the likelihood of product failure

and time to market (Song et al., 2021). Customer co-creation is also positively associated with a firm competitive advantage and sales performance (Corsaro, 2019; Luchs et al., 2016).

From the perspective of the participating customers in the value co-creation, which we will also call collaborators, research highlights the benefits of better product fit, higher customer satisfaction, and feelings of accomplishment and ownership (Dahl et al., 2015; Song et al., 2021).

A significant part of the market acknowledges that a product was co-created through marketing communication. These consumers constitute the large majority of the market and are the ones capable of influencing the firm's sales and competitive advantage. The broader market, i.e., non-participating consumers, also called observing consumers, are those that buy the product but do not take part in the co-creation process (Liljedal & Dahlén, 2018).

Research has pointed out that co-creation positively influences non-participating consumers' perception of collaborative firms. Firms that communicate to the broader market their innovation strategy as co-creation are perceived to have a higher ability to innovate (Schreier et al., 2012), to be more customer-oriented (Fuchs & Schreier, 2011), increasing customers' preference and purchase intentions (Schreier et al., 2012), their willingness to pay and to recommend to others (Schreier et al., 2012; Song et al., 2021).

Consumer gains from co-creation are also related to personal and social benefits, such as activating the sense of community belonging (Gemser & Perks, 2015). Community involvement is "a virtue in itself" (Voorberg et al., 2015). Not only does co-creation with the customers bring value for new product development, but the engagement of individuals and communities is the basis of new value creation (Ramaswamy, 2009; Rowley et al., 2007). The market begins to resemble a forum organized around participants in the co-creation and their experience, promoting dialogue among the consumers, the firms, and consumer communities (Prahalad & Ramaswamy, 2004a, 2004b).

2.3.1. Co-creation and customer trust

Following the dialogue attitude inherent to co-creation, Randall et al. (2011) propose that "through dialogue, the customers and the firm, as well as the community of customers among

themselves, create bonds of integrity and shared risk” (Randall et al., 2011). Therefore, customer trust in co-creation is based on dialogue and transparency with active and empowered consumers (Prahalad & Ramaswamy, 2004b). Iglesias et al. (2020) showed that co-creation has a significant positive effect on customer trust and loyalty (Iglesias et al., 2020).

As previously mentioned, one barrier to the adoption of more sustainable behaviors was cynicism, the consumers' perspective that ethical claims are marketing strategies to gain competitive advantage and not based on authentic values (Bray et al., 2011). Second-hand products were also linked to insufficient confidence in product state and quality, in the sellers, and scarcity of guarantees (Edbring et al., 2016).

Customer co-creation can be a solution to overcome these barriers since it is perceived as a more transparent innovation method ensuring consumers of the legitimacy of the product and company claims (Iglesias et al., 2020; Randall et al., 2011). Customer co-creation can provide greater confidence in second-hand products, decreasing the risks associated with the purchase and strengthening the positive relationship between customer trust and purchase intentions.

Therefore, we claim that the influence of customer trust on purchase intentions of second-hand products will be stronger when the second-hand products are co-created with other customers rather than redesigned by the company. We argue that increasing customer trust in a scenario with co-creation will have a stronger positive effect on purchase intentions of second-hand products than increasing customer trust in a company-designed scenario. In the co-creation scenario, the underline value of legitimacy and transparency from the collaboration with other customers positively impacts purchase intentions.

H3a): The positive effect of customer trust on purchase intentions towards second-hand products is stronger (weaker) for co-created (company-designed) second-hand products.

2.3.2. Co-creation and personal norms

Co-creation is the expression of the collaborating customers' values and felt needs (Zwass, 2010). Therefore, co-creation communication will not impact all observing consumers in the same way. Dahl et al. (2015) propose that the perceived similarity between the observing

consumers and the collaborators will influence consumers' preference toward co-created products (Dahl et al., 2015; Song et al., 2021).

Adapting the insights from White et al. (2019) on social identities, where it is said that “seeing the self-similar to a typical recycler predicts recycling intentions” (White et al., 2019), seeing the self as similar to a customer who is participating in a co-creation to increase the adoption of more sustainable products, will impact the purchase intentions for the co-created products.

As previously mentioned, Bray et al. (2011) identified suppression of ethical obligations and guilt were two factors impeding ethical consumption. Thereby, when the co-creation approach stimulates affinity with the participating consumers, the user identity will be activated, triggering personal norms (Dahl et al., 2015).

Customer co-creation in second-hand products will encourage observing customers identification with people that are doing something for the environment and, in this context, that are helping companies to promote second-hand products. The social identification with the collaborators in the co-creation process will trigger user identity and how the user wants to be seen, influencing ethical and moral charges to adapt the second-hand co-created product.

Consequently, we suggest that for second-hand products, co-creation will endorse the positive effect of personal norms on purchase intentions towards the second-hand products due to the identification with the collaborators in the co-creation process. This indicates that increasing personal norms in a scenario with co-creation will have a stronger positive effect on purchase intentions of second-hand products than increasing personal norms in a company-designed scenario, due to the higher ethical and moral charges on co-creation.

H3b): The positive effect of personal norms on purchase intentions towards second-hand products is stronger (weaker) for co-created (company-designed) second-hand products.

2.3.3. Impact of collaborators in the co-creation process

The challenge in choosing collaborators to participate in the co-creation process is to select the right ones to reach the best solution for the problem the company aims to solve (Pisano & Verganti, 2008).

To study the influence of different collaborators, we will follow two approaches. The first is with collaborators that may strengthen the relationship between customer trust and purchase intentions. The second is with collaborators that may reinforce the relationship between personal norms and purchase intentions.

2.3.3.1. Collaborators in co-creation and customer trust

As previously discussed, second-hand products are mainly associated with low perceived quality and confidence because of uncertainty regarding the product state and usage marks.

Therefore, to strengthen customer trust in purchasing second-hand products, it will be beneficial to communicate the co-creation process with high-status customers (Fuchs et al., 2013). Fuchs et al. (2013) showed that describing the collaborators in the co-creation process as artists can mitigate negative associations to quality perception and trigger agentic feelings (Fuchs et al., 2013).

Collaboration with artists is expected to bring higher aesthetic value, skills, and status to the co-creation process endorsing customer trust, similar to luxury brand designers (Fuchs et al., 2013). For second-hand products, co-creation with artists may also activate the unique and vintage benefits of used products, promoting interpersonal differentiation and self-expression of values and status (Park & Lin, 2020).

Consequently, the inclusion of artists as collaborators in the co-creation process will likely strengthen the relationship between customer trust and purchase intentions of second-hand, in comparison to co-creation with other collaborators and company-designed scenarios, due to higher legitimacy from artists' collaboration in the co-creation process.

H4a): The positive effect of customer trust on purchase intentions of second-hand products is stronger (weaker) for second-hand products co-created with artists (second-hand products co-created with other collaborators and company-designed second-hand products).

2.3.3.2. Collaborators in co-creation and personal norms

The extent to which an individual takes the conduct of others as guiding actions to their behavior is based on the degree of social identification, being expected that individuals are more influenced by immediate surroundings relevant to their identity since people want to gain and preserve the approval from similar ones important to the self-image (Thompson & Malaviya, 2013).

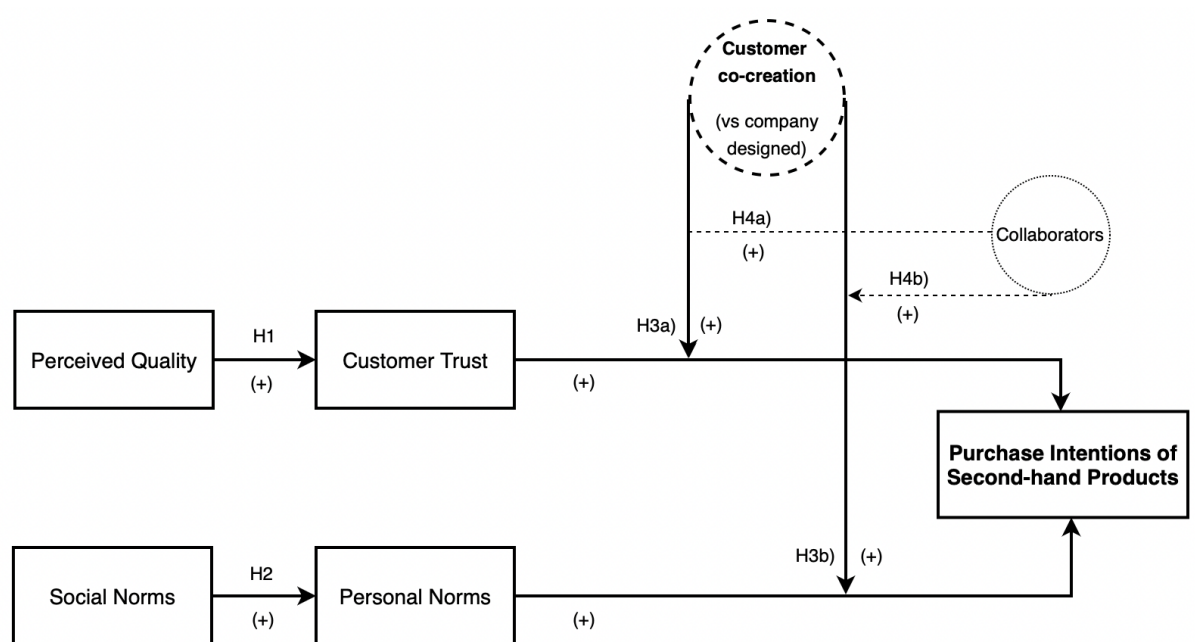
Social identification can be triggered by similar characteristics. Previous research has shown that similarities between a customer and a salesperson have a positive influence on purchase intentions (Jiang et al., 2010). Thompson and Malaviya (2013) showed that for consumer-generated ads, identification with the collaborators enhanced shared identity, increased positive judgements, and boosted persuasion (Thompson & Malaviya, 2013).

In our research, social identification with the collaborators in the co-creation process will be established within a specific demographic group. It is expected that customers in the same demographic group that the collaborators in the co-creation process will have a higher agreement with personal norms, and the influence of personal norms on purchase intentions will be stronger due to higher ethical and moral charges on behavior.

Therefore, the perceived similarity with the collaborators will impact the strength of the relationship between personal norms and purchase intentions.

H4b): For individuals from a specific demographic group, the positive effect of personal norms on purchase intentions is stronger (weaker) for second-hand products co-created with collaborators from the same demographic group (second-hand products co-created with other collaborators and company-designed second-hand products).

2.4. Conceptual Framework



3. Methodology and Data Analysis

Two different studies were performed to test the four hypotheses. Both studies were developed using the second-hand furniture market and having IKEA as a reference brand to facilitate the simulation of the shopping experience.

As already stated in the literature review, the benefits of selling and buying second-hand products led many markets to emerge, such as second-hand apparel, cars, books, machinery, electronics, and furniture (Research Nester, 2023a; Thomas, 2003). Studies reveal that for the period 2018-2025, the growth of the global second-hand furniture market is estimated to expand with a Compound Annual Growth Rate (CAGR) of 6.4% during the forecast period (Research Nester, 2023a).

From the second-hand furniture market, second-hand beds were chosen as the basis of the studies since it is one of the major segments of the market anticipated to grow at a CAGR of 5,8% over 2018-2025 (Research Nester, 2023a).

IKEA brand was chosen due to its worldwide spread and strong presence in the industry. IKEA is one of the leaders in the second-hand furniture market, and the values of the company are deeply associated with sustainable practices and promoting circular principles with renewable and recycled materials (IKEA Test Secondhand Store Format, n.d.). Secondly, IKEA already implemented co-creation projects in the past, promoting the help of consumers to create better products and solve people's problems at home (Co-Creation - Working with You to Create Better Products, n.d.).

Studies Overview. Study 1 was a pre-experimental design test with no independent variable manipulated. This study aimed to test customers' purchase intentions for new (first-hand) versus second-hand products and the role of perceived quality, customer trust, social norms, and personal norms promoting higher purchase intentions of second-hand beds (H1 and H2).

Study 2 used an experimental research design since this type of quantitative design is commonly used in social sciences for controlled testing of causal relationships between two or more variables (Jackson & Cox, 2013). Co-creation scenarios were manipulated to test moderation effects on the relationship between the variables and purchase intentions of second-hand products. To respond to the hypothesis formulated, the effect of co-creation was tested on the relationship between customer trust and purchase intentions (H3a) and the relationship between

personal norms and purchase intentions (H3b), as well as the influence of different collaborators on customer trust effect on purchase intentions (H4a) and personal norms on purchase intentions (H4b).

Both surveys were distributed online and performed on Qualtrics. The answers were collected through personal networking and online platforms, Amazon Mechanical Turk and Clickworker. The use of crowdsourcing platforms made it easier and quicker for data collection with a large and diverse participant pool at cost-efficient pricing. However, it also has disadvantages. Diversity doesn't guarantee its representativeness, leading to potential sampling bias. Other challenges are due to the paid compensation for workers, such as inattention and non-naivete (Aguinis et al., 2021; Follmer et al., 2017).

3.1. Study 1 | Purchase intentions of second-hand products

The first study tested the preference for a first-hand/new bed versus a second-hand one and the influencing variables of second-hand purchase intentions. We argue on our hypothesis that purchase intentions of second-hand products are indirectly influenced by perceived quality through the mediation of customer trust (H1) and social norms through the mediation of personal norms (H2).

3.1.1. Method

Participants. The study involved 53 participants aged 20 to 82 ($M_{\text{age}} = 32.43$, $SD = 13.18$). Of the participants, 23 were male (43.40%), 30 were female (56.60%), 34 were Portuguese (64.15%), and 19 were American (35.85%) acquired through the clickworker platform.

Design. The study tested the comparative preference for new and second-hand beds. Participants were presented with a scenario where they were moving to a new apartment and needed to buy a bed. The first questions were related to product involvement and the likelihood of buying at IKEA.

For the purchase decision-making, two options were described for all participants, with no manipulation of the independent variable in this study. For the same price, the participants have the option of a new or second-hand bed.

Purchase intentions were asked before the independent variables considered in the scope of this study, perceived quality, customer trust, social norms, and personal norms. Other control variables were asked to understand if the purchase intentions of second-hand beds were influenced by other factors outside the contextual framework, such as awareness of consequences, sustainability perception, personal responsibility, and environmental concerns. The last questions were regarding demographics (age, gender, current occupation, nationality).

3.1.2. Measures

	Constructs	Measurement items	Scale	Measurement Source
Dependent Variable	Purchase Intentions	I would seriously consider purchasing this product	7-point scale, ranging from (1) "new bed" to (7) "second-hand bed"	(Schreier et al., 2012)
		To me, purchasing this product would be very likely		
		To me, purchasing this product would be very probable		
Independent Variables	Perceived Quality	I think this option would have a better design	7-point scale, ranging from (1) "new bed" to (7) "second-hand bed"	Own construct
		I think this option would have higher quality		
	Social Norms (descriptive and injunctive norms)	People with whom I identify are trying to reduce environmental footprint	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Nolan et al., 2008)
		People with whom I identify are buying second-hand products		(Harland et al., 1999)
		People with whom I identify approve buying second-hand products		
Mediators	Customer Trust	People with whom I identify expect me to buy second-hand products	7-point scale, ranging from (1) "new bed" to (7) "second-hand bed"	Own construct
		I am more confident choosing this option		
	Personal Norms	I am willing to put extra effort into buying second-hand products	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Harland et al., 1999)
		I would feel guilty if I didn't buy second-hand products		(Kim & Seock, 2019)
		I would be a better person if I buy second-hand products		
Control Variables	Product Involvement	I feel morally obliged to buy second-hand products	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Laurent & Kapferer, 1985)
		Choosing a bed is very important to me		
		When you get a bed, it's not a big deal if you make a mistake		
		I can't say that I particularly like to shop for a bed		
	Likelihood of buying at IKEA	You can really tell about a person by the bed she picks out	7-point scale, ranging from (1) "extremely unlikely" to (7) "extremely likely"	Own construct
		I would consider buying a bed at IKEA		
	Sustainability perception	I think this option would be more sustainable	7-point scale, ranging from (1) "new bed" to (7) "second-hand bed"	Own construct
	Awareness of Consequences	Buying second-hand helps to reduce the exhaustion of natural resources	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Ryan & Spash, 2012)
		Buying second-hand will benefit society		
		The effects of pollution on natural resources are worse than we realize		
Control Variables	Personal Responsibility	Claims that current levels of pollution are changing earth's climate are exaggerated	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Kaiser et al., 1999)
		Over the next decades, thousands of species will become extinct		
		Because my personal contribution is very small I do not feel responsible for global warming		
	Environmental Concern	I feel responsible for the condition of the air	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Kilbourne & Pickett, 2008)
		I feel jointly responsible for environmental problems occurring now		
		I feel jointly responsible for the exhaustion of natural resources		
	Environmental Concern	I am very concerned about the environment	7-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree"	(Kilbourne & Pickett, 2008)
		Humans are severely abusing the environment		
		Major political change is necessary to protect the environment		

Table 1 – Constructs and measurement items

Sources: (Harland et al., 1999; Kaiser et al., 1999; Kilbourne & Pickett, 2008; Kim & Seock, 2019; Laurent & Kapferer, 1985; Nolan et al., 2008; Ryan & Spash, 2012; Schreier et al., 2012)

3.1.3. Reliability test

The items from product perception of quality and design have a significant and positive correlation (Pearson Correlation = .62 and $p = .01$), therefore, they were combined into a single variable labeled “Quality”.

The reliability of the scales was measured by Cronbach’s alpha and inter-item correlation. Following the rule that Cronbach’s alpha of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 (or greater) suggests a very good level (Ursachi et al., 2015). The variables were constructed having as a threshold Cronbach’s alpha higher than 0.7. In the case of Cronbach’s alpha lower than 0.7, the items of the variables with lower correlations were excluded to increase the value of alpha and thus internal consistency (Ursachi et al., 2015).

The variables purchase intentions ($\alpha = .94$), perceived quality ($\alpha = .76$), social norms ($\alpha = .88$), personal norms ($\alpha = .81$), awareness of consequences ($\alpha = .87$), personal responsibility ($\alpha = .80$), and environmental concerns ($\alpha = .88$) passed the reliability test and were constructed according to the items' average scores. Product involvement failed the reliability test ($\alpha = .40$) and as such, we excluded the variable from the analysis (see Table 2).

Variable	Items	Corrected item-total correlation	Cronbach's Alpha
Purchase Intentions	I would seriously consider purchasing this product	0.86	.94
	To me, purchasing this product would be very likely	0.88	
	To me, purchasing this product would be very probable	0.88	
Perceived Quality	I think this option would have a better design	0.62	.76
	I think this option would have higher quality	0.62	
Social Norms	People with whom I identify are trying to reduce environmental footprint	0.69	.88
	People with whom I identify approve buying second-hand products	0.81	
	People with whom I identify are buying second-hand products	0.75	
	People with whom I identify expect me to buy second-hand products	0.71	
Personal Norms	I am willing to put extra effort into buying second-hand products	0.57	.81
	I feel morally obliged to buy second-hand products	0.72	
	I would be a better person if I buy second-hand products	0.67	
	I would feel guilty if I didn't buy second-hand products	0.58	
Product Involvement	Choosing a bed is very important to me	0.09	.40
	When you get a bed, it's not a big deal if you make a mistake	0.09	
	I can't say that I particularly like to shop for a bed	0.38	
	You can really tell about a person by the bed she picks out	0.34	
Awareness of Consequences*	Buying second-hand helps to reduce the exhaustion of natural resources	0.75	.87
	Buying second-hand will benefit society	0.79	
	The effects of pollution on natural resources are worse than we realize	0.68	
	Over the next decades, thousands of species will become extinct	0.72	
Personal Responsibility**	I feel responsible for the condition of the air	0.61	.80
	I feel jointly responsible for environmental problems occurring now	0.63	
	I feel jointly responsible for the exhaustion of natural resources	0.75	
Environmental Concern	I am very concerned about the environment	0.59	.89
	Humans are severely abusing the environment	0.84	
	Major political change is necessary to protect the environment	0.73	
	Major social changes are necessary to protect the environment	0.87	

*"Claims that current levels of pollution are changing earth's climate are exaggerated" (item removed to ensure Cronbach's alpha coefficient above .70)

***"Because my personal contribution is very small I do not feel responsible for global warming" (item removed to ensure Cronbach's alpha coefficient above .70)

Table 2 - Reliability analysis of scales

3.1.4. Results

As purchase intentions were asked on a comparatively 7-point scale from (1) “new bed” to (7) “second-hand bed”, a new variable was computed with the preference for first-hand or second-hand beds.

- (0) “*Prefer First-hand (or neutral preference)*” - participants with purchase intentions between 1 and 4, meaning with a higher preference to buy a new bed instead of a second-hand one (or with a neutral preference).
- (1) “*Prefer second-hand*” – participants with purchase intentions higher than 4, meaning with a preference to buy second-hand instead of a new bed.

Analyzing the preferences, it is possible to conclude that 67.92% of the participants would prefer to buy a first-hand bed (36 participants, 3 of them have a neutral preference), and only 17 respondents preferred a second-hand bed (32.08%). The mean for the purchase intentions is equal to 3.06 ($M_{\text{Purchase Intentions}} = 3.06$), and the standard deviation is equal to 2.12 ($SD = 2.12$), meaning that the preference of consumers, on average, is closer to first-hand beds, but has high dispersion.

Performing a One-way ANOVA analysis between purchase intentions and product preference, we can confirm that the difference in purchase intentions for the two groups is statistically significant. So, it is possible to say that for participants that have a preference for first-hand beds the purchase intentions are closer to 1 closer, meaning intentions for buying a new bed, and for participants that have a preference for second-hand beds the purchase intentions are closer to 7, meaning intentions for buying a second-hand bed (Purchase Intentions: $M_{\text{First-hand}} = 1.78$, $M_{\text{Second-hand}} = 5.76$, $\rho < .001$) (see table 2).

A One-way ANOVA analysis was performed to understand the statistical differences for the independent variables and mediators between consumers that preferred a brand-new or a second-hand bed (see Table 3).

Analyzing perceived quality, the results show that the mean difference for the two groups is statistically significant (Perceived Quality: $M_{\text{First-hand}} = 2.58$, $M_{\text{Second-hand}} = 4.35$, $\rho < .001$). As perceived quality was tested on a comparatively 7-point scale from (1) “new bed” to (7) “second-hand bed”, these results suggest that participants that prefer first-hand beds perceive the quality of a new bed to be higher in comparison to a second-hand bed. On the other

hand, for consumers that prefer to buy second-hand, as the mean value is nearly 4 (the neutral option), we can say that they don't perceive the second-hand beds as having higher or lower quality in comparison to new ones but perceive them as having the same level of quality.

The result for customer trust is similar since it was also tested on a comparatively 7-point scale from (1) "new bed" to (7) "second-hand bed". The means difference is statistically significant (Customer Trust: $M_{\text{First-hand}} = 2.08$, $M_{\text{Second-hand}} = 4.82$, $p < .001$), which proposes that customers that prefer to buy first-hand associate higher trust to new beds in comparison to second-hand beds, and the ones that prefer to buy second-hand associate higher trust with second-hand beds in comparison to new ones.

Social norms are statistically significant (Social Norms: $M_{\text{First-hand}} = 4.35$, $M_{\text{Second-hand}} = 5.04$, $p = .05$), meaning that the participants who prefer to buy first-hand have a lower level of agreement with social norms in comparison to the participants that prefer to buy second-hand.

Analyzing personal norms, the results show that the agreement with personal norms was statistically different between the two groups, being higher for consumers that prefer to buy second-hand beds (Personal Norms: $M_{\text{First-hand}} = 4.04$, $M_{\text{Second-hand}} = 5.38$, $p < .001$).

To conclude, consumers with higher intentions to buy second-hand instead of first-hand associate higher quality and trust towards second-hand beds than the ones that prefer to buy first-hand. For norms, it is possible to confirm that the level of agreement with the social and personal norms is higher for respondents that prefer second-hand beds.

Testing variables	Factor	N	Mean	SD	Sig.
Purchase Intentions	Prefer First-hand	36	1.78	.99	<.001
	Prefer Second-hand	17	5.76	.99	
Perceived Quality	Prefer First-hand	36	2.58	1.20	<.001
	Prefer Second-hand	17	4.35	1.75	
Customer Trust	Prefer First-hand	36	2.08	1.30	<.001
	Prefer Second-hand	17	4.82	1.94	
Social Norms	Prefer First-hand	36	4.35	1.19	.05
	Prefer Second-hand	17	5.04	1.25	
Personal Norms	Prefer First-hand	36	4.04	1.16	<.001
	Prefer Second-hand	17	5.38	1.03	

Table 3 – One-way ANOVA analysis of variables

To test the variables that explain purchase intentions for second-hand, a linear regression with Stepwise method was conducted, having purchase intentions (7-point scale) as the dependent variable and perceived quality, customer trust, social norms, personal norms, and the control variables as independent variables, product involvement was not included since the variable didn't pass the reliability test.

The linear regression indicates that customer trust and personal norms are the only variables with a direct influence on purchase intentions of second-hand beds and the effect is positive, which means that increasing customer trust and personal norms lead to higher purchase intentions of second-hand (R – square = .64; ANOVA: $F = 45.79$, $p < .001$; variables that explain the model: customer trust ($B = .73$; $p < .001$), personal norms ($B = .35$; $p = .03$). All the control variables, including the likelihood of buying at IKEA, were excluded from the model, therefore, were not significant to explain purchase intentions (see Table 4_Appendices).

After showing the direct effect of customer trust and personal norms on purchase intentions of second-hand beds, the first two hypotheses will be tested to understand if customer trust and personal norms are full mediators of the effect of perceived quality and social norms, respectively.

3.1.4.1. Testing H1

To formally test H1, a mediation model was conducted with a bootstrap analysis from Preach and Hayes PROCESS model 4 (Hayes, 2017) with purchase intentions as the dependent variable (Y), perceived quality as the independent variable (X), and customer trust as the mediator (M).

The model is significant ($p = .00$) and explains 62% of the variance in the dependent variable (R-square = .62). As expected only trust is significant to explain purchase intentions (coeff = .75 and $p = .00$). While the direct effect of perceived quality on purchase intentions is not significant ($p = .22$), the indirect effect via customer trust is positive and significant (effect = .55; CI= [.32; .81]) (see Table 5). As the confidence interval does not include zero, we do not reject H1. Therefore, the positive effect of perceived quality on purchase intentions of second-hand goes through the full mediation of customer trust.

Direct effect Perceived Quality on Purchase Intentions			
Effect	p-value	LLCI	ULCI
.17	.22	-.11	.46
Indirect effect Perceived Quality on Purchase Intentions			
	Effect	Boot LLCI	BootULCI
Customer Trust	.55	.32	.81

Table 5 – Model 4 PROCESS - Direct/ indirect effects of perceived quality on purchase intentions

3.1.4.2. Testing H2

To formally test H2, a mediation model was conducted with a bootstrap analysis from Preach and Hayes PROCESS model 4 (Hayes, 2017) with purchase intentions as the dependent variable (Y), social norms as the independent variable (X), and personal norms as the mediator (M).

The model is significant ($\rho = .000$) but the model only explains 33% of the variance in the dependent variable ($R\text{-square} = .33$). As expected only personal norms are significant to explain purchase intentions (coeff = .74 and $\rho = .00$). While the direct effect of social norms on purchase intentions is not significant ($\rho = .06$), the indirect effect through personal norms is positive and significant (effect = .27; CI= [.04; .59]) (see Table 6). As the confidence interval does not include zero, we cannot reject H2. Thus, the agreement with personal norms fully mediates the positive effect of social norms on purchase intentions for second-hand products.

Direct effect Social Norms on Purchase Intentions			
Effect	p-value	LLCI	ULCI
.41	.06	-.01	.84
Indirect effect Social Norms on Purchase Intentions			
	Effect	Boot LLCI	BootULCI
Personal Norms	.27	.04	.59

Table 6 – Model 4 PROCESS – Direct/ indirect effects of social norms on purchase intentions

3.1.5. Control variables and demographics

As previously discussed, the control variables did not influence purchase intentions of second-hand beds. To confirm this result, a One-way ANOVA analysis was performed to understand statistical differences in control variables between consumers that preferred a first-hand or a second-hand bed (see Table 7).

As previously mentioned, the use of IKEA branding did not influence purchase intentions. There is no statistically significant difference between the mean likelihood of buying at IKEA for users that prefer first-hand or second-hand beds ($M_{\text{First-hand}} = 5.36$, $M_{\text{Second-hand}} = 6.00$, $\rho = .17$).

The other control variables tested were not statistically significant, showing that factors related to sustainability, such as the sustainable perception ($M_{\text{First-hand}} = 5.22$, $M_{\text{Second-hand}} = 5.59$, $\rho = .58$), the level of awareness of consequences ($M_{\text{First-hand}} = 5.74$, $M_{\text{Second-hand}} = 6.16$, $\rho = .22$), personal responsibility ($M_{\text{First-hand}} = 4.33$, $M_{\text{Second-hand}} = 4.57$, $\rho = .19$), and environmental concerns ($M_{\text{First-hand}} = 5.97$, $M_{\text{Second-hand}} = 5.75$, $\rho = .50$) do not translate into higher or lower purchase intentions for second-hand products.

Control Variables	Factor	N	Mean	SD	Sig.
Likelihood of buying at IKEA	Prefer First-hand	36	5.36	1.68	.17
	Prefer Second-hand	17	6.00	1.23	
Sustainability perception	Prefer First-hand	36	5.22	2.33	.58
	Prefer Second-hand	17	5.59	1.94	
Awareness of Consequences	Prefer First-hand	36	5.74	1.17	.22
	Prefer Second-hand	17	6.16	1.09	
Personal Responsibility	Prefer First-hand	36	4.33	0.56	.19
	Prefer Second-hand	17	4.57	0.73	
Environmental Concerns	Prefer First-hand	36	5.97	1.07	.50
	Prefer Second-hand	17	5.75	1.33	

Table 7 – One-way ANOVA analysis for control variables

Finally, to check the influence of demographics on purchase intentions, an ANOVA analysis was performed. Gender and current occupation variables were not statistically significant (Gender: $\rho = .77$; Current Occupation: $\rho = .29$). However, the means differences between the two nationalities were statistically significant ($M_{\text{PT}} = 2.44$, $M_{\text{US}} = 4.16$, $\rho = .00$). From

this analysis, we can conclude that Portuguese customers have higher purchase intentions for first-hand beds and are statistically different from the purchase intention of Americans, which are higher for second-hand beds (see table 8). This result infers the importance of cultural differences in the market acceptance of second-hand products.

Demographics	Factor	N	Mean	SD	Sig.
Gender	Male	23	2.96	2.24	.77
	Female	30	3.13	2.06	
Current Occupation	Student	9	2.78	1.72	.29
	Full-time/Part-time worker	32	3.19	2.19	
	Student and Full-time/Part-time worker	8	2.75	2.23	
	Retired	2	1.00	.00	
	Other	2	5.50	2.12	
Nationality	PT	34	2.44	1.98	.00
	US	19	4.16	1.95	

Table 8 – One-way ANOVA analysis for demographics

3.1.6. Findings

From the data collected and the analysis performed, it is possible to conclude that first-hand beds are preferred to second-hand ones. It was also possible to show that customer trust and personal norms have a positive direct effect on purchase intentions of second-hand products. Perceived quality has a positive indirect effect on purchase intentions through the mediation of customer trust, and social norms have a positive indirect influence through the mediation of personal norms, supporting H1 and H2, respectively. The brand IKEA did not influence purchase intentions or other variables related to sustainability and the environment. The difference in purchase intentions between Portuguese respondents and Americans showed culture as a relevant variable for studying the market acceptance of second-hand products.

Considering the learnings taken, the following study will analyze how co-creation can boost purchase intentions for second-hand products, increasing the preference for more sustainable behaviors.

3.2. Study 2 | Purchase intentions of second-hand co-created products

This study aimed to test the moderating role of co-creation and its collaborators on purchase intentions of second-hand products, H3 and H4, respectively.

In hypothesis 3, we argue that in scenarios with second-hand co-created products the positive effect of customer trust (H3a) and personal norms (H3b) on purchase intentions are stronger than in scenarios with company-designed second-hand products.

In hypothesis 4, we discuss that the collaboration of artists in the co-creation process will strengthen the relationship between customer trust and purchase intentions (H4a) and that for individuals within a demographic group, collaborators from that same demographic group will empower a stronger relationship between personal norms and purchase intentions (H4b).

3.2.1. Method

Participants. A total of 100 participants aged 19 to 64 ($M_{\text{age}} = 33.26$, $SD = 11.05$), took part in a between-subject design with 3 different scenarios for the redesign of the second-hand products (redesign scenarios: co-creation with artists vs co-creation with students vs company-designed). Answers were collected between the personal network and the Amazon Mturk platform. Of the participants, 12.00% were Portuguese and 88.00% American, the majority were female (53.00%), and 2 respondents preferred not to say. The respondents were randomly assigned to one of three scenarios (scenario 1 had 34 answers, and scenarios 2 and 3 had 33 answers each).

Design. After questions about product involvement and the likelihood of buying at IKEA, participants were presented with the same purchase decision as in study 1. For the same price, respondents could choose a new or second-hand bed. However, in this study, participants were informed about how the second-hand beds were being redesigned, with or without co-creation. As discussed in hypothesis 4, co-creation with artists was chosen to trigger customer trust through the association with higher aesthetic skills and status (Fuchs et al., 2013), while co-creation with students aimed to activate personal norms from students' respondents through identification (Dahl et al., 2015).

Scenario 1: Co-creation with artists - “IKEA is implementing a project that invites artists worldwide to redesign and co-create second-hand products. They are starting by giving a new life to old beds.”.

Scenario 2: Co-creation with students - “IKEA is implementing a project that invites students to redesign and co-create second-hand products. They are starting by giving a new life to old beds.”.

Scenario 3: Company-designed – “IKEA designers are redesigning second-hand products. They are starting by giving a new life to old beds.”.

After the presentation of the scenarios and the manipulation check, respondents evaluated their purchase intention to buy the second-hand bed, how they evaluate the perceived quality, trust, and their agreement with social and personal norms. The last questions were regarding demographics (age, gender, current occupation, nationality).

3.2.2. Measures

Constructs	Measurement items	Scale	Measurement Source
Manipulation check	Who is redesigning the second-hand beds?	7-point scale, ranging from (1) “Only IKEA designs” to (7) “Only Community designers”, option (4) was “IKEA and the community”	(Song et al., 2021)
Dependent Variable	Purchase Intentions	I would seriously consider purchasing the second-hand bed To me, purchasing the second-hand bed would be very likely To me, purchasing the second-hand bed would be very probable	7-point scale, ranging from (1) “strongly disagree” to (7) “strongly agree” (Schreier et al., 2012)
	Perceived Quality	The second-hand bed would have a good design The second-hand bed would have high quality	7-point scale, ranging from (1) “strongly disagree” to (7) “strongly agree” Own construct
Independent Variables	Social Norms (descriptive and injunctive norms)	People with whom I identify are trying to reduce environmental footprint	(Nolan et al., 2008)
		People with whom I identify are buying second-hand products	7-point scale, ranging from (1) “strongly disagree” to (7) “strongly agree” (Harland et al., 1999)
		People with whom I identify approve buying second-hand products	
		People with whom I identify expect me to buy second-hand products	
Mediators	Customer Trust	I am more confident choosing a second-hand bed	7-point scale, ranging from (1) “strongly disagree” to (7) “strongly agree” (Song et al., 2021)
		I can rely on the second-hand bed	
		I can count that the second-hand bed will be good	
	Personal Norms	Buy second-hand is trustworthy I am willing to put extra effort into buying second-hand products I would feel guilty if I didn't buy second-hand products I would be a better person if I buy second-hand products I feel morally obliged to buy second-hand products	(Harland et al., 1999) (Kim & Seock, 2019)
Control Variables	Product Involvement	The choice of furniture is very important to me The furniture I choose for my home is part of my self-image It gives me pleasure to buy furniture I enjoy buying furniture for my home You can tell about a person by the furniture she picks out	7-point scale, ranging from (1) “strongly disagree” to (7) “strongly agree” (Michaelidou & Dibb, 2006)
	Likelihood of buying at IKEA	I would consider buying a bed at IKEA	7-point scale, ranging from (1) “extremely unlikely” to (7) “extremely likely” Own construct

Table 9 – Constructs and measurement items

Sources: (Harland et al., 1999; Kim & Seock, 2019; Michaelidou & Dibb, 2006; Nolan et al., 2008; Schreier et al., 2012; Song et al., 2021)

3.2.3. Manipulation check

Manipulation check. Two nominal variables were created to differentiate the manipulation scenarios:

- Design philosophy: (0) “Company-designed” and (1) “Co-creation”;
- Collaborators: (1) “Artists’ co-creation”, (2) “Students’ co-creation”, and (3) “Company-designed”,

The manipulation check was tested with a One-way ANOVA that compared how participants in each scenario understood who was redesigning the second-hand products. The result was statistically significant for the design philosophy variables ($M_{\text{co-creation}} = 5.06$; $M_{\text{company-designed}} = 2.91$; $\rho < .001$). This means that the mean answer in the co-creation scenarios is closer to “IKEA and the community”, while in the company-designed scenario is closer to “Only IKEA designers”.

The One-way ANOVA performed considering the three collaborators also gives a significant result ($M_{\text{artists}} = 4.97$; $M_{\text{students}} = 5.15$; $M_{\text{company-designed}} = 2.91$; $\rho < .001$). Doing a posthoc test it is possible to show that the mean difference between both co-creation collaborators (artists and students) is not significant ($\rho = .63$), but the difference between a co-creation scenario and the company-designed scenario is always statistically significant ($\rho < .001$). This result indicates that for both co-creation scenarios, respondents associated the redesign of second-hand products as an effort from the company and the community, and for the company-designed scenario associated only with IKEA designers.

It is possible to conclude that the respondents in study 2 understood the design philosophy being tested.

3.2.4. Reliability test

Scale Reliability. The reliability of the scales was measured by Cronbach’s alpha and inter-item correlation. The variables were constructed having as a threshold a Cronbach’s alpha higher than 0.7, the items with lower correlations were excluded to increase the value of alpha and thus internal consistency (Ursachi et al., 2015).

All the variables in the study passed the reliability test and were constructed according to the items' average scores, purchase intentions ($\alpha = .81$), perceived quality ($\alpha = .71$), social norms ($\alpha = .73$), customer trust ($\alpha = .88$), personal norms ($\alpha = .81$), and product involvement ($\alpha = .75$), see Table 10.

Variable	Items	Corrected item-total correlation	Cronbach's Alpha
Purchase Intentions	I would seriously consider purchasing the second-hand bed	.59	.81
	To me, purchasing the second-hand bed would be very likely	.68	
	To me, purchasing the second-hand bed would be very probable	.70	
Perceived Quality	The second-hand bed would have good design	.56	.71
	The second-hand bed would have high quality	.56	
Social Norms	People with whom I identify are trying to reduce environmental footprint	.44	.73
	People with whom I identify approve buying second-hand products	.48	
	People with whom I identify are buying second-hand products	.58	
	People with whom I identify expect me to buy second-hand products	.57	
Customer Trust	I am more confident choosing a second-hand bed	.73	.88
	I can rely on the second-hand bed	.74	
	I can count that the second-hand bed will be good	.72	
	Buy second-hand is trustworthy	.81	
Personal Norms	I am willing to put extra effort into buying second-hand products	.49	.81
	I feel morally obliged to buy second-hand products	.73	
	I would be a better person if I buy second-hand products	.75	
	I would feel guilty if I didn't buy second-hand products	.58	
Product Involvement*	The furniture I choose for my home is part of my self-image	.47	.75
	It gives me pleasure to buy furniture	.56	
	I enjoy buying furniture for my home	.66	
	You can tell about a person by the furniture she picks out	.52	

*"The choice of furniture is very important to me" (item removed to ensure Cronbach's alpha coefficient above .70)

Table 10 - Reliability analysis of scales

3.2.5. Results

Study 2 provides the needed data to test all the hypotheses formulated in this research. Beginning with the analysis of the role of perceived quality (H1) and social norms (H2) on purchase intentions of second-hand beds, and the mediation effects of customer trust and personal norms, analyzed in study 1 (pre-experimental design). Then, we will advance with the analysis of the co-creation moderation effect on the relationship between customer trust and purchase intentions (H3a) and the relationship between personal norms and purchase intentions (H3b). Finally, the effect of artists' co-creation on customer trust (H4a) and students' co-creation on the personal norms of student respondents (H4b) will be explored.

To start the analysis, a One-way ANOVA was performed to understand how the respondents in the two design philosophy scenarios answered the variables under study, purchase intentions, perceived quality, customer trust, social norms, and personal norms (see Table 11).

For the purchase intentions, the means differences give a good insight into the co-creation moderation effect since participants in the co-creation scenarios display higher purchase intentions to buy second-hand beds than the ones in the company-designed scenario, and the result is statistically significant ($M_{\text{co-creation}} = 5.67$, $M_{\text{company-designed}} = 4.53$, $\rho < .001$).

The ANOVA tests for perceived quality and customer trust also exhibit higher means in the co-creation scenarios (Perceived Quality: $M_{\text{co-creation}} = 5.64$, $M_{\text{company-designed}} = 4.71$, $\rho < .001$; Customer Trust: $M_{\text{co-creation}} = 5.60$, $M_{\text{company-designed}} = 4.65$, $\rho < .001$). This result indicates that the participants in the co-creation scenarios associate higher quality and trust with second-hand beds than those in the company-designed scenario.

Looking for personal and social norms ANOVA analysis, both have statistically significant differences between the design philosophy scenarios. Participants in the co-creation design philosophy have a higher agreement with social and personal norms than those in the company-designed (Social Norms: $M_{\text{co-creation}} = 5.63$, $M_{\text{company-designed}} = 4.93$, $\rho < .001$; Personal Norms: $M_{\text{co-creation}} = 5.51$, $M_{\text{company-designed}} = 4.45$, $\rho < .001$).

Variable	Factor	N	Mean	SD	Sig.
Purchase Intentions	Co-creation	67	5.67	.67	<.001
	Company-designed	33	4.53	1.36	
Perceived Quality	Co-creation	67	5.64	.73	<.001
	Company-designed	33	4.71	1.34	
Customer Trust	Co-creation	67	5.60	.79	<.001
	Company-designed	33	4.65	1.22	
Social Norms	Co-creation	67	5.63	.72	<.001
	Company-designed	33	4.93	.90	
Personal Norms	Co-creation	67	5.51	.73	<.001
	Company-designed	33	4.45	1.29	

Table 11 – One-way ANOVA analysis of variables

To conclude, all variables were significantly different between the two design philosophies. Therefore, we will analyze which variables explain the purchase intentions of second-hand beds, as we did in study 1.

Linear regression analysis was performed with the Stepwise method between the dependent variable (purchase intentions) and all variables, including the likelihood of buying at IKEA and product involvement. We reached a model with an R-square equal to .60 and with three significant variables, customer trust, personal norms, and design philosophy (Customer trust: $B = 0.42, \rho < .001$; Personal norms: $B = 0.33, \rho = .00$; Design philosophy: $B = 0.39, \rho = .03$) (see Table 12 | Appendices). As shown in study 1, customer trust and personal norms are relevant variables to explain the purchase intentions of second-hand beds. From study 2, we can add that co-creation also has a significant effect on purchase intentions.

As shown in study 1, customer trust and personal norms have a positive direct effect on purchase intentions of second-hand beds. However, it remains to be studied whether the indirect effects of perceived quality and social norms are also supported by the data collected in the study 2 (H1 and H2, respectively).

3.2.5.1. Testing H1

A mediation model was conducted with a bootstrap analysis from Preach and Hayes PROCESS model 4 (Hayes, 2017) with purchase intentions as the dependent variable (Y), perceived quality as the independent variable (X), and customer trust as the mediator (M).

As expected, while the direct effect of perceived quality is not significant ($\rho = .99$), the indirect effect through the mediation of customer trust is positive and significant (effect = .55; CI = [.33; .79]). As the confidence interval does not include zero, we do not reject H1. As verified in study 1, customer trust fully mediates the positive effect of perceived quality on purchase intentions of second-hand beds (see Table 13).

Direct effect Perceived Quality on Purchase Intentions			
Effect	p-value	LLCI	ULCI
-.00	.99	-.22	.21
Indirect effect Perceived Quality on Purchase Intentions			
	Effect	Boot LLCI	BootULCI
Customer Trust	.55	.33	.79

Table 13 - Model 4 PROCESS – Direct/ indirect effects of perceived quality on purchase intentions

3.2.5.2. Testing H2

The second mediation was conducted using Preacher and Hayes PROCESS macro model 4 (Hayes, 2017) with purchase intentions as the dependent variable (Y), social norms as the independent variable (X), and personal norms as the mediator (M).

While the direct effect of social norms on purchase intentions is not significant ($p = .58$), the indirect effect of social norms on purchase intentions through personal norms is positive and significant (effect = .59; CI = [.30; .93]). As the confidence interval does not include zero, we do not reject H2. As verified in study 1, personal norms fully mediate the positive effect of social norms on purchase intentions for second-hand beds (see table 14).

Direct effect Social Norms on Purchase Intentions			
Effect	p-value	LLCI	ULCI
.07	.58	-.18	.33
Indirect effect Social Norms on Purchase Intentions			
	Effect	Boot LLCI	BootULCI
Personal Norms	.59	.30	.93

Table 14 - Model 4 PROCESS – Direct/ indirect effects of social norms on purchase intentions

After validating the mediation effect of customer trust and personal norms on purchase intentions for second-hand beds, we can proceed with the moderation effect of co-creation and the influence of the collaborators, H3 and H4, respectively.

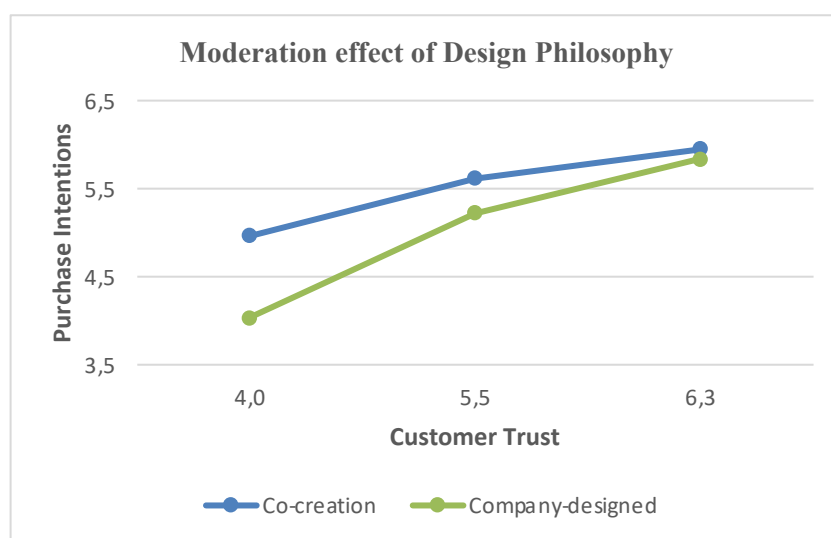
3.2.5.3. Testing H3a)

To formally test H3a), which suggests that the positive effect of customer trust on purchase intentions towards second-hand products is stronger (weaker) for co-created (company-designed) second-hand products, a moderation was conducted using Preacher and Hayes PROCESS macro model 1 (Hayes, 2017) with purchase intentions as the dependent variable (Y), customer trust as the independent variable (X), and design philosophy as the moderator (W). It is important to recall that design philosophy variable is (0) for company-designed scenario and (1) for co-created scenarios.

The model is significant ($\rho = .00$, $R - \text{square} = .58$). Customer trust and design philosophy are significant (Customer Trust: $\text{coeff} = .82$, $\rho = .00$; Design Philosophy : $\text{coeff} = 2.42$, $\rho = .00$, as well as the interaction effect between customer trust and design philosophy ($\text{Int}_1(\text{Customer Trust} \times \text{Design Philosophy})$): $\text{coeff} = -.37$, $\rho = .02$).

From the model obtained, we can say that the effect of the design philosophy on purchase intentions is positive, the co-created second-hand beds have higher purchase intentions than company-designed ones. We can also say that the moderation effect of design philosophy on the relationship between customer trust and purchase intentions is significant. However, we cannot say that co-creation strengthens the relationship between customer trust and purchase intentions. As the coefficient of the interaction is negative, the effect of customer trust on purchase intentions is weaker (stronger) for the co-created (company-designed) second-hand beds. Consequently, H3a) is rejected.

From the visualization of the moderation effect, we can see that for lower levels of customer trust, knowing that the product was co-created promotes higher purchase intentions of second-hand beds. However, as customer trust increases, the effect of co-creation decreases, and the purchase intentions become similar to the ones in the company-designed scenario. Therefore, we can say that co-creation works as a source of legitimacy, as a complement to incentive the purchase of second-hand beds for the more skeptical consumers, but with a low impact on customers with higher trust in second-hand products (see Graph 1 for visualization).



Graph 1 – Moderation effect of design philosophy on the relationship between customer trust and purchase intentions

3.2.5.4. Testing H3b)

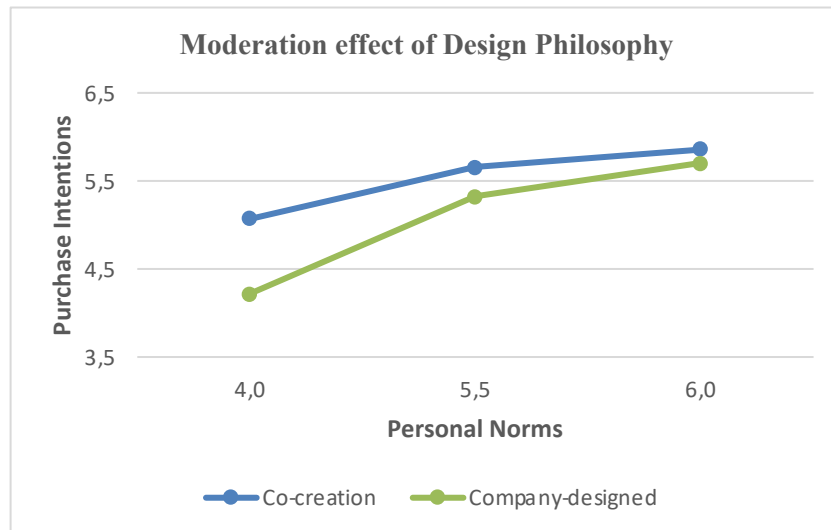
To formally test H3b), which suggests that the positive effect of personal norms on purchase intentions towards second-hand products is stronger (weaker) for co-created (company-designed) second-hand products, a moderation was conducted using Preacher and Hayes PROCESS macro model 1 (Hayes, 2017) with purchase intentions as the dependent variable (Y), personal norms as the independent variable (X), and design philosophy as the moderator (W). As mentioned in H3a), design philosophy variable is (0) for company-designed scenario and (1) for co-created scenarios.

The model is significant ($p = .00$, $R - \text{square} = .55$). The coefficients of personal norms, design philosophy and the interaction effect between personal norms and design philosophy are also significant (Personal Norms: $\text{coeff} = .76$, $p = .00$; Design Philosophy : $\text{coeff} = 2.30$, $p = .01$; $\text{Int}_1(\text{Personal Norms} \times \text{Design Philosophy})$: $\text{coeff} = -.36$, $p = .03$).

The model indicates that co-creation has a positive direct effect on purchase intentions of second-hand beds. The moderation effect of design philosophy is significant, but we cannot say that co-creation strengthens the relationship between personal norms and purchase intentions. As the coefficient of the interaction is negative, the effect of personal norms on purchase intentions is weaker for the co-created scenarios.

Therefore, H3b) is also rejected. For second-hand co-created (company-designed) products, the positive relationship of personal norms on purchase intentions is weaker (stronger).

From the visualization of the moderation effect, it is possible to check that when the level of agreement with personal norms is lower, the presence of co-creation leads to higher purchase intentions of second-hand beds. However, as in the case of customer trust, as personal norms increase, the effect of co-creation decreases, and the purchase intentions become similar to the ones in the company-designed scenario. Therefore, the co-creation moderating effect encourage consumers who feel lower agreement with moral obligations and guilt to increase their purchase intentions of second-hand beds. For consumers with higher agreement with personal norms the impact on purchase intentions decreases (see Graph 2 for the visualization).



Graph 2 – Moderation effect of design philosophy on the relationship between personal norms and purchase intentions

To conclude, the moderation effect of design philosophy on the relationship between customer trust and purchase intentions of second-hand products is significant, the same for the moderation effect of design philosophy on the relationship between personal norms and purchase intentions of second-hand products. However, the effect of co-creation is weaker (stronger) for second-hand co-created (company-designed) products. So, H3 was rejected.

3.2.5.5. Testing H4a)

In H4a), we argue that the positive effect of customer trust on purchase intentions of second-hand products is stronger (weaker) for second-hand products co-created with artists (second-hand products co-created with other collaborators and company-designed second-hand products).

To test this hypothesis, we will follow the same procedure as in H3a (moderation analysis/ model 1 from Preacher and Hayes PROCESS (Hayes, 2017)), with collaborators' profiles as the moderator (W). It is important to remind that the collaborators variable was constructed as (1) "Artists' co-creation", (2) "Students' co-creation", and (3) "Company-designed".

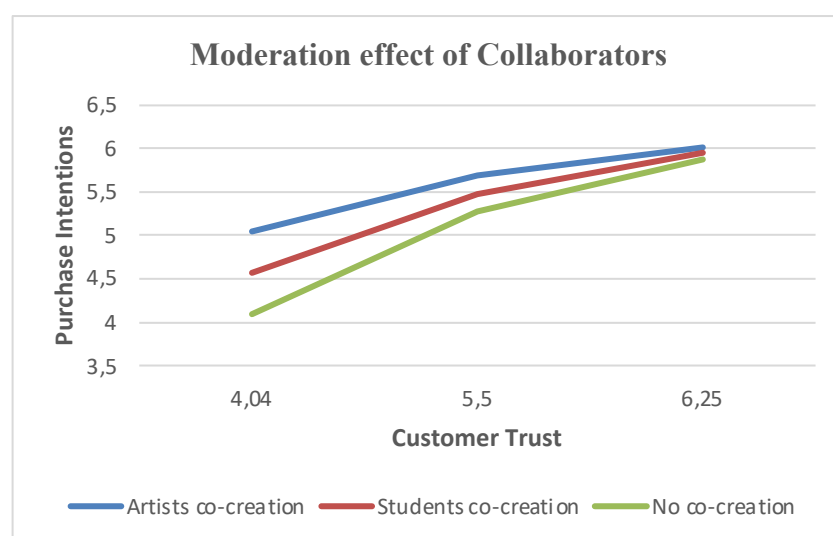
The model is significant ($p = .00$, $R - \text{square} = .57$). Customer trust is not significant to explain purchase intentions of second-hand beds (Customer Trust: $\text{coeff} = .26$, $p = .24$), however, collaborators' profile and the interaction effect between customer trust and

collaborators' profiles are both significant (Collaborators : coeff = -1.20 , $\rho = .01$; $\text{Int}_1(\text{Customer Trust} \times \text{Collaborators})$: coeff = $.18$, $\rho = .05$). The effect of customer trust on purchase intentions depends on the collaborators' profiles.

Analyzing the direct effect of collaborators' profiles on purchase intentions of second-hand beds, it is possible to see that artists' co-creation is the scenario with higher purchase intentions of second-hand beds. Nevertheless, analyzing the moderation effect, as the coefficient of the moderation is positive, the effect of artists' co-creation on the relationship between customer trust and purchase intentions is the smaller (Effects: (1) Artists co – creation = $.44$, $\rho = .00$; (2) Students co – creation = $.62$, $\rho = .00$; (3) Company – designed = $.80$, $\rho = .00$).

Therefore, H4a) is rejected. For second-hand products co-created with artists (second-hand products co-created with other collaborators and company-designed second-hand products), the positive relationship of customer trust on purchase intentions is weaker (stronger).

The analysis of the moderation effect is identical to H3a). For lower levels of customer trust, knowing that the product was co-created with artists promotes higher purchase intentions of second-hand beds. However, as customer trust increases, purchase intentions become similar to the ones of students' co-creation and company-designed scenarios. Therefore, we can say that co-creation with artists gives higher legitimacy for the more skeptical consumers, but the legitimacy claim has a lower impact on customers with higher trust in second-hand products (see Graph 3 for visualization).



Graph 3 – Moderation effect of collaborators' profile on the relationship between customer trust and purchase intentions

To conclude, artists' collaboration in the co-creation process encourages higher purchase intentions of second-hand beds, and this effect is more significant for customers with lower levels of trust in second-hand.

3.2.5.6. Testing H4b)

Lastly, in H4b), we argue that for individuals from a specific demographic group, the positive effect of personal norms on purchase intentions is stronger (weaker) for second-hand products co-created with collaborators from the same demographic group (second-hand products co-created with other collaborators and company-designed second-hand products). The analysis will consider students co-creation scenario and students respondents.

A moderated moderation was conducted using Preacher and Hayes PROCESS macro model 3 (Hayes, 2017) with purchase intentions as the dependent variable (Y), personal norms as the independent variable (X), collaborators as the moderator (W), and students as moderator (Z). The student variable was calculated considering the responses to the demographic question of the current occupation, (0) Not student (Full-time/ Part-time worker); (1) Student (Student and Student and Full-time/Part-time worker).

The moderated moderation model is significant ($p = .00$, $R - \text{square} = .60$). Personal norms (coeff = .36, $p = .15$), the interaction effect between personal norms and collaborators (Int₁(Personal Norms x Collaborators): coeff = .18, $p = .06$), the interaction effect between collaborators and students (Int₃(Collaborators x students): coeff = -1.96 , $p = .12$), and the overall interaction effect between personal norms, collaborators, and students (Int₄(Personal Norms x Collaborators x students): coeff = .38, $p = .16$) are not significant. Nevertheless, collaborators (coeff = -1.13 , $p = .04$), students (coeff = 7.53, $p = .02$) and the interaction effect between personal norms and students (Int₂(Personal Norms x students): coeff = -1.45 , $p = .03$) are significant (see Table 15 | Appendices).

From this model, we can conclude that purchase intentions of second-hand products are dependent on the collaborators' profile, being higher in the artists' co-creation scenario, as seen in H3a). Being a student has a positive effect on purchase intentions, however being a student decreases the effect of personal norms on purchase intentions. The interaction effect of personal

norms, collaborators, and students was not significant, so it is not possible to say that for students, the relationship between personal norms on purchase intentions is strengthened by the collaborators' profiles, in particular students' co-creation scenario. Therefore, H4b) is rejected.

3.2.6. Control variables and demographics

In this second study, the control variables tested were product involvement and the likelihood of buying at IKEA. A One-way ANOVA was performed to test the statistical differences between the collaborators' profiles (see Table 16 | Appendices).

The mean difference in product involvement for the three scenarios is statistically significant ($p = .01$), being higher for artists' co-creation scenario than students and, lastly, for company-designed. However, as previously tested, product involvement is not a statistically significant variable to explain purchase intentions of second-hand beds. Running a linear regression with product involvement as the independent variable and purchase intentions as the dependent variable, it is possible to check a positive relation, but product involvement only explains 8% of the variance in the purchase intentions ($R\text{-square} = .08$).

The likelihood of buying at IKEA is not statistically significant for the three scenarios ($p = .18$), so we cannot say that the IKEA branding influenced the results in each scenario.

Performing an ANOVA analysis between the purchase intentions and the demographic variables, no statistically significant results were found for gender ($p = .59$), current occupation ($p = .45$), or nationality ($p = .37$) (see Table 17 | Appendices). We can conclude that purchase intentions are not statistically different between the different demographic groups of participants. Consequently, the insights from cultural differences between Portuguese and American respondents on the acceptance of second-hand products, obtained in study 1, were not sustained in study 2.

3.2.7. Findings

In study 2, it was possible to confirm the results obtained in study 1 for H1 and H2, the indirect effect of perceived quality and social norms on purchase intentions via customer trust and personal norms, respectively.

The novelty of this study comes from the positive effect of co-creation on purchase intentions of second-hand products and the moderation analysis of design philosophy and collaborators' profiles.

Testing hypothesis 3, we found that in the co-creation (company-designed) scenarios the effect of customer trust on purchase intentions is weaker (stronger), and that in the co-creation (company-designed) scenarios the effect of personal norms on purchase intentions is also weaker (stronger). So, H3a) and H3b) were rejected.

The influence of collaborators' profiles on purchase intentions were significant. So, artists co-creation has a positive effect on purchase intentions, this effect is lower for students' co-creation and even lower for company-designed second-hand products.

Nonetheless, H4a) was rejected since artists' co-creation (students' co-creation and company-designed) has a weaker (stronger) effect on the positive relationship between customer trust and purchase intentions of second-hand products.

The interaction effect between personal norms, collaborators, and students was not statistically significant, so, the moderated moderation effect from the identification of members from a demographic group with collaborators from the same demographic group on the relationship between personal norms and purchase intentions of second-hand products was not possible to confirm. The H4b) was rejected.

4. General Discussion

4.1. Main Conclusions

Following critical concerns about the influence of modern consumption rates on the environment and climate change, it urges the adoption of more sustainable consumer behaviors. Second-hand consumption is one of the solutions to the sustainability claim that has increased adoption and visibility in the past years and is expected to play a significant role in the future.

In this research, we aim to understand the drivers for purchase intentions of second-hand products, besides price benefits, the role of perceived quality and social norms, and whether these effects were mediated by customer trust and personal norms, respectively. Based on this understanding, we sought to investigate how co-creation can influence purchase intentions for second-hand products and, lastly, the impact of different co-creation collaborators' profiles on purchase intentions.

First, we showed that purchase intentions of first-hand beds are still higher than second-second-hand ones. The purchase intentions of second-hand are directly influenced by customer trust and personal norms and indirectly influenced by perceived quality and social norms through the mediation of customer trust and personal norms, respectively. Environmental concerns and awareness of consequences do not significantly impact purchase intentions.

Secondly, our study identified that purchase intentions of second-hand products are enhanced when consumers learn that the second-hand product was co-created, as co-creation has a positive direct effect on purchase intentions.

Thirdly, we show that co-creation has a significant moderating role on customer trust and personal norms. However, contrary to our argumentation, co-creation (company-designed) weakens (strengthens) the relationship between customer trust and purchase intentions for second-hand beds, as is the relationship between personal norms and purchase intentions.

It was possible to understand that in the co-creation scenarios, the purchase intentions of second-hand beds are higher than in the company-designed one, but only for respondents with lower levels of trust or personal norms. For higher levels of customer trust or personal norms, the effect of design philosophy is not significant.

Co-creation boosts purchase intentions of second-hand beds for consumers with lower trust and/or agreement with personal norms. This happens because co-creation activates legitimacy and ethical obligations. Co-creation guarantees greater legitimacy to skeptical customers and morality charges to customers suppressing ethical obligations.

If a customer already favorably trusts a product and/or has high personal obligations to buy it, the influence of legitimacy and morality charges, triggered by co-creation, is not relevant to change already high purchase intentions.

Lastly, the collaborators' profiles were also shown to influence purchase intentions of second-hand beds. Co-creation with artists enhances higher purchase intentions for the more skeptical consumers, giving higher legitimacy than the scenario with students' co-creation. However, the moderating role of artists' collaborators also weakens the relationship between customer trust and purchase intentions.

The role of identification from respondents with collaborators in the co-creation process was not possible to confirm as an incentive to purchase intentions through the interaction with personal norms.

4.2. Theoretical Contributions

Following previous research, our study also shows that environmental concerns and awareness of consequences do not translate into purchase intentions, supporting the gap between attitudes toward sustainability and the adoption of more sustainable consumer behavior (Joshi & Rahman, 2015; Park & Lin, 2020; Skard et al., 2021).

As other researchers have shown, our studies confirm that perceived quality has a positive indirect effect on purchase intentions for environmentally friendly products, mediated by customer trust (Marakanon & Panjakajornsak, 2017; Pretner et al., 2021); and the positive indirect effect of social norms on purchase intentions through the mediation of personal norms (Han et al., 2018; Kim & Seock, 2019).

We can conclude that respondents associate their behaviors and purchasing decisions with the trust they have in the product and their personal norms, but it is indirectly influenced by how they perceive the quality of the product and the social norms they agree with, endorsing the

idea that attitude-behavior gap is explained by product and individual characteristics (Park & Lin, 2020)

Our findings also add to the green innovation and open innovation literature by studying the effects of co-creation in the context of second-hand products (Bogers et al., 2010; Chang, 2019; Chen et al., 2012; Iglesias et al., 2020; Ramaswamy, 2009; West & Bogers, 2014).

Previous research has studied the effects of user-designed communication on products with different complexities (Schreier et al., 2012), on luxury products (Fuchs et al., 2013), on cultures with different power-distance beliefs (Song et al., 2021), as a source of social identification (Dahl et al., 2015), but the role of co-creation as an innovative solution for the adoption of more sustainable practices still has gaps to be filled, especially when considering the effect on personal norms.

Customer co-creation was studied through the influence on customer trust (Iglesias et al., 2020; Randall et al., 2011) and personal norms (Dahl et al., 2015). We show that the role of co-creation is to increase purchase intentions of second-hand products for customers that are more skeptical and/or feel fewer moral obligations. Past research has investigated consumer skepticism and suppression of ethical obligations and guilt as factors impeding ethical consumption (Bray et al., 2011). We offer insights on how to stimulate legitimacy and morality in second-hand consumption through customer co-creation.

4.3. Managerial Insights and Practical Implications

The findings from our research can assist practitioners at the strategic and implementation level. For communication and marketing managers, three advertising and communication strategies can be followed to increase the purchase intentions of second-hand products.

The first one is to increase perceived quality, for example, with certifications to activate customer trust (Pretner et al., 2021). Another approach is through the focus on social actions and community approval, communication that persons in the community are buying second-hand products (descriptive norms) with messages that show approval of these actions (injunctive norms), as social norms influence the individual perspective, personal norms, and purchase intentions (Goldstein et al., 2008).

These two strategies aim to increase customer trust and personal norms so the customer will have a higher intention to purchase second-hand products.

The third approach is through communication to the broad market of a co-created redesign of second-hand products. The communication messages should highlight the collaborators' qualities and skills, besides the cooperation and adoption of the products, increasing legitimacy, besides moral and ethical obligations. This study supports that the communication of co-created products is an innovative strategy and a meaningful tool to promote more sustainable purchase intentions, particularly relevant for second-hand markets in which customer risks are perceived to be higher when compared with buying a brand-new product (Edbring et al., 2016).

Although communication that other customers are participating in the redesign of second-hand products weakens the relationship between customer trust and purchase intentions, and the relationship between personal norms and purchase intentions, it increases purchase intentions for customers with lower trust and personal norms agreement. Therefore, for a market where customer trust and/or personal norms are already significant, communicating a co-creation strategy will not be that significant to increase purchase intentions, but for second-hand markets associated with low product guarantees and social expectations, implementing a co-creation design can bring more benefits, particularly, if the collaborators in the co-creation scenario are linked to valuable skills and status, bringing higher legitimacy and confidence in the co-created product.

4.4. Limitations and future research

A set of recommendations from some limitations of the present research gives insights for future tests and possible analysis in the field of sustainable innovation.

First, our research design targeted a specific market and product segment. Therefore, the conclusions' validity is limited to the context of our product segment. Future research should test the results for other markets and products. The impact of collaborators' profiles in the co-creation process might change due to the product complexity and status signaling.

The bed product segment has relatively low complexity and is not linked with status signaling since for products to convey identity and symbolic value, an audience is needed, and the bed is

a product associated with intimacy in the home (*Bedroom Furniture, Wooden, Nes* | *OEC - The Observatory of Economic Complexity*, n.d.; *Products as Signals* | *Journal of Consumer Research* | *Oxford Academic*, n.d.; Reimer & Leslie, 2004).

Fuchs et al. (2013) showed that co-creation with customers harm luxury branded fashion products due to the negative perceptions of user expertise in this context and reduced agentic signaling qualities (Fuchs et al., 2013). The negative impact decreased for low-status products (Fuchs et al., 2013). Additionally, for high-complexity products, researchers showed that consumers are more likely to rely on professional designers to ensure the integrity and a satisfactory experience (Song et al., 2021).

Therefore, for second-hand cars and mobile phones, for example, as status signaling and product complexity are higher compared to second-hand furniture, the effects of design philosophy and collaborators' profiles might change.

Another limitation comes from both studies being developed under IKEA branding. To improve the validity of results, other brands should be tested so the conclusions can be extended to the market. Since customers associate a brand image with specific attributes, benefits, and attitudes, leading to potential bias (Pitta & Katsanis, 1995).

Broader profiles of collaborators in the co-creation process should also be developed in the future, as well as the level of identification with the target audience. Dahl et al. (2015) argued that increasing the level of identification with co-creation participants, with a fully open to participation rather than a selective approach, should encourage customers to almost see themselves as the ones who participated in the innovation process of products, increasing customer preference (Dahl et al., 2015).

Furthermore, the level of social norms could also be advanced in the future, specifically the impact of descriptive and injunctive norms on personal norms, separately and combined, since these norms trigger conformity with socially desired behaviors through different mechanisms (Cialdini et al., 2006; Reno et al., 1993).

The sample profile of respondents was one of the limitations of this study. Future research could consider increasing sample size and representativeness, increasing validity by decreasing sampling errors (Bonett, 2002).

Both studies had participants from Portugal (personal network) and the US (crowdsourcing platforms). In the first study, the mean difference between the purchase intentions of the countries was statistically significant. In the second study, however, it was not statistically significant. Therefore, the differences between countries could be further analyzed to ensure the validity of the results.

As purchase intentions are dependent on social and personal norms, different cultures might impact the level of agreement with those norms. It would be interesting to analyze in the future the impact of Hofstede cultural dimensions (for example, power distance, uncertainty avoidance, individualism versus collectivism, and long-term versus short-term oriented) on social and personal norms and how those influence purchase intentions of second-hand products (Hofstede, 2011). The cultural dimensions can also influence the effects of co-creation on purchase intentions, as Song et al. tested the moderating role of power distance beliefs on the customers' preference for user-designed or company-designed products (Song et al., 2021).

Lastly, for the applicability of the three communication strategies previously presented, it is necessary to develop further research to test the cumulative or dissociative value added by each one in different markets.

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6. Appendices

Table 4 – Study 1 | Linear regression to explain purchase intentions (Method: Stepwise)

Model (dependent variable: Purchase Intentions)	Unstandardized B	Standardized Coefficients Beta	Sig.
Constant	-.65	-	.32
Customer Trust	.73	.69	<.001
Personal Norms	.35	.21	.03

Excluded Variables

Model (dependent variable: Purchase Intentions)	Beta In	t	Sig.
Perceived Quality	.13	1.28	.21
Social Norms	.00	.01	.99
Likelihood of buying at IKEA	.02	.20	.84
Sustainability perception	-.11	-1.18	.23
Awareness of Consequences	-.00	-.03	.98
Personal Responsibility	-.04	-.37	.71
Environmental Concerns	-.07	-.83	.41

Table 12 – Study 2 | Linear regression to explain purchase intentions (Method: Stepwise)

Model (dependent variable: Purchase Intentions)	Unstandardized B	Standardized Coefficients Beta	Sig.
Constant	1.12	-	.01
Customer Trust	.42	.41	<.001
Personal Norms	.33	.32	.00
Design philosophy	.39	.17	.03

Excluded Variables

Model (dependent variable: Purchase Intentions)	Beta In	t	Sig.
Perceived Quality	-.07	-.72	.47
Social Norms	-.12	-1.27	.21
Likelihood of buying at IKEA	-.09	-1.24	.22
Product Involvement	-.10	-1.36	.18

Table 15 – Study 2 | Model 3 PROCESS | Moderated Moderation model for students on personal norms and collaborators

	coefficient	p-value
Constant	3.83	.01
Personal Norms	.36	.15
Collaborators	-1.13	.04
Int_1 (Personal Norms x Collaborators)	.18	.06
Students	7.53	.02
Int_2 (Personal Norms x Students)	-1.45	.03
Int_3 (Collaborators x Students)	-1.96	.12
Int_4 (Personal Norms x Collaborators x Students)	.38	.16

Table 16 - Study 2 | One-way ANOVA for control variables

Variable	Factor	N	Mean	SD	Sig.
Product Involvement	Artists co-creation	34	6.02	.69	.01
	Students co-creation	33	5.82	.76	
	Company-designed	33	5.51	.58	
Likelihood to buy at IKEA	Artists co-creation	34	6.09	1.24	.18
	Students co-creation	33	5.79	.99	
	Company-designed	33	5.58	1.14	

Table 17 - Study 2 | One-way ANOVA for demographics

Demographics	Factor	N	Mean	SD	Sig.
Gender	Male	45	5.41	.92	.59
	Female	53	5.19	1.23	
	Non-binary/ third gender	2	5.50	.24	
Current Occupation	Student	14	4.95	.90	.45
	Full-time/Part-time worker	80	5.35	1.13	
	Student and Full-time/Part-time worker	6	5.28	.88	
Nationality	PT	88	5.33	1.08	.37
	US	12	5.03	1.12	