



Can Co-Creation Narrow the Sustainability Gap?

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Dissertation written under the supervision of professor Cláudia
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Dissertation submitted in partial fulfilment of requirements for the
MSc in Management with specialization in Strategic Marketing, at the
Universidade Católica Portuguesa, April 2023.

Abstract

Title: *Can Co-Creation Narrow the Sustainability Gap?*

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The growing concern about environmental issues has led to widespread attention from consumers toward sustainability and sustainable products. However, sales of sustainable products still represent a fraction of overall consumer demand. Such discrepancy between attitude (concern) and behavior (purchase) is what scholars have identified as the sustainability gap. Market research has led decision-makers to believe that consumers would purchase sustainable products, only to see sales fall far below expectations.

Co-creation has been argued as an innovation strategy that instills trust in new products due to transparency and openness toward its operations. This research shows that the effect that co-creation has on trust in the development of new sustainable products supports the reduction of consumers' sustainability gap, increasing the purchase intention.

The research was conducted using a scenario-based experimental methodology. The study followed a 2 x 1 (Co-creation vs non-co-creation; sustainability claim) between-subject design.

Findings show that the increase in purchase intention of sustainable co-created products is mediated by consumer trust. Results also show that the effect of co-creation on consumer trust in sustainable marketing claims is moderated by the consumers' general concern with sustainable issues, such that for consumers with low or no concern, co-creation is a more trustworthy and honest strategy. Finally, research also demonstrates that loyalty serves as a mediator for the beneficial effect of trust on purchase intention, and that tolerance for higher pricing for sustainable products mediates the favorable effect of loyalty on purchase intention. Theoretical and practical implications will be discussed.

Keywords: co-creation, innovation, sustainability, trust, loyalty, price sensitivity, purchase intention, consumer behavior

Sumário

Título: *Consegue a Cocriação Reduzir o Fosso de Sustentabilidade?*

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A crescente preocupação com questões ambientais tem suscitado atenção por parte dos consumidores relativamente a produtos sustentáveis. Contudo, as vendas de produtos sustentáveis ainda representam uma fração da procura. Tal discrepância entre atitude (preocupação) e comportamento (compra) é o que académicos identificaram como o fosso de sustentabilidade. Estudos de mercado têm levado empresas a acreditar que os consumidores comprariam produtos sustentáveis, apenas para as vendas ficarem aquém das expectativas.

A cocriação é considerada como uma estratégia de inovação que incute confiança em novos produtos devido à transparência e abertura das suas operações. Esta pesquisa mostra que o efeito que a cocriação tem na confiança em novos produtos sustentáveis ajuda a reduzir o fosso de sustentabilidade dos consumidores, aumentando a intenção de compra.

A investigação foi realizada utilizando uma metodologia experimental baseada em cenários. O estudo seguiu uma conceção 2 x 1 (cocriado vs não-cocriado; reivindicação de sustentabilidade) entre sujeitos.

Os resultados mostram que o aumento da intenção de compra de produtos cocriados sustentáveis é mediado pela confiança. Também demonstram que o efeito da cocriação na confiança em marketing sustentável é moderado pela preocupação dos consumidores com questões sustentáveis, de tal forma que para consumidores com pouca preocupação, a cocriação é uma estratégia mais honesta. Finalmente, a investigação demonstra que o efeito positivo da confiança na intenção de compra é mediado pela lealdade, e que o efeito positivo da lealdade na intenção de compra é mediado pela tolerância de preços de produtos sustentáveis. As implicações teóricas e práticas serão discutidas.

Palavras-chave: cocriação, inovação, sustentabilidade, confiança, lealdade, sensibilidade ao preço, intenção de compra, comportamento do consumidor

Acknowledgements

First, I would like to thank my supervisor, Cláudia Costa, who guided me and encouraged me during all stages of my dissertation. It was a new and scary experience and her constant willingness to help was valuable and essential for the completion of my dissertation.

Second, I would like to thank my family, who throughout the making of my dissertation and whole academic journey was always there for me and always supported me, in my highs and lows, whether they were academic or personal.

More specifically, I would like to thank my grandfather and my uncle, who unfortunately are no longer able to see me complete this important step of my life, but I'm sure are very proud of me and cheering me on from wherever they are seeing me. My dissertation is dedicated to both of them.

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Introduction

The increasing focus on sustainable products, which are defined as “products that promote positive social and environmental values” (Luchs et al. 2010), demonstrates the rising social awareness and favorable attitudes of consumers towards environmental issues (Eurobarometer 2011). The proportion of new products with sustainable features has risen annually since 2017. In 2021, roughly half of all newly launched products made a claim about their sustainable benefits (NYU Stern Center for Sustainable Business 2021).

A new type of consumer – the “sustainable consumer”- has risen (Carrigan & Attalla 2001), and sustainable consumerism has become an important influence on businesses and governments (Carrigan & Attalla 2001, Shaw & Shiu 2002). The United Nations (Reuters 2018), NGOs (Reuters 2019), and globally known activists (Reuters 2022) have continuously pointed out the wrongdoings of governments and firms, pressuring them to rapidly change their behaviors in favor of a more social and environmentally friendly approach.

Although sustainability has gained significant attention, sustainable products continue to make up a small portion of the overall market demand (Luchs et al. 2010). The market share of sustainable products is alarmingly low, especially when compared to consumers' reported intent to purchase such products. (Eckhardt et al. 2010).

A significant gap between consumers’ explicit attitudes toward sustainable products and their consumption behavior still persists (Luchs et al. 2010, Eckhardt et al. 2010, Carrington et al. 2010). Researchers named this inconsistency the attitude-behavior or word–deed gap (De Pelsmacker et al. 2005, Carrigan & Attalla 2001, Auger & Devinney 2007). Many companies are discovering that consumers who claim to prioritize sustainability are not always consistent with their actions (Carrington et al. 2010). When it comes to socially desirable behaviors like sustainable consumption, the gap between expressed attitudes and actual behavior is often exacerbated because consumers are reluctant to acknowledge that sustainability plays a minor role in their purchasing decisions (Eckhardt et al. 2010). Scholars such as Eckhardt, Belk, and Devinney, point to the gap between consumers’ attitudes and behaviors regarding sustainable products as the “sustainability gap”.

The sustainability gap has been widely researched with scholars identifying several causes for the consumers’ mismatched behavior: limited distribution of sustainable products (Luchs et al. 2010, De Pelsmacker et al. 2005), lack of ethical regulation by the institutions such as the government (Eckhardt et al. 2010), higher prices of sustainable products (Luchs et al. 2010,

Eckhardt et al. 2010, Gam 2011, Connell 2010), the rationalization of the occurrence of unethical corporate behavior as a necessary component for macro-level economic development (i.e., poor working conditions in developing countries like India and China) (Eckhardt et al. 2010), skepticism about sustainable marketing claims (De Pelsmacker et al. 2005, Kagawa 2007, Furlow 2010), and lack of information about sustainable products (De Pelsmacker et al. 2005, Hill & Lee 2012).

Consumers expect and demand transparency (Kang & Hustvedt 2014, Prahalad & Ramaswamy 2004), and an innovation strategy such as co-creation is able to achieve that goal of having a company being perceived as more transparent (Prahalad & Ramaswamy 2004). The extent to which corporations are perceived to be transparent can have a direct impact on consumers' trust and attitudes towards the corporation, as well as an indirect impact on their intentions to make purchases from and advocate for the corporation through positive word-of-mouth. (Kang & Hustvedt 2014).

Co-creation is a social and collaborative practice that involves active, dynamic, and creative interactions between a company and its customers (Ramaswamy & Ozcan 2016, Ind et al. 2017). Its primary objective is to develop new and meaningful innovations for products or services, achieved through relationships and collaborative efforts. (Ind et al. 2013, 2017, Markovic & Bagherzadeh 2018). Several firms are or have been developing true partnerships with their customers and success stories like Adidas, IKEA, Nike+, and Mindstorms, which is one of Lego's best-selling products to date, that was developed through co-creation with customers, show the importance and impact of this process (Iglesias et al. 2020). In recent years, co-creation has gained recognition as an important innovation strategy among both academics and practitioners, (Payne et al. 2008, Prahalad & Ramaswamy 2003) and has reshaped the views on the creation of value (Agrawal & Rahman 2015). What was seen as something created by the firm that flowed toward the customer, has now been recognized as a joint process that occurs between the customer and the firm (Agrawal & Rahman 2015).

Adopting co-creation as a strategy can be instrumental in developing customer trust (Iglesias et al. 2020) and fostering long-lasting, trustworthy partnerships between companies and their customers. (Vallaster & von Wallpach 2013, da Silveira et al. 2013, Iglesias et al. 2013). Prior research has concluded that co-creation has a positive effect on consumers' trust (Iglesias et al. 2020, Ind et al. 2013)

The two motives for consumers' mismatched behavior that I will be highlighting in this paper are the skepticism that consumers have regarding sustainable marketing claims and the low tolerance for the high prices charged for sustainable products since the purpose of this paper is to study the effects of communicating the use of co-creation in sustainable products (when compared to non-co-created sustainable products) on observing consumers' (i.e., the consumers that are not involved in the co-creation process) perceived trust in the sustainable marketing claims of firms, loyalty, tolerance of higher prices, and how it may contribute to narrow the sustainability gap (i.e., purchase behavior). This paper will also describe the prior literature on the sustainable consumer, sustainability gap, skepticism toward sustainable marketing claims, transparency, co-creation, trust, loyalty, and tolerance of higher prices.

There is an extensive prior literature on the sustainable consumer, sustainability gap, the motives that contribute to that gap, co-creation, and the effect that it has on consumers' trust, loyalty, and purchase behaviors. However, to my knowledge, there is not any research on the effects that the implementation of co-creation in sustainable products may have on the observing consumers' lack of trust in sustainable marketing claims, loyalty, tolerance of higher prices, purchase behavior, and the sustainability gap.

Literature Review

The sustainability gap

Sustainability is the practice of utilizing natural products and energy in a manner that does not cause harm to the environment, and is capable of being maintained over an extended period (Oxford Advanced Learner's English Dictionary 10th edition), while sustainable goods are regarded as those that uphold positive environmental and social principles (Luchs et al 2010). Consumers who prioritize sustainability tend to feel a sense of obligation toward the environment and/or society, and aim to reflect their values through their purchasing decisions by engaging in sustainable consumption or boycotting behavior (De Pelsmacker et al. 2005, Shaw & Shui 2002).

The concept of sustainable consumerism can be traced back to the 1970s, when social concern and environmental consciousness grew in popularity (Vazquez & Liston-Heyes 2008). Nevertheless, in the late 1980s and early 1990s, a new perspective on sustainability, known as "sustainable thinking", emerged (Dryzek 1997). This approach emphasized that many environmental issues were rooted in "the prevailing socio-economic systems of production and

consumption”, and that solving these problems required fundamental changes to these systems (Dryzek 1997).

Only a small portion of consumers is required to inspire firms to make significant changes in their production processes toward environmental sustainability (Moorman 1998). Furthermore, most businesses are likely to switch to sustainable production if the majority of consumers shift to buying sustainable products (Eriksson 2004).

The increased social awareness and influence of sustainable products and services has encouraged the adoption and communication of sustainable practices in many organizations (Delmas & Burbano 2011). The proportion of new products with sustainable features has risen annually since 2017 (NYU Stern Center for Sustainable Business 2021), and firms often create marketing messages that incorporate eco-friendly terms and buzzwords such as “ECO, environmentally friendly, taintless, earth-friendly, sustainability, uncontaminated, green, and greenization.” (Chen & Chang 2013).

Over 75% of S&P 500 companies regularly disclose information about their environmental policies and performance on their websites (Alves 2009). In 2010, 60 large international companies used social media to engage stakeholders in sustainability talks. Two years later, that number increased to 176 (Lyon & Montgomery 2013).

Auger et al. (2010) examined the role that two different sustainable attributes (environmental and labor conditions) played on consumer choice by studying the trade-offs consumers make between tangible attributes and two intangible attributes (firm and country of origin). The findings showed that sustainable attributes can influence consumer choice even when intangible attributes are included in the research design. A study by Young et al. (2010) showed that in the hierarchy of the importance of sustainable drivers during purchasing decisions, the environment ranked first, followed by human rights and then animal rights.

Nevertheless, a notable gap remains between consumers’ explicit attitudes toward sustainable products and their consumption behavior, which consequently translates into sustainable products making up only a minor portion of the overall demand in the market (Luchs et al. 2010).

Several arguments have been suggested to explain the sustainability gap. The place of consumption of a product (public vs. private) affects the consumers’ purchase behavior regarding sustainable companies. Consumers are more likely to choose sustainable firms in

highly observable contexts due to social desirability concerns (Luchs et al. 2010). Sustainable consumers also tend to be more engaged in daily sustainable activities like switching off lights and recycling paper compared to the weekly/monthly activity that is purchasing sustainable products. (Young et al. 2010).

In most cases, people offer justifications or excuses for the apparent inconsistency between their beliefs and behaviors (Eckhardt et al. 2010). Another finding was the “all or nothing” approach. Until an individual fully commits to being sustainable, the individual does not see a point in participating in sustainable consumption behavior due to the perception that individual actions will have negligible impact on the environment (Johnstone & Tan 2015). Younger generations exhibit a stronger inclination towards this sentiment, as they perceive being environmentally friendly as an unattainable ideal (Johnstone & Tan 2015).

In social psychology, it is a commonly accepted idea that attitudes influence human behavior (Bredahl 2001), and multi-attribute models such as the Theory of Planned Behaviour (TPB) (Ajzen 1991) have theorized that attitudes impact individuals' intentions to engage in certain behaviors. The TPB suggests that individuals formulate their purchase intention before they engage in the corresponding buying behavior (Ajzen 1991). However, the association between sustainable attitudes and behavior has been a controversial topic (Johnstone & Tan 2015). Empirical studies have shown that despite a growing number of consumers are absorbing the values of sustainable consumerism, there is little evidence of a corresponding shift in their consumption behavior (Carrington et al. 2010). Actual sustainable buying behavior often does not match stated sustainable intentions (Carrington et al. 2010).

It has been argued that although the TPB is designed to provide better predictions of reasoned actions (Newholm & Shaw, 2005), such reasoned behavior models are inappropriate for emotional consumer choices of the sort involved in sustainable consumption (Eckhardt et al. 2010). The extent of individuals' control over their behavior at the time of purchase and how this control differs from their perceived behavioral control during the formation of purchase intentions has received minimal attention in the application of TPB within the sustainable consumption context (Carrington et al. 2010). The TPB suggests that relevant factors such as belief in the relative value for money, sustainability or pleasantness of the behavior in question, moral concerns, and the expectations of significant others are all internally evaluated by the individual in the process of forming their purchase intention (Carrington et al. 2010). In other words, all of these factors are subsumed under the singular notion of intention. However,

Carrington et al. (2010) argues that relevant factors can hinder the translation of purchase intentions into buying behavior, which creates the intention-behavior gap.

Skepticism

Among the causes for the sustainability gap, authors have highlighted the lack of trust that consumers have in sustainable marketing claims made by firms (De Pelsmacker et al. 2005, Kagawa 2007, Furlow 2010).

Since the beginning of sustainable consumerism in the 70s, the multitude of vague and misleading environmental claims has caused consumers to question corporate honesty (Furlow 2010). In the early 1990s, roughly half of the environmental advertising in the US was deemed to be deceptive or misleading. (Kangun et al. 1991). Moreover, the misuse and overuse of sustainable claims can saturate the market to the point that the sustainability of products becomes meaningless to the consumer (Furlow 2010).

The main culprit of the skepticism that most consumers, especially generation Y consumers (Hill & Lee 2012), feel towards sustainable claims is the practice of greenwashing by companies (Johnstone & Tan 2015, Furlow 2010, Peattie & Crane 2005, Darnall et al. 2012, Braga et al. 2019, Netto et al. 2020, Du 2015, Delmas & Burbano 2011). The concept of greenwashing emerged in the 1980s (Dahl 2010) and refers to the situation in which consumers are misled into believing that a company is engaging in sustainable practices or that its products have environmental benefits (Johnstone & Tan 2015). Greenwashing is the dissemination of false or incomplete information to create a misleading perception of environmentally responsible actions or products (Furlow 2010), making it very difficult for consumers to identify legitimate sustainable products (Johnstone & Tan 2015).

The proliferation of environmental disinformation has become so frequent and such a concern that “Greenwashing Indexes” have been created to monitor the sustainable claims of companies (Miller 2008).

The fundamental issue behind corporate greenwashing is whether profit-driven companies have adequate market incentives to willingly bear additional private costs for the benefit of society and the environment (Darnall et al. 2010). Without such incentives, businesses may opt for superficial changes to their products to create an illusion of sustainability, rather than making substantial alterations to their production processes to develop genuinely sustainable products (Darnall et al. 2010).

Due to the dissemination of false or incomplete information, genuine efforts by companies to reduce their environmental impact lose any competitive advantage they could have gained (Furlow 2010). This has resulted in some companies avoiding the promotion of their positive environmental initiatives out of fear of a greenwashing backlash. For instance, McDonald's has taken steps to reduce waste but does not heavily promote this fact (Zmuda & Parekh, 2008). The fear of backlash can be detrimental, as it reduces the rewards and motivation for firms to create sustainable products since consumers are skeptical of their claims (Furlow, 2010).

Consumers face a disadvantage compared to companies due to a lack of information and information asymmetry (Costa & Coelho do Vale 2020). Greenwashing strategies have increased consumer confusion. Nguyen et al. (2019) conducted a study that revealed consumers are unable to differentiate between sustainable and non-sustainable food, as well as real sustainable food and greenwashed food. The study found that consumers lacked confidence in the credibility of sustainability attributes (Lassoued & Hobbs 2015, Nguyen et al. 2019).

Despite of a lack of information and information asymmetry (Costa & Coelho do Vale 2020), consumers are increasingly aware of poor company practices (Nyilasy et al. 2014) and when a firm is accused of greenwashing, consumers no longer trust the company or the product, completely tarnishing the firm's image (Chen & Chang 2013). This can be very intimidating for any firm that wants to become more sustainable, since one mistake, even if not with intent, can ruin their company image.

False claims are not the only reason why consumers are skeptical. According to Peattie & Crane (2005), there are five marketing practices that contribute to customers' distrust. These include using public relations to dismiss environmental criticisms, adding sustainability claims to existing products solely to boost sales, being eco-friendly only when it results in cost savings, developing sustainable products that are not in demand, and claiming sustainability credentials while only complying with existing regulations.

As society becomes more interested in environmental issues and unverifiable environmental information becomes more widespread, it is expected that the number of deceptive sustainable advertisements will continue to rise (Darnall et al. 2012). Nevertheless, since the beginning of the XXI century, efforts have been made to help reduce the amount of false or incomplete information. In the early 2000s, in order "to guide customers in acquiring low-energy consumption products", an information campaign was initiated by the EU (Rex & Baumann 2007). Furthermore, governments and non-governmental organizations across the globe are

now playing a more significant role in regulating and standardizing corporate claims (Rex & Baumann 2007).

However, despite the efforts made to regulate and standardize corporate claims, sustainable consumers continue to often report feeling confused about the claims used by firms and ignoring sustainable advertising claims (Oates et al. 2008, Mayer et al. 1993), since it is difficult for consumers to identify greenwashing (Netto et al. 2020). Identifying greenwashing can be challenging even for expert consumers who are well-informed about the phenomenon and the market. The process of accusing companies of greenwashing is even more complicated for regular consumers who have limited knowledge of the phenomenon (Netto et al. 2020), leaving the regular sustainable consumers unsure of whom to trust (Du 2015). This confusion and perceived risk can negatively impact trust, long-term loyalty, and increase skepticism, widening the attitude-behavior gap (Chen & Chang 2013).

High prices

A second well-researched cause for the sustainability gap is the low tolerance that customers have for the higher prices generally charged for sustainable products (Luchs et al. 2010, Eckhardt et al. 2010, Gam 2011, Connell 2010).

Sustainability-marketed products continue to demand higher prices in 2021, with premiums ranging from 8% to over 130%, and only a few number of categories offering discounts compared to conventionally-marketed products. On average, sustainability-marketed products carry a significant price premium of 28% over conventionally-marketed products (NYU Stern Center for Sustainable Business 2021).

One of the offered justifications for the apparent inconsistency between customers' beliefs and behaviors is economic rationalization (Eckhardt et al. 2010). The economic rationalization perspective proposes that consumers prioritize getting the most value for their money, even if it contradicts their sustainability beliefs (Eckhardt et al. 2010). Consumers justify their actions based on personal consumer utility, with cost being the most critical factor (Eckhardt et al. 2010).

Sustainable products are commonly perceived as being more expensive and less certain in terms of quality and performance compared to non-sustainable products (Skard et al. 2021). This perception often results in reduced attractiveness of sustainable products to consumers. (Luchs et al. 2010). The higher prices of sustainable products, especially when compared to their mainstream counterparts, continue to be one of the reasons for the significant gap between

consumers' explicit attitudes toward sustainable products and their consumption behavior (Luchs et al. 2010, Young et al. 2010), and an explanation for the lower market share held by sustainable products (Eckhardt et al. 2010).

The Integration of Co-Creation in Sustainable Products

Co-creation refers to a collaborative and social process between a company and its consumers, where the consumers are actively involved in the development of new and relevant product or service innovations through interactive and cooperative relationships with the company (Markovic & Bagherzadeh 2018, Ind et al. 2013, 2017).

When referring to co-creation, two types of actors need to be distinguished: those that take part in the co-creation process and those that observe (or learn) about the outcome of co-creation. The consumers that are involved in the co-creation process are the participating consumers, while the consumers that are not involved in the co-creation process (broader market) but learn that a product was co-created are the observing consumers. Observing consumers are the most significant consumer segment because they encompass the broader market and the majority of potential customers for the company (Fuchs & Schreier 2011, Costa & Coelho do Vale 2020), and they will be the subject of my research.

Scholars have highlighted the advantages of co-creation to the broader market. Consumers who observe the co-creation process, but do not participate in it, gain access to more unique experiences (Prahalad & Ramaswamy 2004). They also identify more with the firms involved in co-creation (Dahl et al. 2014), and are more likely to increase their behavioral intentions as they feel more empowered and perceive the firms as more customer-oriented (Fuchs & Schreier 2011).

The origins of this innovation strategy can be traced back to pre-industrial times, where customers played a role in determining “what should be created by the craftsperson and how” (Wikström 1996). Nonetheless, co-creation fell out of favor during the industrial era as mass production became more prominent, leading to the standardization of products to attain cost benefits (Harwood & Garry 2010).

Despite losing prevalence during the industrial period, co-creation reemerged as an important innovation strategy in the post-industrial era. This was due to the emergence of “fast and flexible production facilities, decentralized organizations, and rapidly evolving information technologies” that created an environment of “heterogeneous, unpredictable, and uncontrollable” consumption patterns (Füller et al. 2009, Ind et al. 2017). As a result, mass

production has become limited in satisfying the idiosyncratic needs and desires of customers. Therefore, co-creation started to be recognized as the future of product and service innovation in the early 2000s (Prahalad & Ramaswamy 2000).

As such, value creation can no longer be perceived as value created by the firm that flows to the customer (Agrawal & Rahman 2015). Value creation has become a joint process that occurs between the customer and the firm (Agrawal & Rahman 2015). The conventional approach to innovation that was once centered around companies has now shifted towards a customer-oriented approach, which emphasizes greater customer involvement in co-creating new products and services (Prahalad & Ramaswamy 2004).

The integration of consumer skills and knowledge in value-creation processes through greater involvement can lead to the development of new and important capacities (Prahalad & Ramaswamy 2004), which in turn can become a source of competitive advantage (Zhang & Chen 2008). Additionally, the co-creation process can foster innovation and the evolution of market trends (Vargo et al. 2008).

Companies find co-creation appealing as it can result in various organizational advantages such as cost savings, risk mitigation, speed-to-market, improved insights, competitive advantage, increased productivity, and enhanced customization (Prahalad & Ramaswamy 2000, Hatch & Schultz 2010, Kazadi et al. 2016, Ind et al. 2013, 2017).

Concurrently, consumers are also advantaged by this process as they can come as close as possible to obtaining precisely what they desire, and are able to reduce costs, time, and energy (Nuttavuthisit 2010), ultimately resulting in greater satisfaction (Vega-Vazquez et al. 2013). Active involvement in experiences enables individuals to derive personal value by integrating their physical, social, and cultural resources into the consumption experience, and collective value by integrating operational resources into co-consumption experiences (Arnould et al. 2006, Baron & Harris 2008). The acquisition of personal value through co-creation can involve various aspects, such as the accumulation of knowledge and experiences, self-improvement, building relationships, and engaging in social interactions. In addition, co-creation can generate collective value by fostering a sense of community or group identity, contributing to group resources, promoting the company culture, and eliciting positive emotions and attitudes toward the company, leading to greater affective commitment (Pongsakornrungrasit & Schroeder 2011, Insley & Nunan 2014, Lin & Bennett 2014, Ind et al. 2013, 2017).

For companies operating their business online, once their online customers, in a firm community, intend to co-create, they'll provide details of their shopping experiences and information on their favorite companies and encourage others to purchase (Gensler et al. 2013). eBay, for example, has become a cost-effective alternative, by allowing users to auction off goods globally with far less cost and effort than required in the offline world, as well as being a form of interactive entertainment (Kambil et al. 1999).

For consumers to engage in co-creation, they need motivation to interact with a company and gain confidence that the business is committed to their interests and needs, and capable of providing them with added value (Morgan & Hunt 1994). Thus, it can be inferred that the higher the perceived benefits of the consumer-firm relationship, the more likely consumers are to participate in co-creation activities (Alves & Mainardes 2017). This, in turn, is linked to the level of trust consumers have in the company, as higher levels of trust are associated with increased consumer participation in co-creation (Alves & Mainardes 2017).

Trust can be defined as the belief that a company is reliable and will act with honesty and fairness (Morgan & Hunt 1994). When consumers perceive risks, trust reflects their expectations about the intentions of the company (Andaleeb 1992).

The adoption of co-creation can be a significant factor in the establishment of customer trust (Iglesias et al. 2020). When customers recognize that companies are sincerely interested in their needs and preferences, and respond appropriately, they develop a sense of trust in the company (Ind et al. 2013). Co-creation can assist companies in creating relationships of trust with their consumers (Vallaster & von Wallpach 2013, da Silveira et al. 2013, Iglesias et al. 2013).

Previous studies have established that co-creation has a favorable impact on consumer trust (Iglesias et al. 2020, Ind et al. 2013). Additionally, customers are likely to provide feedback and suggest firms to their friends and family when they trust them (Flint et al. 2011).

Consumers expect and demand access to and transparency of information (Kang & Hustvedt 2014, Prahalad & Ramaswamy 2004), and the openness of a company regarding its operations and plans has the potential to increase the trust of customers in its products (Kang & Hustvedt 2014). Co-creation involves active participation by consumers in the value creation process, with their knowledge, skills, and commitment playing a crucial role in the co-creation process. This connection suggests that co-creation has the ability to build trust between the company and the observing customer, as it involves transparency and dialogue as integral parts of the process (Randall et al. 2011). Consumers are more likely to trust products co-created by users

when they perceive that the motives behind the co-creation process are purely toward enhancing the quality of the product (Thompson & Malavyia 2013).

Observing consumers tend to have a clearer identification with co-creators and thus, with the firm that practices co-creation (Dahl et al. 2015). Consumers develop identification with the company when they feel a connection with others who are participating in co-creation activities for that company (Dahl et al. 2015). Social identification theory suggests that users tend to identify with companies that are driven by consumers because they feel a greater affinity with user designers, experience feelings of empowerment (i.e., engagement with the company), and feel that they belong to the company's consumer community (Dahl et al. 2015). The level of trust in those participating in co-creation for the company increases as the level of identification with similar others increases (Morgan & Hunt 1994).

Co-created products tend to generate greater purchase intentions among observing consumers, resulting in higher profits for the company (Schreier et al. 2012). The first hypothesis proposes that observing consumers, when learning that a product was co-created (i.e., consumers make product judgments based on given and missing product information (Luchs et al. 2010)), will display more favorable behavioral intentions toward co-created sustainable products than for sustainable non-co-created products, helping to reduce the sustainability gap through a higher display of trust toward sustainable marketing claims, bringing closer together the sustainable attitudes and behaviors of observing consumers.

Trust is enabled through the presence of dialogue, transparency, and intrinsic consumer motives. Firms that are genuinely trying to implement sustainable practices into their business through co-creation will be perceived by consumers are more genuine and transparent (Prahalad & Ramaswamy 2004), thus increasing the observing consumers' trust. Consumers tend to view firms that are perceived as sustainable as being fair, honest, and trustworthy in their products and services (Singh et al. 2012). This perception of sustainability can be leveraged by firms to enhance trust in their products (Singh et al. 2012).

H_{1a}: Consumers develop more positive behavioral intentions (i.e., purchase intent) toward sustainable co-created products than for sustainable non-co-created products.

H_{1b}: The positive effect of sustainable co-created products on purchase intention is mediated by consumers' trust in sustainable marketing claims.

Consumers' Concern for Sustainability

Sustainability and sustainable products, despite growing concerns, are not of the same concern for every consumer (Eckhardt et al. 2010). Some consumers, generally named “Grey” consumers for their lack of sustainable consumption values or sustainable lifestyles (Young et al. 2010), continue to buy environmentally hazardous products (Johnstone & Tan 2015). Justifications such as the “utilitarian view that the benefits personally outweigh the costs” (i.e., value for money), “knowledge of how capitalism works”, the “all or nothing” approach, culture, and lack of individual responsibility for the issue are given for the lack of concern toward sustainable issues (Eckhardt et al. 2010). Some consumers lack the knowledge or are confused regarding sustainability, sustainable products, and sustainability issues, creating a barrier toward sustainable consumption (Johnstone & Tan 2015).

I predict that the effect of co-created sustainable products on trust depends on the extent to which observing consumers perceive sustainable issues as a relevant matter. In particular, the effect should depend on a boundary conditional variable that has actionable implications: the observing consumers' concern with sustainable issues. There is an expectation that the likelihood of trusting the sustainable marketing claims of companies increases when consumers have familiarity with the concept of sustainability and sustainable products and are concerned with sustainable issues. This reasoning comes from the well-established literature in social cognitive psychology that states that people generally project their own characteristics, beliefs, and attitudes onto others (Holmes 1968, Kawada et al. 2004). Accordingly, consumers who are concerned with sustainable issues are likely to project a proactive consumer stereotype onto other consumers in other domains when confronted with a company pursuing co-creation. In contrast, consumers who are not concerned with sustainable issues are unlikely to make these attributions and will not perceive co-created sustainable products in a meaningful way.

With this information in mind, this paper proposes that the level of concern toward sustainability and sustainable products moderates the effect that the integration of co-creation in sustainable products has on trust toward sustainable marketing claims made by firms.

H₂: The positive effect of co-created sustainable products on trust in marketing claims is attenuated for consumers with low concern for sustainable issues.

Loyalty and Tolerance of Higher Prices

Customer loyalty refers to the willingness of a customer to establish a long-term relationship with a particular company and to advocate for that company to others (Lovelock & Wirtz, 2011,

Markovic et al. 2018). Customer loyalty can drive profitability in various ways, such as through repeat transactions, decreased cost of service, a higher willingness to pay, lower price sensitivity, and better sales forecasting (Lovell & Wirtz, 2011). Loyal customers, due to these mentioned motives, are also more profitable than acquiring a new customer (Hajli et al. 2017).

Loyalty can be explained by the core variable of trust (Sirdeshmukh et al. 2002), and research has shown that the relationship between trust and loyalty is reciprocal. When firms act to earn the trust of consumers, it leads to consumers demonstrating loyalty to the firm (Sirdeshmukh et al. 2002). Trust has been found to be an antecedent of customer loyalty (Singh et al. 2012, Markovic et al. 2018, Leonidou et al. 2013), and it has a positive impact on loyalty (Iglesias et al. 2020).

When customers perceive that a company portrays their sustainable behavior sincerely, their loyalty to that company is likely to increase (Iglesias et al. 2020), as they often show their appreciation for firms that are beneficial to the environment and society by rewarding them (Eisingerich et al. 2011, Walsh & Beatty 2007).

Customers that actively participate in co-creation see their loyalty to the company increase (Cossío-Silva et al. 2016, Kaufmann et al. 2016, Hajli et al. 2017), meaning that co-creation has a positive effect on customer loyalty (Iglesias et al. 2020). Companies have been using co-creation to build customer loyalty (Kambil et al. 1999).

Research has shown that consumers' perceived sustainability of a firm positively impacts firm and product loyalty (Singh et al. 2012). The third hypothesis of this paper proposes that loyalty mediates the positive effect between the observing consumers' trust in marketing claims and purchase intention.

H₃: The positive effect between trust in the sustainable marketing claims and purchase intention is mediated by consumers' loyalty toward the firm.

Tolerance to higher prices (price sensitivity) is defined as how consumers feel and react about paying the price for a product (Ramirez & Goldsmith 2009). In other words, it is the overall reaction of consumers to prices. Since the willingness to pay for products is a key managerial concern (Goldsmith et al. 2010), several studies focused on the effects of loyalty on tolerance of prices and reported that loyal consumers are willing to pay higher prices for their favorite firms, being less price sensitive than non-loyal consumers when choosing a product (Ramirez

& Goldsmith 2009, Krishnamurthi & Raj 1991, Dominique-Ferreira et al. 2016). Brand loyalty can enable companies to command a price premium over their competitors and provide protection against cheaper alternatives (Krishnamurthi & Papatla 2003).

However, although researchers have provided evidence that loyalty can increase consumers' willingness to pay for a particular firm, research on if and how this relationship varies across different product categories is limited (Goldsmith et al. 2010). This paper proposes that tolerance of higher prices mediates the positive effect between the observing consumers' loyalty and purchase intention.

H4: The positive effect between consumers' loyalty and purchase intention is mediated by tolerance of higher prices.

All the hypotheses proposed by this paper can be seen in the conceptual framework (see Figure 1).

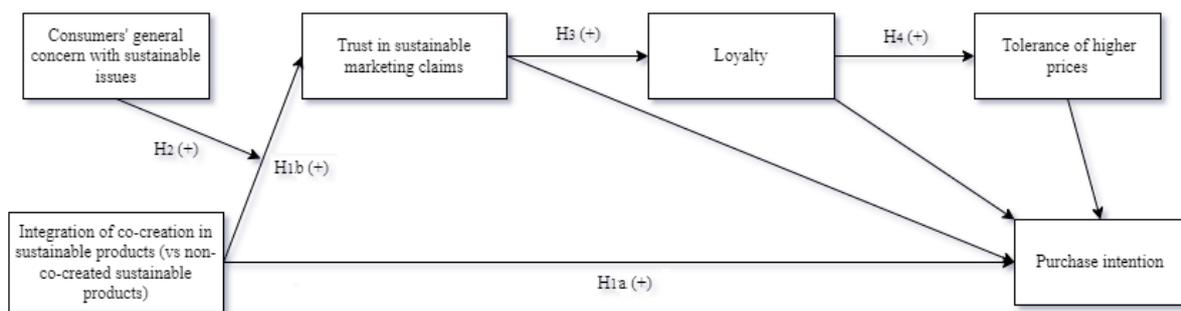


Figure 1 - Conceptual Framework

Methodology

This study utilized an experimental study. Experimental studies are characterized by four key features: manipulation, control, random assignment, and random sampling. These studies are commonly used to establish a causal link (cause-effect) between two variables (Ross & Morrison 2013). The objective is to test and draw conclusions on the effect of co-created sustainable products on observing consumers' purchase intention, ceteris paribus, meaning that all other relevant factors are kept constant. Experimental research is the finest way to evaluate the hypothesis because it includes manipulating variables. In this paper, I'll be evaluating each scenario for the innovation strategy (co-created sustainable products vs non-co-created sustainable products). By manipulating those variables, I will be able to analyze their effect on consumers' trust, loyalty, tolerance of higher prices, and purchase intentions.

To test my hypotheses, I performed one study using a scenario-based experimental methodology. The study investigates how sustainable co-created products (vs non-co-created sustainable products) affect the observing consumers' trust, and consequent loyalty, tolerance of higher prices, and purchase intention.

Data Collection

Data collection was conducted through the sharing of the survey through social media, friends and family, and social media groups solely dedicated to the sharing of surveys and research for students in need of collecting data. The target population was wide, consisting of individuals over 18 years old, allowing me to reach the most amount of respondents possible in a way that would not compromise the quality of the data collected and the final results and discussion. All the recruitment process was done without any cost.

The study followed a 2 x 1 (Co-creation vs non-co-creation; sustainability claim) between-subject design. 105 respondents took part with 101 valid respondents. The 101 valid respondents had an average age of 34.29 and a median age of 26. 58.4% of respondents were female.

Method

Participants were first presented with the product in discussion for the entirety of the survey, baby shampoo. Baby shampoo was the product chosen because it has already been used in previous literature regarding sustainability (Luchs et al. 2010), and the sustainability nature of the product is something that does not change, whether it is co-created or not. After being asked about their familiarity with the product, respondents were randomly assigned to one of two groups (sustainable co-created product vs. sustainable non-co-created product). In one group respondents were introduced to company A. Company A was described as a company that sells baby shampoos and markets all their products as sustainable and co-created products. The respondents were provided with the definition of co-creation. In the other group, respondents were introduced to company B, which was described as a company that sells baby shampoos and markets all their products as sustainable and designed by company designers. The between-subjects treatment was that company A was described as the co-creation-driven firm and company B as the designer-driven firm. Both companies remained nameless for the whole duration of the survey and both group participants were also provided with the definition of sustainable products. Both groups were told that their respective company was launching a new baby shampoo in their country. To minimize discrepancies in participants' perceptions of

product attributes across experimental conditions, it was conveyed to them that the new baby shampoo from both companies had received positive ratings in an independent consumer test.

Measures

The survey responses were collected using a seven-point Likert scale that ranged from "strongly disagree" to "strongly agree".

To comprehend if participants understood the information given to them, regardless of their group, but specifically, to understand if participants of the group that introduced company A understood the definition of co-creation, the first statement after the introduction of both companies was "Consumers participated in the development of the new baby shampoo". This question served as a manipulation check.

The survey included constructs that were assessed using scale items already established in the existing literature. The four items used in the construct of customer trust (e.g., "The company keeps its promises") used existing scales of Mende & Bolton (2011), Dagger et al. (2009), and Hochreich & Rotter (1970). The four items used in the construct of customer loyalty (e.g., "I am willing to maintain my relationship with the company") used existing scales of Dagger et al. (2009), and Bruner & Hensel (2001). The seven items used in the construct of purchase intention and product preference (e.g., "I would seriously consider purchasing the new baby shampoo from this company") used existing scales of Escalas & Bettman (2005), and Bruner & Hensel (2001). Two items were used in the construct of tolerance of higher prices (Goldsmith et al. 2003, Goldsmith & Newell 1997, Krishnamurthi 1988) (e.g., "I am willing to pay a higher price for the product"). Participants were also provided with the construct definition of customer loyalty and customer trust.

To study the moderator of my conceptual framework (H_2), a construct of three items was used, inspired by previous literature (Schreier et al. 2012), to measure the respondents' general concern with sustainable issues (e.g., "I consider myself as a customer that is concerned with sustainable (environmental and social) issues").

To mitigate the potential influence of common method variance (CMV), the survey items measuring the dependent, mediating, moderator, and independent variables were positioned at separate locations in the survey (Podsakoff et al. 2003). This prevented participants from associating the study's variables, reducing the likelihood of their answers to one set of questions influencing their answers to the other.

The table below details all the constructs used to develop the survey.

Table 1 – Study Measures

Construct	Item	Scales
Manipulation Check	Consumers participated in the development of the new baby shampoo	Own Construct
Customer Trust	The company keeps its promises	Mende & Bolton (2011), Dagger et al. (2009), and Hochreich & Rotter (1970)
	The company can be trusted	
	The company is trustworthy	
	The company is honest	
Customer Loyalty	I consider the company my first choice when I purchase the products they supply	Dagger et al. (2009), and Bruner & Hensel (2001)
	I am willing to maintain my relationship with the company	
	I am loyal to the company	
	I would recommend this company to others	
Tolerance of Higher Prices	I am willing to pay a higher price for the product	Goldsmith et al. (2003), Goldsmith & Newell (1997), and Krishnamurthi (1988)
	I feel more tolerant toward possible higher prices charged	
Concern with Sustainable Issues	I consider myself as a customer that is concerned with sustainable issues	Schreier et al. (2012)
	I try to indulge in sustainable consumption	
	I have purchased products because they had sustainable attributes	
Purchase Intention	I would seriously consider purchasing the new baby shampoo from this company	Escalas & Bettman (2005), and Bruner & Hensel (2001)
	I have a strong preference for the new baby shampoo from this company	

	I would actively search for this company	
	Purchasing the new baby shampoo from this company is very likely	
	I feel connected with the company	
	I can identify with the company	
	In the future, I will continue to purchase products from this company	

Data Analysis

Manipulation Check

The analysis of the survey data began with the manipulation question (“Consumers participated in the development of the new baby shampoo”). The significance threshold was set at 0.05. For the innovation strategy (co-created product vs non-co-created product), a variable “Scenario” was created that indicated which of the two companies each respondent was randomly assigned to (0 = company B; 1 = company A). An independent-samples T-test was conducted (Park 2009), with the company innovation strategy (company A vs. company B) as the grouping variable, and it was statistically significant ($p = .025$), which meant that participants understood the definition of co-creation. Due to no insignificance arising from the manipulation check, I was able to continue with the data analysis.

Measures

A reliability analysis (George & Mallery 2018) was done for all the different constructs to understand if all items were significant.

Starting with Customer Trust, which was measured using four items (Mende & Bolton 2011, Dagger et al. 2009, Hockreich & Rotter 1970), that showed a Cronbach’s alpha of .915, meaning that it is significant because, since it has a higher value than .8, the four items explain 96% of trust total variance. In the Item-Total statistics, all four items had a corrected item-total correlation higher than .7, meaning that they were significant, and no item had to be discarded from the data analysis.

Customer Loyalty, which was measured using four items (Dagger et al. 2009, Bruner & Hensel 2001), showed a significant Cronbach’s alpha of .901, and all four items had a corrected item-total correlation higher than .7, which means that once again no item was removed from the data analysis.

The moderator construct (respondents' general concern with sustainable issues), which was measured using three items (Schreier et al. 2012), showed a significant Cronbach's alpha of .848. In the Item-Total statistics, two of the three items had a corrected item-total correlation higher than .7, with one of them having a value of .651. However, since the item is considered as very important, and its value reported is very close to the .7 threshold, I've decided to not remove the item from the data analysis.

The same happened with one of the seven items that measured Purchase Intention (Escalas & Bettman 2005, Bruner & Hensel 2001), which had six items with a corrected item-total correlation higher than .7, and one with a value of .689. The same reasoning mentioned above for the moderator was applied to Purchase Intention, which had a significant Cronbach's alpha of .937.

With Tolerance of Higher Prices, since it was measured using only two items (Goldsmith et al. 2003, Goldsmith & Newell 1997, Krishnamurthi 1988), a bivariate correlation was computed (Denis 2018), that showed that both items were significant since the value of Pearson correlation was .746 ($p < .001$).

Since all constructs were significant and no item had to be removed from the data analysis, five new variables were created, one regarding each construct, that consisted of the arithmetic mean of all items of each construct (See Table 2).

Table 2 – Reliability Analysis

Construct	Item	Corrected Item-Total Correlation	Cronbach's Alpha
Customer Trust	The company keeps its promises	.767	.915
	The company can be trusted	.843	
	The company is trustworthy	.860	
	The company is honest	.760	
Customer Loyalty	I consider the company my first choice when I purchase the products they supply	.769	.901

	I am willing to maintain my relationship with the company	.754	
	I am loyal to the company	.858	
	I would recommend this company to others	.736	
Concern with Sustainable Issues	I consider myself as a customer that is concerned with sustainable issues	.651	.848
	I try to indulge in sustainable consumption	.763	
	I have purchased products because they had sustainable attributes	.753	
Purchase Intention	I would seriously consider purchasing the new baby shampoo from this company	.800	.937
	I have a strong preference for the new baby shampoo from this company	.860	
	I would actively search for this company	.689	
	Purchasing the new baby shampoo from this company is very likely	.813	
	I feel connected with the company	.811	
	I can identify with the company	.810	
	In the future, I will continue to purchase products from this company	.783	

Construct	Item	Pearson Correlation
Tolerance of Higher Prices	I am willing to pay a higher price for the product	.746
	I feel more tolerant toward possible higher prices charged	($p < .001$)

Results

H_{1a}: Consumers develop more positive behavioral intentions (i.e., purchase intent) toward sustainable co-created products than for sustainable non-co-created products.

H_{1b}: The positive effect of sustainable co-created products on purchase intention is mediated by consumers' trust in sustainable marketing claims.

To test H_{1a}, I began by conducting a one-way ANOVA (Park 2009), with purchase intention as the dependent variable and innovation strategy as the factor. The one-way ANOVA showed that the innovation strategy (co-created product vs non-co-created product) affected the purchase intention of respondents ($p = .015$). The company that co-created had a higher mean of purchase intention ($M_{CC} = 5.04$) than the company that uses the traditional innovation strategy ($M_{Trad} = 4.49$). Thus, H_{1a} is accepted.

To test H_{1b}, a mediation analysis was conducted using Process (Hayes 2012, 2017), with innovation strategy as the independent variable, customer trust as the mediator, and purchase intention as the dependent variable. The model, which consisted of the indirect effect between the independent variable (innovation strategy) and the mediator (trust) was statistically significant ($p = .0000$). The innovation strategy has a significant impact on trust ($p = .0309$), with a positive coefficient ($\beta = 0.1698$), meaning that consumers display higher trust in the marketing claims for sustainable co-created products than for sustainable non-co-created products, supporting H_{1b}.

The model, consisting of the indirect effect between the mediator (trust) and the dependent variable (purchase intention), and the direct effect between the independent variable (innovation strategy) and dependent variable (purchase intention), was statistically significant ($p = .0000$). Both innovation strategy ($\beta = .4356$; $p = .0145$) and trust ($\beta = .6657$; $p = .0000$) have a significant impact on purchase intention, with positive coefficients. The total effect, direct effect, and indirect effect ($\beta = .1131$; LLCI = .1475; ULCI = .4248) were all significant

(see Table 3). This means that there is a complementary and partial mediation effect, since both the direct and indirect effects are significant and positive (Hayes 2015), supporting the mediating effect of trust in H_{1b}. Thus, H_{1b} is accepted.

Table 3 – Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval	Conclusion
Innovation Strategy → Trust → Purchase Intention	0.5487 (0.0154)	0.4356 (0.0145)	0.1131	Lower Bound 0.1475 Upper Bound 0.4248	Mediation

H₂: The positive effect of co-created sustainable products on trust in marketing claims is attenuated for consumers with low concern for sustainable issues.

To test H₂, a moderation analysis was conducted using Process (Hayes 2012, 2017), with a categorical moderator, the respondents' general concern with sustainable issues, a continuous dichotomous independent variable, the innovation strategy, and a dependent variable, the customers' trust. The model was statistically significant ($p = .0012$). With trust as the outcome variable, the innovation strategy ($p = .0309$), general concern with sustainable issues ($p = .0001$), and the interaction effect ($p = .0293$) were all statistically significant. The coefficient of the innovation strategy was positive ($\beta = 2.2437$), meaning that consumers display higher trust in the marketing claims for sustainable co-created products than for sustainable non-co-created products.

The interaction term presented was significant ($p = .0293$), with a negative coefficient ($\beta = -.4039$), meaning that it negatively moderates the relationship between the innovation strategy and trust (i.e., the relationship between the innovation strategy and customer trust is weakened by higher levels of general concern with sustainable issues). A more detailed view using the Johnson-Neyman interval (Hayes & Matthes 2009) (See Table 5), which shows the range of values of the moderator in which the slope of the predictor is significant vs. nonsignificant, informs that the effect of the innovation strategy on trust is moderated by the respondents'

general concern with sustainable issues. When consumers' concern for sustainability is low (value equal to or less than 3.531, on a scale from 1 to 7), the effect of the innovation strategy on trust is moderated ($p < .05$). When consumers' concern for sustainability is high (value is higher than 3.531, on a scale from 1 to 7), the effect of the innovation strategy on trust is no longer moderated ($p > .05$), meaning that general concern with sustainable issues no longer has a moderating effect. This means that there is a moderating effect of the general concern with sustainable issues on the relationship between innovation strategy and trust (See Table 4). Thus, H_2 is accepted.

Table 4 – Moderation Analysis Summary

Variables (Outcome = Trust)	Coefficient (β)	P – value (p)	Conclusion
Innovation Strategy	2.2437	0.0309	Moderation
Concern with Sustainable Issues	0.4722	0.0001	
Interaction (Innovation Strategy X Concern with Sustainable Issues)	- 0.4039	0.0293	

Table 5 – Moderation Analysis Summary (Johnson-Neyman interval)

Values of Moderator (Concern with Sustainable Issues) – Scale from 1 to 7	Effect	P – value (p)
1.000	1.8398	0.0321
1.600	1.5975	0.0334
2.200	1.3552	0.0355
2.800	1.1129	0.0393
3.400	0.8706	0.0472
3.531	0.8177	0.0500

H₃: The positive effect between trust in the sustainable marketing claims and purchase intention is mediated by consumers' loyalty toward the firm.

To test H₃, a mediation analysis was conducted using Process (Hayes 2012, 2017), with trust as the independent variable, customer loyalty as the mediator, and purchase intention as the dependent variable. The model, which consisted of the indirect effect between the independent variable (trust) and the mediator (loyalty) was statistically significant ($p = .0000$). Trust has a significant impact on loyalty ($p = .0000$), with a positive coefficient ($\beta = 0.6461$), meaning that when customer trust increases, customer loyalty also increases. The model, consisting of the indirect effect between the mediator (loyalty) the dependent variable (purchase intention), and the direct effect between the independent variable (trust) and dependent variable (purchase intention), was also statistically significant ($p = .0000$). Both trust ($\beta = .2831$; $p = .0012$) and loyalty ($\beta = .6185$; $p = .0000$) have a significant impact on purchase intention, with positive coefficients. The total effect, direct effect, and indirect effect ($\beta = .3996$; LLCI = .2233; ULCI = .6380) were all significant (see Table 6). This means that there is a complementary and partial mediation effect, since both the direct and indirect effects are significant and positive (Hayes 2015), supporting the mediating effect of loyalty in H₃. Thus, H₃ is accepted.

Table 6 – Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval	Conclusion
Trust → Loyalty → Purchase Intention	0.6827 (0.0000)	0.2831 (0.012)	0.3996	Lower Bound 0.2233 Upper Bound 0.6380	Mediation

H₄: The positive effect between consumers' loyalty and purchase intention is mediated by tolerance of higher prices.

To test H₄, a mediation analysis was conducted using Process (Hayes 2012, 2017), with loyalty as the independent variable, tolerance of higher prices as the mediator, and purchase intention as the dependent variable. The model, which consisted of the indirect effect between the

independent variable (loyalty) and the mediator (tolerance of higher prices) was statistically significant ($p = .0000$). Loyalty has a significant impact on tolerance of higher prices ($p = .0000$), with a positive coefficient ($\beta = 0.5510$), meaning that when customer loyalty increases, tolerance of higher prices also increases. The model, consisting of the indirect effect between the mediator (tolerance of higher prices) and the dependent variable (purchase intention) and the direct effect between the independent variable (loyalty) and dependent variable (purchase intention), was statistically significant ($p = .0000$). Both loyalty ($\beta = .7022$; $p = .0012$) and tolerance of higher prices ($\beta = .1391$; $p = .0124$) have a significant impact on purchase intention, with positive coefficients. The total effect, direct effect, and indirect effect ($\beta = .0767$; LLCI = .0013; ULCI = .1645) were all significant (see Table 7). This means that there is a complementary and partial mediation effect, since both the direct and indirect effects are significant and positive (Hayes 2015), supporting the mediating effect of tolerance of higher prices in H4. Thus, H4 is accepted.

The overview of the results can be found in Table 8. All the data analysis was conducted through IBM SPSS Statistics (George & Mallery 2019).

Table 7 – Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval	Conclusion
Loyalty → Tolerance → Purchase Intention	0.7788 (0.0000)	0.7022 (0.000)	0.0767	Lower Bound 0.0013 Upper Bound 0.1645	Mediation

Table 8 – Data Analysis Results

Hypothesis	Results
H _{1a}	Supported
H _{1b}	Supported
H ₂	Supported (a)

H ₃	Supported
H ₄	Supported

(a) – The moderation effect was significant, but in opposition to what was proposed.

Further Findings

After completing the data analysis, since the results supported the four proposed hypotheses, it was appropriate to conduct a sequential mediation (Hayes 2012, 2017), with innovation strategy as the independent variable, purchase intention as the dependent variable, trust as the first mediator, loyalty as the second mediator, and tolerance of higher prices as the third mediator. The objective of the sequential mediation was to test all hypotheses simultaneously and examine the indirect sequential effects of the innovation strategy through trust, loyalty, and tolerance of higher prices on purchase intention.

The sequential mediation showed, as expected due to the previous results, significant and positive total ($\beta = .5487$; $p = .0154$) and direct ($\beta = .2788$; $p = .0450$) effects of the independent variable (innovation strategy) on the dependent variable (purchase intention), meaning that consumers develop more favorable purchase intent toward sustainable co-created products than for sustainable non-co-created products. The indirect effects, however, tell a completely different story. Apart from the first significant and positive indirect effect of innovation strategy through trust on purchase intention, that supports the mediation effect of trust on the positive effect between the innovation strategy and purchase intention ($\beta = .0476$; LLCI = .0623; ULCI = .1830), all the other six indirect effects were rejected, as the lower bound of the confidence interval was negative and the upper bound of the confidence interval was positive on all of them. The indirect effect of the innovation strategy through loyalty on purchase intention ($\beta = .1248$; LLCI = -.0576; ULCI = .3400) and the indirect effect of the innovation strategy through tolerance of higher prices on purchase intention ($\beta = .0162$; LLCI = -.619; ULCI = .0949) were not significant, and do not mediate the positive effect between the innovation strategy and purchase intention. There is no indirect sequential effect of the innovation strategy through trust, loyalty, and tolerance of higher prices on purchase intention ($\beta = .0073$; LLCI = -.0098; ULCI = .0365). The sequential mediation was rejected.

To further understand the sequential effects between the variables, another sequential mediation was conducted (Hayes 2012, 2017), this time with trust as the independent variable, purchase intention as the dependent variable, loyalty as the first mediator, and tolerance of higher prices as the second mediator. The objective was to test the indirect sequential effects of trust through

loyalty and tolerance of higher prices on purchase intention. The direct ($\beta = .2776$; $p = .0011$) and total ($\beta = .6827$; $p = .0000$) effect of trust on purchase intention were significant and positive, meaning that when the trust in sustainable marketing claims increases, so does purchase intention. The direct effect of trust on loyalty was positive and significant ($\beta = .6461$; $p = .0000$), while the direct effect of trust on tolerance of higher prices was not significant ($\beta = .0411$; $p = .7987$). The direct effects of loyalty on tolerance of higher prices ($\beta = .5277$; $p = .0007$) and purchase intention ($\beta = .5474$; $p = .0000$) were positive and significant. This means that the tolerance of higher prices is exclusively explained by customer loyalty. The direct effect of tolerance of higher prices on purchase intention ($\beta = .1346$; $p = .0111$) was positive and significant. The indirect effect of trust through loyalty on purchase intention was significant ($\beta = .3537$; LLCI = .1969; ULCI = .5799) while the indirect effect of trust through tolerance of higher prices on purchase intention was not significant ($\beta = .0055$; LLCI = -.0431; ULCI = .0654). Despite rejecting the sequential mediation due to one of the indirect effects not being significant, the indirect sequential effect of trust through loyalty and tolerance of higher prices on purchase intention was positive and significant ($\beta = .0459$; LLCI = .0014; ULCI = .1133).

After computing both sequential mediations, we can conclude that, in a sustainable product context, it is possible to increase the purchase intentions of consumers through the domino-effect of an increase in the display of trust in sustainable marketing claims, loyalty, and tolerance of higher prices. This means that although co-creation can narrow the sustainability gap, as it was shown with the support of all four hypotheses, the decrease of the sustainability gap can be achieved with other innovation strategies, as long as those strategies increase consumers' trust in sustainable marketing claims, as this triggers the domino-effect and increases consumer loyalty, tolerance of higher prices, and purchase intention.

General Discussion

The growing concern that various social and environmental issues have been receiving in the past years has led to widespread attention toward sustainability and sustainable products (Luchs et al. 2010). This shift, which was once supported only by a small group of consumers, has now become a mainstream trend influencing businesses, governments (Carrigan & Attalla 2001, Shaw & Shiu 2002), and the consumption patterns of the broader markets (Luchs et al. 2010).

However, companies have found that consumers who claim to prioritize sustainability are not always consistent with their actions (Carrington et al. 2010). Due to widely researched causes such as the skepticism about sustainable marketing claims (De Pelsmacker et al. 2005, Kagawa

2007, Furlow 2010), lack of information about sustainable products (De Pelsmacker et al. 2005, Hill & Lee 2012), and the higher prices of sustainable products (Luchs et al. 2010, Eckhardt et al. 2010, Gam 2011, Connell 2010), a significant gap between the consumers' explicit attitudes toward sustainable products and their consumption behavior took shape, that scholars such as Eckhardt, Belk, and Devinney pointed as the sustainability gap.

The goal of this research was to demonstrate that an innovative and transparent strategy like co-creation (Prahalad & Ramaswamy 2004), that saw its importance increasingly recognized by academics and practitioners in the past years (Payne et al. 2008, Prahalad & Ramaswamy 2003) and has reshaped the views on the creation of value (Agrawal & Rahman 2015), was able to reduce the sustainability gap among the observing consumers through a higher perceived trust of the observing consumers toward sustainable marketing claims. Despite the extensive research that has been conducted on the participating consumer (Schreier et al. 2012), researchers have largely disregarded the reactions of observing consumers, who constitute the broader market (Fuchs & Schreier 2011). As such, a better understanding of how co-creation affects the observing consumers regarding their trust in sustainable products is essential.

Theoretical Contributions

This paper contributes to the emerging literature by exploring the observing consumers' perception of companies selling co-created sustainable products. The study conducted adds to the co-creation literature (Schreier et al. 2012, Dahl et al. 2015, Iglesias et al. 2013, 2020, Prahalad & Ramaswamy 2004, Alves & Mainardes 2017, Randall et al. 2011, Agrawal & Rahman 2015, Cossío-Silva et al. 2016, Costa & Coelho do Vale, 2020, Ind et al. 2013, 2017) by supporting that co-creation can be beneficial to decrease the sustainability gap through a higher perceived trust of the observing consumers toward sustainable marketing claims.

A higher display of trust leads to a higher display of loyalty toward the firm and its sustainable products. The increased display of loyalty consequently leads to a higher tolerance for the higher prices that are generally charged for sustainable products (Luchs 2010, Eckhardt 2010, Gam 2011, Hiller Connell 2010). Co-created sustainable products, a higher display of trust, loyalty, and tolerance of higher prices by observing consumers leads to the development of a more favorable purchase intent. These favorable behavioral intentions toward sustainable firms fostering co-creation, when compared to non-co-created sustainable products, are an important step in helping to close the gap between the observing consumers' explicit attitudes and their consumption toward sustainable products, the sustainability gap. Co-creation is an important

variable to reduce the sustainability gap through a higher perceived trust of the observing consumers. The innovation strategy (co-created product vs non-co-created product) affected the purchase intention of respondents in favor of the co-created sustainable products.

The moderation effect of the consumers' general concern with sustainable issues in the relationship between the described innovation strategy (co-created product vs non-co-created product) and customer trust is the boundary condition for the reduction of the sustainability gap through co-creation and consequent higher perceived trust of the observing consumers.

However, despite having a moderating effect, in contrast to what was hypothesized, it negatively moderates the relationship, meaning that the effect of co-created sustainable products on trust is attenuated for consumers with high concern for sustainable issues. This could mean that for observable consumers that show low or no interest in sustainable issues, co-creation is a more trustworthy and honest strategy regarding a firm's sustainable products and their sustainable marketing claims than the designer-driven strategy. This effect gets lost the more consumers show interest and concern toward sustainable issues. These concerned consumers already showed low levels of trust toward designer-made sustainable products (De Pelsmacker 2005, Kagawa 2007, Furlow 2010), which could mean that it is difficult for consumers concerned with sustainable issues to trust in any firms' strategy and marketing claims when it comes to sustainable products, regardless of the strategy.

By researching the observing consumers' perception of companies selling co-created sustainable products, some of the widely researched causes for the consumers' mismatched behavior such as the skepticism about sustainable marketing claims (De Pelsmacker et al. 2005, Kagawa 2007, Furlow 2010) and the higher prices of sustainable products (Luchs et al. 2010, Eckhardt et al. 2010, Gam 2011, Connell 2010) have been addressed. The increased display of trust and tolerance of higher prices address the above-mentioned causes that widen the sustainability gap.

Lastly, the two computed sequential analyses helped us to further understand how to narrow the sustainability gap by showing that it is possible to increase the purchase intentions of consumers through an increase in the display of trust in sustainable marketing claims, meaning that the decrease of the sustainability gap can be done with other innovation strategies besides co-creation, as long as those strategies increase the display of consumers' trust in sustainable marketing claims, as this triggers the domino-effect and increases consumer loyalty, tolerance of higher prices, and purchase intention.

Practical Implications

The widespread attention that sustainability and sustainable products (Luchs et al. 2010) have been receiving has led to a trend that influences businesses, governments (Carrigan & Attalla 2001, Shaw & Shiu 2002), and the consumption patterns of the mainstream markets (Luchs et al. 2010). Market research initially led decision-makers to believe that a significant portion of consumers would buy sustainable products, while in reality, the sales of these products have fallen well below expectations (Luchs et al. 2010). This research provides valuable insights for companies seeking to address the challenges of sustainable consumption when they encounter instances where sustainable-minded consumers do not follow through with their attitudes (Carrington et al. 2010).

First, insights suggest that the strategy that managers choose to implement in the products they market as sustainable makes a difference for the consumers, in particular, regarding their trust and purchase intentions. For managers that are genuinely trying to implement sustainable practices, and may be hesitant to promote them due to fear of public backlash (Furlow 2010), an implementation of a co-creation strategy in a firm's sustainable products can help to increase the level of trust that consumers have in that firm. The same can be applied to managers that, despite having a positive feedback from their customers regarding their new sustainable products, are seeing a gap between explicit attitudes and consumption behavior, and want to translate those attitudes more efficiently into purchase intention. However, it seems that as long as managers manage to increase their customers' trust in their sustainable marketing claims, other sustainable strategies implemented in their sustainable products can decrease the sustainability gap, by triggering a domino-effect that increases consumer loyalty, tolerance of higher prices, and purchase intention.

For managers, it is critical that, when they are trying to collect the benefits of implementing a co-creation strategy, even in non-sustainable products, it becomes clear for consumers, through promotion, that the product(s) they are looking at was co-created, since consumers make product judgments based on given and missing product information (Luchs et al. 2010). Cues about what co-creation is can be given to consumers in those products, for those that might not be aware of what it means.

However, it is essential for managers to have a comprehensive understanding of their target consumers' characteristics. As seen by the moderation effect, it seems that for consumers that show high levels of concern toward sustainable issues, it is difficult for them to trust in any

firm's strategy and marketing claims when it comes to sustainable products. For observing consumers, on the other hand, that show low or no interest in sustainable issues, co-creation is a more trustworthy and honest strategy regarding a firm's sustainable products and their sustainable marketing claims than the designer-driven strategy.

The study findings showed that managers can increase the sustainable purchase intentions of observing consumers through co-creation, reducing the sustainability gap through a higher perceived trust. Trust, loyalty, and tolerance of higher prices influence the purchase intention of consumers. By increasing customer trust, they can increase their customer's loyalty, and consequently increase tolerance of prices in their favor.

Limitations and Future Research

While this study has both theoretical and practical implications, it also has some limitations that could inspire further research.

This paper study employed a binary approach, only examining the polar opposite roles of professional designers and users. However, in real-world scenarios, many companies may find themselves operating somewhere in the middle ground.

The study is conducted regarding one product category (baby shampoos). It is impossible with one study to predict the observing consumers' behavior toward all the other different product categories. It should be further researched for other product categories, with the possibility of comparing some of them (gentleness-related versus strength-related attributes; low-tech versus high-tech products). A study exploring the suggested model in the services industry and contrasting its results with those in the product industry would be compelling and advantageous. Such research could potentially uncover significant distinctions between the two, highlighting the best approaches to manage them.

Due to limitations such as conducting the recruitment process without any cost and trying to reach respondents without the usual channels that researchers have and use, the study only reached the minimum amount of respondents to be considered valid. It would be preferable to conduct a survey on a larger sample size. Given that the sample used in this study was mainly drawn from the Portuguese population, the generalizability of the findings is a concern. To overcome this limitation, future research should seek to replicate this study in other countries that possess relevant cultural differences. Previous research has demonstrated that customers from diverse backgrounds define sustainable firms in varying ways (Iglesias et al 2019).

This paper studies the perceptions of observing customers toward trust regarding co-created sustainable products when compared to non-co-created sustainable products. Other perceptions of observing customers when presented with the same innovation strategy such as quality, innovation, and the characteristics of the participating consumers (e.g., number, diversity, expertise, constraints), among others, can be researched in the future.

For future research, it might be important to understand how to reach the more concerned and sustainable consumers, that have shown skepticism and lack of trust toward firms and their sustainable products, regardless of whether the firm uses a co-creation strategy or not (De Pelsmacker et al. 2005, Kagawa 2007, Furlow 2010). A different strategy might be able to lead to a higher display of trust and loyalty regarding a firm's sustainable products among these consumers.

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