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Do consumers intend to buy more co-created green products than traditionally developed green products?

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Abstract

Title: Do consumers intend to buy more co-created green products than traditionally developed green products?

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The globe is currently facing a number of environmental issues that require the rapid development of ecological technologies. Green product purchases continue to fall short of market forecasts. One of the causes of this behavior is a lack of trust in corporate environmental claims.

According to the literature, co-creation is a strategy for increasing consumers' trust and, as a result, their buying intentions. Additionally, firms that foster co-creation are perceived as being more customer-centric, which should lead to more favorable attitudes toward consumption.

According to two studies conducted on this research, co-creation of green products increases consumer trust.

Literature also states that the relevance of political orientation as a moderator between the type of development (co-creation vs professionals only) and consumer trust is considered significant. Liberal consumers (with low-power distance) tend to trust more in co-created products, whereas conservative consumers (with a high-power distance) are more likely to trust products generated solely by experts.

Despite the above, the effects of co-creation on the green economy have yet to receive much attention. Therefore, the main goal of this dissertation is to help executives better understand how co-creation can contribute to increasing consumer trust. Hence, companies should more commonly use co-creation in the development of green products in order to generate trust and additional sales. There are also limitations and suggestions for future research.

Keywords: Co-creation, political orientation, power-distance, green products, trust, conservative, liberal, trust in green, purchasing intention

Sumário Executivo

Título: Os consumidores pretendem comprar mais produtos verdes cocriados do que produtos verdes tradicionalmente desenvolvidos?

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O mundo está atualmente a enfrentar uma série de questões ambientais que exigem o rápido desenvolvimento de tecnologias ecológicas. As compras de produtos verdes continuam aquém das previsões do mercado. Uma das causas deste comportamento é a falta de confiança nas declarações ambientais corporativas.

De acordo com a literatura, a cocriação é uma estratégia para aumentar a confiança dos consumidores e, conseqüentemente, as suas intenções de compra. Além disso, as empresas que promovem a cocriação são percebidas como mais centradas no cliente, o que deve levar a atitudes mais favoráveis em relação ao consumo.

De acordo com dois estudos realizados nesta pesquisa, a cocriação de produtos verdes aumenta a confiança do consumidor.

A literatura também afirma que a relevância da orientação política como moderador entre o tipo de desenvolvimento (cocriação vs. apenas profissionais) e a confiança do consumidor é considerada significativa. Consumidores liberais (com distância de baixa potência) tendem a confiar mais em produtos cocriados, enquanto consumidores conservadores (com distância de alta potência) são mais propensos a confiar em produtos gerados exclusivamente por especialistas.

Apesar do exposto, os efeitos da cocriação na economia verde ainda precisam receber muita atenção. Portanto, o principal objetivo desta dissertação é ajudar os executivos a entender melhor como a cocriação pode contribuir para aumentar a confiança do consumidor. Assim, as empresas devem usar mais frequentemente a cocriação no desenvolvimento de produtos verdes para gerar confiança e vendas adicionais. Há também limitações e sugestões para pesquisas futuras.

Palavras-chave: Cocriação, verde, orientação política, distância do poder, produtos verdes, confiança, conservador, liberal, confiança no verde, intenção de compra.

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1. Introduction

Generally, consumers show concern about the long-term consequences of unsustainable practices (Economist, 2009; Kostadinova, 2016). Environmental change is a major issue of concern for the population of the most industrialized countries: Germany, France, Singapore, Japan, Taiwan, (Funk et al., 2020; Poortinga et al., 2019). According to Morris (2021), 60% of internet users say they will pay more for environmentally friendly products (Morris, 2021). In 2018, a consumer survey reported that 63% of respondents were concerned with air pollution and 67% were also worried about water pollution (CPG, 2018). Interestingly, 81% of the respondents agreed that businesses should have a significant amount of responsibility in helping to improve the environment (CPG, 2018).

As a result, consumers have embraced environmentally friendly activities. For example, during the Covid pandemic, sustainable actions have grown in popularity, demonstrating consumer reaction and awareness of environmental issues (Kumar et al., 2021).

Companies are addressing two challenges: depletion of environmental resources and consumer demand for more sustainable actions. For example, the recent Paris agreement, one of the most significant international commitments towards the environment protection (Dieleman, 2010). The agreement sends a strong signal to market scrutiny, as emissions are predicted to plummet by 2050 (Chapman et al., 2020). In addition, the Covid-19 virus posed even deeper difficulties for everyone (Rababah et al., 2020). Despite the challenges that the pandemic has caused and continues to cause, including as the digital divide, access to health services, gender and social inequality, economic instability, consumption vs environmental protection, and family well-being (Shek, 2021), people have become more environmentally conscious (Wendtlandt & Wicker, 2021). Such conscious has been activated due to the effects of Covid on people's uncertainty instilling further fear and uncertainty (Jian et al., 2020). As a result, the market is putting pressure on businesses to move towards a more sustainable future, with customers playing an increasingly important role at every stage of the product's development (Kohtamäki & Partanen, 2016)., we can assert that customers want sustainable product consumption to conserve natural resources and, as a result, contribute to a better world (Yan et al., 2021a).

Companies that recognized sustainability as a relevant trend for achieving a competitive advantage in the market are claiming to follow a sustainable line of business. Companies are under pressure from the government, activist groups, and others to act environmentally friendly (Gingerich & Karaatli, 2015). As a result, companies have been updating and introducing

sustainable technologies to the market, as well as attempting to embed procedures, activities, or corporate social responsibility models into their businesses, as previously said (Padilla-Lozano & Collazzo, 2021).

The downside is that some firms claimed environmental practices but were still not ecologically as sound as claimed (Chen & Chang, 2013b; de Vries et al., 2015). Companies ended up communicating sustainability, but were instead misleading consumers (Parguel et al., 2011; Szabo & Webster, 2021a; Zhang et al., 2018). “Greenwashing” is the term for coined by Vries et al., (2015) for firms that follow such strategy (de Vries et al., 2015).

Greenwashing causes consumers to lose trust in sustainable claimed product (green products), giving rise of feelings of mistrust in consumers, which eventually echoes in the entire market or industry. Moreover, even in companies that follow a sustainable business model (Szabo & Webster, 2021a) start to be subjected of mistrust around companies’ sustainability claims. This may explain why sales of green products are still below expectations, accounting for fewer than 3% of total sales in their respective categories (Sheth et al., 2011). This is because there are issues with firms' environmental claims, such as credibility, honesty, and trust (Moussa & Touzani, 2008).

Studies that test and seek to understand why this behavior on the part of consumers exists, referred to as the “*Green Gap*” which is defined as the difference between the importance of environmental protection and environmental behavior (M. Gleim & Lawson, 2014a). According to studies, price, poor quality perception, a lack of information, and the establishment of habits by customers are all variables that contribute to this contradictory behavior (Durif et al., 2012).

Nevertheless, the combination of co-creation and sustainability factors brings value to the market for companies adopting sustainable strategy, as such approach are perceived as companies becoming more responsive to society (Krasteva, 2017). To address the rapid changes in consumer behavior and from regulators, companies around the world are implementing an open innovation strategy, sourcing innovation from outside the firm boundaries. Co-creation, “*the interactive creation of services or products through system environments*” (Ramaswamy & Ozcan, 2018), is one such approach. Co-creation, an innovation strategy, is an approach that encourages transparency and consumer trust in new developed products (REF) As such, companies are fostering customer awareness, by stimulating, and motivating consumer participation in co-creation process towards sustainable value in order to achieve a significant degree of consumers’ trust in the sustainability claim (Arnold, 2017; Gao & Zhang, 2006).

Stakeholders have a larger influence in the company's management decisions as a result of

interactions with its employees (Prahalad & Ramaswamy, 2004a). Cosso-Silva et al. (2016) predict that this will result in the development of products or services that express consumer confidence, satisfaction, loyalty, authenticity, and trust (Cossío-Silva et al., 2016a).

Companies like Lego and Adidas, chose to build trusting relationships and collaborations with their stakeholders, mainly their consumers, in order to gain outstanding value in a highly competitive market (REF). For example, Lego co-created “Mindstorms” with its customers, which became one of the best-selling items of all time (Iglesias, Markovic, Mehdi Bagherzadeh, et al., 2020). Adidas has made it possible for customers to design their own personalized sneakers online, with a range of materials and colors to choose from.

Co-creating a green product can be a strategic alternative for firms in terms of regaining consumers' trust and increasing purchase intentions, as distrust and skepticism are still prevalent regarding sustainable products. (Cossío-Silva et al., 2016a; W. S. Randall et al., 2011a).

Consumers, particularly so-called “observer consumers”, or those who buy items but aren't involved in the development process, prefer products produced by users to those designed completely by firm staff (Costa & Coelho do Vale, 2018a). This is because the consumer develops a strong bond with the firm, which leads to a rise in their confidence and, as a result, their desire to purchase these products (W. S. Randall et al., 2011b).

However, co-creation also has a darker side. Thompson and Malavyia (2013) have already identified skepticism about the ability of consumers to technically contribute to product innovation. So and So (2019) show that political orientation and power distance can change how co-created products are perceived. As such boundary conditions need to be correctly identified before companies decide to communicate the co-creation strategy, i.e., the market in which the company operates must be evaluated (Ginevičius & Ostapenko, 2015) (Beske, 2012; Cao, 2011; Makkonen et al., 2014).

If there is evidence that informing the community about consumer involvement in new product development can cause unfavorable reactions, then understanding the factors causing this behavior is critical.

Political orientation is one of the most important predictors of environmental attitudes and behaviors, conservative societies are more likely to have a low perception of climate change and a lack of understanding of the importance of sustainable behaviors, whereas liberal societies are more concerned about the climate and its challenges (Casper et al., 2021). We approach the political orientation as proxy of power distance variable. Political orientation is defined as “*the extent to which members of society accept the fact that power in institutions and organizations is allocated unequally*” (Jain & Jain, 2018; Yan et al., 2021a). This variable is important

because nations with more conservative ideologies (resisting change, accepting inequality, having a hierarchical society, and being authoritarian) frequently have a higher power distance (Paharia & Swaminathan, 2019a). On the contrary, a low power distance exists in more liberal nations that adhere to a more left-wing political philosophy (value equality; are more sensitive to notions of justice) (Paharia & Swaminathan, 2019a).

We also anticipate that a co-created green product will be perceived as having superior quality and trust, resulting in higher buy intent by consumers with a low power distance (liberals) compared to those with a high-power distance (conservatives) (Song et al., 2021).

This dissertation investigates with particular attention the aspect of trust: If companies operating in a sustainable market should communicate more clearly that their products were developed by co-creation with consumers, as a way to increase trust levels, honesty and transparency and thus combat the skepticism that still exists. Will help managers to understand and draw their conclusions about whether co-creation can be an element that adds value to their business and whether it can be useful to increase consumers' willingness to purchase, with regard to green products.

1.1. Research Aim and Research Questions

The purpose of this study is to examine how consumers' trust in green products may be boosted. We'll examine if corporations can improve consumer trust in green products through co-creation. We expect this relationship to have a positive outcome, resulting in higher purchasing intent. This will aid managers in determining the most effective ways to bring more reliable green products to market in response to current environmental challenges, as well as consumers' environmental expectations and concerns, thereby closing the “green gap”.

As a result, the most important research question is: *Do buyers trust co-created green products more than new green products that are traditionally generated?*

The following questions will help you answer the complete research topic:

Can trust in green products be increased through a co-creation strategy?

Trust explains consumers' preference (purchase intention) for sustainable?

Can co-creation enhance purchasing intentions through higher perception of green trust?

Is co-creation in green products a viable strategy for businesses operating in high-power distance markets?

1.2. Conceptual Framework

Conceptual Framework

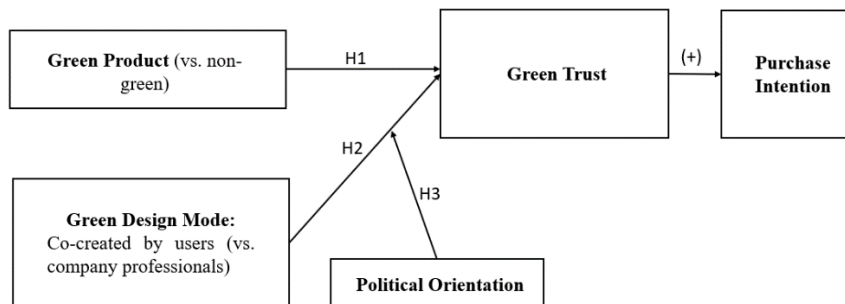


Figure 1. Conceptual Framework

2. Literature Review and Hypotheses Development

2.1 Sustainability

Sustainability is described as “*development that meets current demands without jeopardizing future generations' ability to meet their own needs*” (Bansal & DesJardine, 2014). Johnston and colleagues (2007) highlight three variables to achieve sustainability: economy, environment, and social assistance. Sustainability forces new ways of living, thinking, and working, allowing people to live healthier, more secure lives without damaging the environment or harming subsequent generations (Scoones, 2007).

The increasing awareness of consumers, researcher, and managers about the environment, offer companies a growth opportunity (Mueller, 2015). A recent survey, almost 65 % of respondents prefer to purchase purpose-driven brands that encourage sustainability (White Katherine et al., 2019). 60% of online consumers report willingness to pay more for environmentally friendly products (Orazi & Chan, 2020). Scholarly articles have multiples. 1970 witnessed the first publication with the term “*sustainability*” while in 2020, more than 250,000 papers were published (Jose & Ramakrishna, 2021). Managers increasingly recognize that addressing sustainable concerns creates long-term shareholder value. The search for sustainability by large

companies is mostly out of concern for safety and quality or fear of losing reputation or consumers (Arnold, 2015).

The rising popularity of the concept of sustainability has led us to believe that it is a major trend (Dauvergne & Lister, 2012). Companies are willing to adapt, develop new tactics, modify their culture, promote new ideas, and manufacture environmentally friendly products in order to make the world a better place (Chen et al., 2012). Due to increasing environmental challenges and commercial competition, several of them have already implemented corporate social responsibility procedures with the goal of achieving sustainable performance (Padilla-Lozano & Collazzo, 2021).

Firms are constantly seeking for methods to improve their operations, reputation, and access to new markets (Hörner, 2002). According to certain research, the practice of sustainable business today is an important factor to consider in order to improve the three aspects described in the previous line (Ford & Despeisse, 2016). The implementation of sustainable practices also contributes to the company's resilience, as it helps to understand and take advantage of long-term opportunities, improve its strengths, and mitigate threats (Ortiz-de-Mandojana & Bansal, 2016).

Furthermore, sustainable products are frequently referred to as “green products” or “environmental products”, as they are less detrimental to the environment, produce less waste, and utilize fewer toxic ingredients, hence safeguarding and strengthening the ecosystem (Atzwanger, 2021).

2.1.1. Behavioral Gap

In spite of the number of studies reporting favorable consumers' attitude toward sustainability (Leung et al., 2019; Luchs et al., 2011; Viswanathan & Rosa, 2010) actual purchasing behavior does not match such claimed concern (Warwick et al., 2015). Luchs and colleagues (2010) claim that while 40% of consumers are prepared to pay for sustainable items, just 4% actually do so (Luchs et al., 2010a). The low market share of green products can be attributed to several factors. (Luchs et al., 2010a). Past habits and behaviors, culture, lifestyles, personalities lack of trust, pricing, limited product availability, product features and quality, and brand image (consumers usually have favorite brands and prefer these over green brands) are the factors that have the greatest impact on consumer behavior when it comes to green products (Joshi & Rahman, 2015; Kataria et al., 2013).

Consumers have developed well-established routines and habits in their daily lives over time.

Habits and routines can be an impediment to choosing sustainable products, as this form of consumption demands a change in these people's lives (in their behavior in relation to improving the environment) (Gleim & Lawson, 2014) (M. Gleim & Lawson, 2014b). Changes in the sense that consumers need more motivation, time, and space (Young et al., 2010).

Choosing a green option typically takes a bigger outlay of cash, time, effort, and other resources (M. Gleim & Lawson, 2014a). If a consumer does not understand the impact that the sustainable purchasing will have, the likelihood of consuming a sustainable product is decreased (lack of information) (M. Gleim & Lawson, 2014a).

Customers are often overwhelmed with claims from corporations, leaving them confused as to which claim to believe leading to distrust about the product (Chen & Chang, 2013c; do Paço & Reis, 2012a; Johnstone & Tan, 2015).

Price is also referred as a deterrent for green purchasing. Green consumption is often associated with a premium which influences the choices for less expensive options (M. R. Gleim et al., 2013a). As a result, researchers have noted a disconnect between customers' intentions and behavior, referred as a “*green gap*” (M. Gleim & Lawson, 2014a).

2.1.2. Sustainability as a liability

The green gap can also be attributed to what Luchs and colleagues coined as the sustainable liability (Luchs et al., 2010a). The dark side of sustainable arises from the association of sustainable products with gentleness-related attributes (e.g., gentle, sensitive) (Luchs et al., 2010b) which runs against perceptions of effectiveness in certain products such as car shampoos. As a result, the preference for sustainability may be reduced in cases of products in which strength-related attributes (e.g., powerful, effective) are highly valued (Luchs et al., 2010b). In cases of products in which strength-related attributes are valued, this may eventually lead the consumer to opt for unsustainable alternatives, resulting in a phenomenon known as “sustainability responsibility” (Chernev & Blair, 2021). Therefore, depending on the types of attributes that are highly valued in each product category, consumers may view sustainability as an asset or a liability.

The fact that sustainable products are perceived as being more expensive (D’Souza et al., 2006), difficult to judge before and after consumption (credence value) (Nuttavuthisit & Thøgersen, 2017), and posing a considerable performance risk presents a huge challenge for the buyer when choosing a product (and, thus, sustainable liability arises) (M. R. Gleim et al., 2013b). Consumers are often hesitant about firms' green claims since they are tough to evaluate. (M. R.

Gleim et al., 2013b).

2.2. Greenwashing

Some companies communicate a sustainable business model or product to be sustainable, with the goal to gain a competitive advantage, as sustainability reflects a growing trend in consumers (Szabo & Webster, 2021b). Companies claim to be concerned about the environment, however, despite promoting sustainable behavior some companies end up not considering this aspect in their business model (Delmas & Burbano, 2011; Ettinger, 2022). This is the case in the fashion industry, where around 60% of green claims are untrue (Ho, 2021). Such behavior coined “greenwashing” refers to *“the intersection of two firms’ behaviors: poor environmental performance and positive communication about the environmental performance”* (Seele & Gatti, 2017).

The case of VW from 2009 to 2015, VW made use of fraudulent techniques to reduce nitrogen oxide and carbon dioxide emissions. In 2015 reports claimed that the company had intentionally installed a device, called a “defeat device”, in around 11 million cars, with the aim of activating certain emission controls, only during pollutant tests. The device caused a temporary decrease in the emission of nitrogen oxide, but if the cars were with these controls turned off, they started to emit up to 40 times more nitrogen oxide (Siano et al., 2017).. This is, of course, an extreme case of greenwashing, which led, just two weeks after the scandal, to a 40% loss of value on the stock market (Mačaitytė & Virbašiūtė, 2018).

Greenwashing became a popular term in 1996, since consumers have been pushing companies to adopt greener practices and minimize the environmental effect and has been expanding, as corporate environmental performance increased dramatically (Yang et al., 2020). With this exponential growth of greenwashing practices, the information available is also greater and nowadays the literature helps us to identify two types of greenwashing: Deceiving consumers about sustainable practices in companies (greenwashing at the company level) or about the ecological benefits of a certain product or service (greenwashing at a product-level) (Torelli et al., 2020).

Greenwashing does not have a positive effect on consumer confidence and, consequently, on consumers behavioral intention such as purchase of sustainable products. Greenwashing is an event that damages the reputation of the company involved and all stakeholders (Torelli et al., 2020). Greenwashing also increases skepticism towards sustainability, CSR, and eco-friendly

claims (Szabo & Webster, 2021b).

Consumers distrust some corporations because they overstate or manufacture the environmental functionality of their products (Chen & Chang, 2013d; Szabo & Webster, 2021a). Consumers' attitudes toward a company that communicates about its environmental performance would be harmed if there was a perception of greenwashing or misleading techniques (Chen & Chang, 2013d). Greenwashing techniques reduce customers' trust in green product advertising from 30% to 13%, according to a study conducted in around 20 nations (Wang et al., 2020).

2.3. Trust

Since practices like the one detailed in the previous section are becoming more prevalent in the market, discussing customer trust is becoming increasingly important.

Trust can be defined as the perception of “*confidence in the exchange partner’s reliability and integrity*” (Lin et al., 2003). (Mcknight & Chervany, 1996) define trust as a psychological state in which a person (the trustor) accepts the risk of being vulnerable in the presence of another person (the trustee). This definition refers to emotional security in relation to an exchange partner (Sirdeshmukh et al., 2002).

In interpersonal and social connections, trust is essential and should be considered even more, in moments of greater uncertainty and distrust (Beatty et al., 2011). According to studies, if trust is absent, humans would be confronted with a plethora of difficult issues, leading to insanity (Beatty et al., 2011). That is, a lack of trust would pose significant problems because trust aids consumers in properly thinking and anticipating others' actions (Beatty et al., 2011). Specifically green trust is defined as “*the willingness to depend on a product, service or brand based on the belief or expectation resulting from its credibility, benevolence and capacity regarding its environmental performance*” (Chen, 2010a). A major barrier for increasing consumption of sustainable products, is the behavioral gap that results from the lack of trust of consumers about the sustainability claim (Chen, 2010a).

Consumers' trust and purchasing intent are jeopardized when businesses explore and become interested in sustainability but then engage in greenwashing practices (Goh & Balaji, 2016a). As a result, people begin to be skeptical of companies' green claims and hence, of green products (Chen & Chang, 2013e).

2.4. Green Skepticism

Skepticism is a psychological state that can be defined as a person's predisposition to be skeptical, distrustful, and skeptical of others (an example of skepticism, is a certain consumer doubting the green claims or also the performance of sustainable products) (Nguyen et al., 2019). Skepticism can be identified as the opposite on trust on a continuum.

Skepticism or lack of trust in green products is influenced by misinterpretation, mislabeling and misrepresentation of products (Testa et al., 2021). Therefore, even if consumers are aware of how important sustainable lifestyle are and want to contribute to a greener world, skepticism about product's environmental performance prevents the choice of green products (Leonidou & Skarmeas, 2017a).

Green products, compared to non-green products, are perceived by consumers as lower in quality, more expensive and also more uncertain in terms of performance, which makes the aforementioned products less attractive (Kong et al., 2014). What was said in the previous sentence explains or largely justifies the fact that there is the concept of a green gap between consumers' intentions, beliefs and concerns and the behavior that is actually observed (Johnstone & Tan, 2015).

Although companies try through descriptions on packaging and eco-labels to clarify consumers about the green attributes of their products, green claims are, in most cases, difficult to verify and evaluate (Goh & Balaji, 2016b). The perception of transparency and the trust that claims can bring to the market will decrease significantly if companies choose to mislead consumers through greenwashing practices (do Paço & Reis, 2012b). The stronger the skepticism, the more the consumer uncertainty about the claim, with the ultimate goal of finding real evidence concerning environmental qualities in the products (thus minimizing the danger of their functionality) (Goh & Balaji, 2016c).

Green skepticism is a problem that is becoming more widely acknowledged around the world as this sector grows at an exponential rate. Since skepticism is the antonym of trust, some organizations began by incorporating users in their new product invention and development processes in order to improve transparency, discussion, and, as a result, their trust (Piligrimiene et al., 2015).

2.5. Trust and Green Claims

A number of ecological comments about environmental qualities are still ambiguous and

untrustworthy (Nguyen et al., 2019). Green statements or environmental claims must be trustworthy, accurate, and honest (Nguyen et al., 2019). Environmental claims can be defined as any sentences, symbols, or images that depict environmental aspects of services, products, or components and include references to sustainability, recycling, carbon neutrality, energy efficiency, natural product use, or their impact on animals and the environment (Manrai et al., 1997).

Many customers think that calling a product green is typically merely a marketing trick, and they are skeptical of green promises (Mustiko Aji & Sutikno, 2015a). Consumers' attitudes regarding a company that discloses its environmental goals can be harmed by greenwashing tactics (Nguyen et al., 2019). Consumers are confused by greenwashing because of untrustworthy advertising or green claims, making it difficult for them to evaluate green products or brands (Schmuck et al., 2018). And this (Greenwashing), has the potential to damage the market by making buyers wary of green products (Mustiko Aji & Sutikno, 2015a). One of the primary impediments to consumers' purchase intentions of green products is a lack of consumer trust or skepticism toward green claims (Goh & Balaji, 2016d). As a result, businesses should work to dispel consumers' mistrust of green claims (strive towards green claims that may be linked to trust and trustworthiness), by providing them with sufficient facts, boosting brand image and loyalty (Delgado-Ballester & Munuera-Alemán, 2005).

Green brand image is defined as *“a collection of perceptions about a particular brand in the mind of a consumer that demonstrates its dedication and concern for the environment”* (Chen, 2010b).

Consumers are more willing to pay for a product if they believe the company's green claims are true because environmental concerns have been addressed (Manrai et al., 1997). However, if the customer is perplexed and skeptical of the green claims (green skepticism), it is preferable for the company to reconsider its approach and possibly sell non-sustainable items (Nguyen et al., 2019).

Other elements that are directly tied to the perceived consequences of the purchase choice, such as the product's ability to have a positive impact on the environment, influence consumers' desire to make green purchases (Goh & Balaji, 2016b).

As a result, we expect that customers' decisions about whether or not to buy green items will be influenced by their faith/trust in the product's green promise. As a consequence, we assume that if people have a high level of trust, they will be more likely to buy green products.

Therefore:

H1: The positive influence of a product green claim on consumers' purchase intentions are mediated by trust.

2.6. Cocreation

Traditional innovation models assume that firms through internal employees, were responsible for developing new products for consumers (company-centric model) (Marske & Stempowski, 2009). More recently, users have been included in the firm's creative processes, such as ideation, product development, and launch stages, in recent years (Sheth, 2020).

Co-creation originates in co-production, where consumers participated in supply chain activities (Chathoth et al., 2013). The term Co-creation was first introduced as a strategy that helped to reduce costs (as was the case with IKEA), but in the 1990s, Co-creation was introduced from a different perspective: that the collaboration of users with company employees will lead to greater consumer satisfaction (Lehrer et al., 2012).

Co-creation is a collaborative effort between a firm and its stakeholders to design, produce, or upgrade a product or service (Fan & Luo, 2020), to make something with the assistance of others (Fan & Luo, 2020). Co-creation can take a variety of forms (online voting, crowdsourcing, or user-generated content). The common element entails collaborating to create something new (Krasteva, 2017). Maltzahn (2016) defines co-creation as the different ways in which companies try to connect with target consumers, incorporating core consumer values into retail concepts and marketing strategies. Some benefits relate to consumer empowerment, access, dialogue, risk-return, and transparency, which allows the generation of ideas through shared experiences and knowledge and a better understanding of the consumer (Cova et al., 2011). Other studies refer that co-creation reduces risks (i.e., the possibility that the final product may be rejected by the consumer), increases speed to market and also consumer loyalty (Payne et al., 2008). While increasing the likelihood of positive word-of-mouth is also higher (Vázquez-Casielles et al., 2017).

Some businesses have looked into co-creation after determining that incorporating customers in the development of new products will benefit them in the long run. As in the case of the company Starbucks, which collaborated with its customers through a website called "My Starbucks Idea", where they could vote for their favorite ideas and track their progress (Veronette & Hamdi-Kidar, 2013); or the company Lego, which is known for its creativity, which allowed

its users to think of imaginary thoughts and share them on their online stage (R. Randall et al., 2013).

Co-creation also aims to discover what motives lead consumers or communities to acquire acts, as well as what value linkages they believe are the most important (Saarijärvi et al., 2013a).

According to various studies, including customers in the innovation process makes companies appear more inventive and customer-focused, which is reflected in positive behavior intentions such as a stronger desire to pay for co-created products and a greater willingness to refer the company (Saarijärvi et al., 2013b).

In this research work, we will focus on consumers who buy the goods but do not participate in the co-creation process (observing consumers), because they are the most important consumer group since they represent the largest market for this sort of product.

Moreover, previous study has demonstrated that this new innovation paradigm benefits observing consumers by providing more distinctive experiences, empowering them to feel more empowered by the company, and allowing them to identify more with user-designing companies (Frow et al., 2015). And these positive sentiments or attitudes (the result of a consumer-oriented perspective) have benefited businesses, resulting in a rise in buy intent for products from user design firms (Tuan et al., 2019).

In other words, the consumer-company connection is increasingly becoming a source of value generation. The market is evolving into a place where consumers and businesses may converse and connect. The process of value creation focuses on dialogue, trust, access, transparency, and an awareness of risk and benefit. Transparency of information is a prerequisite for establishing trust between institutions and the market, as well as for consumers of goods and services to become value creators (Prahalad & Ramaswamy, 2002, 2004b).

2.7. Co-creation as a source of trust

One of the most important antecedents of green trust on the part of the consumer is the co-creation of a certain product (Franklin & Marshall, 2019). It is seen as a significant driver for trust (Iglesias, Markovic, Bagherzadeh, et al., 2020).

Many studies share information about the business world today and indicate that consumers in most markets are no longer seen as passive but as active in the creative process of a product or service (Hsieh & Chang, 2016). Users have the necessary skills and expertise to be able to participate in co-creation processes of a certain company (Roberts & Darler, 2017).

Franklin and Marshall (2019) describe the concept of co-creation as something that increases

interaction, collaboration, and participation between two agents (the consumer and the company) with the ultimate goal of perceiving and finding a solution to satisfy the needs of the consumer. The activities involved in the co-creation process increase customer trust because they require greater consumer involvement, contribute to the generation of ideas and knowledge, and also encourage the building of relationships (W. S. Randall et al., 2011a).

The literature also states and suggests that before consumers get involved in the product creation process, it already requires a priori that they have some initial trust, because the tasks or activities require information exchange and sharing. Consequently, all of this contributes in a very significant way to building greater trust (Cossío-Silva et al., 2016a).

The interdependence that seems to exist between these two variables leads us to conclude that co-creation is a key driver for increasing trust, which can help in this way, in building a company or brand and in maintaining relationships of trust with the consumers (Cossío-Silva et al., 2016b; W. S. Randall et al., 2011a, 2011c; Romero & Molina, 2011).

In relation to the moment of purchase, consumers who buy a green product, perhaps feel a greater connection with the users who participated in the development of that product than with the professionals of the company and for this reason the confidence on the part of the market will grow, making consumers demonstrate positive attitudes towards the product (Tuan et al., 2019). This will also lead to a greater likelihood of purchase intent and also of product recommendation (Barroso, 2016).

Finally, we may conclude that, in order for a firm to understand what its customers want, it is no longer required to invest a significant amount of time and money in market research or the establishment of focus groups. Companies are now able to harvest information from the focus market, directly from co-creation projects (Ao & International Association of Engineers., 2010).

H2a: Consumers display higher levels of trust in cocreated green products

H2b: Trust positively mediates the impact of a co-created new green product in purchase intentions.

2.8. The role of power distance/political approach cultures (political orientation)

A higher or lower power distance can be used to describe people, society, institutions, organizations, and countries (Yan et al., 2021a). Power distance refers to the degree to which people in a society or organization accept the fact that there is no equality, and it is a crucial component of a country's cultural values (Bochner & Hesketh, 1994). In a community with a high-power distance, or those who score high on a power distance metric (Farh et al., 2007), inequality is natural or even desirable. People believe in authoritarian figures because they see society as a hierarchy. The distribution of power in an organization is unequal, with persons in higher positions having greater decision-making power than those in lower positions (Puni & Anlesinya, 2017). In civilizations with a low power distance culture, however, the goal is to decrease disparities between people, and when a major choice must be made, all viewpoints are considered (Puni & Anlesinya, 2017).

There are many variations and differences in terms of power distance, with some countries demonstrating a higher power distance (ex: China; France; Portugal; Ukraine; Russia; Brazil; India; United Arab Emirates; Colombia; Egypt) and others demonstrating a lower power distance (ex: Netherlands; Canada; Australia; Denmark; Sweden)(*Country Comparison - Hofstede Insights*, 2022).

Political orientation is also linked to the Power Distance variable (Paharia & Swaminathan, 2019b). People with a high-power distance tend to be more conservative, whereas those with a low power distance tend to be more liberal (Paharia & Swaminathan, 2019a). Political choices, in turn, are tied to sustainability and how society views issues like social responsibility (Yan et al., 2021b). Individuals tend to discount and display a lack of knowledge and trust in relation to sustainability in countries with a higher power distance culture (Yan et al., 2021b). That is why we are still a long way from having cultures that are worried about the environment and from living in a society that is more environmentally conscious.

In today's business environment, the consumer is getting increasingly important and is becoming more involved in the entire process of making a product, since some firms have already learned that this method yields more benefits than if the product were fully developed by their workers (Martinez, 2014). And the fact that companies become more transparent and available to “listen” to the customer and their needs has a lot to do with the culture of the country in which it operates.

Firms are still seen as having more power than consumers in many parts of the world (due to inequality) (Rezabakhsh et al., 2006), making strategies like co-creation difficult to implement (Arnold, 2017).

Since our research focuses on two crucial variables: co-creation and sustainability, the words innovation and creativity could be considered cultural values for businesses that desire to take this more ecologically friendly route. Five attitudes characterize high power distance cultures, all of which inhibit innovation and, as a result, investment in a more sustainable and cooperative industry. The five attitudes are the value of hierarchy, concentrated authority, control over subordinates, resistance to change, and vertical communication patterns (Paharia & Swaminathan, 2019b; Yan et al., 2021a).

Therefore, we assume that conservative consumers (with a high-power distance) place a higher value on expertise, which will contribute to their trust and, as a result, their preference for company-designed products. More liberal consumers (those with smaller power distance) will place a higher value on products made with the consumer involvement (Paharia & Swaminathan, 2019b).

We want to see how this type of society (conservative vs liberal) views sustainable products developed through the interaction and integration of consumers and other stakeholders with organizations and institutions, so that managers can figure out what they're good at and what strategy to use in these markets.

H3: The positive effect of co-creation on trust is moderated by consumer's political orientation.

3. Methodology

3.1. Research Methodology

Our study follows an experimental study design to evaluate our hypothesis, specifically to assess causal links (cause-effect) between two variables. The goal is to test and draw conclusions on the effect of co-creation on green product purchase intention, *ceteris paribus*, meaning that all other relevant factors are kept constant. Experimental research allows to evaluate our hypotheses because it includes manipulating variables. In our case, we'll be evaluating each scenario for design mode (Co-creation vs Professionals) and for Green (Green vs. non-green product). By manipulating those variables, we will be able to analyze their effect

on consumers' trust and consequently purchase intentions.

Overview of Studies

To test our hypothesis, we performed two studies using a scenario-based experimental methodology. The role of consumer trust in new green product purchase intentions is investigated in Study 1. Study 2 analyzes how co-created green products affect consumer trust and purchasing intentions, as well as how political orientation influences consumer trust in the two scenarios (Co-creation vs. Professionals).

3.1.1. Pilot Study

Before developing our studies in more detail, we conducted a pilot study in order to select the category of products that we intend to analyze. We intend to assess a product category that is part of the food market, is perceived as not being very complex from manufacturing to consumption, is not perceived as being green, and is finally perceived as being the result of a green co-creation.

Note that 64 participants responded to our pilot survey, with 59.4% male. most participants (39.1%) had an aged range between 18 and 24 years old) (see Table 1).

The Pilot study was administered in Qualtrics in Portuguese and English. The survey was distributed online through the researcher's network of contacts.

First, participants answered questions related to gender and age (demographic questions).

Next, they were asked about the variables Complexity and Perception of “green” for each of the 5 product categories (Yogurt; Ice Cream; Milkshakes; Cereals and Coffee). Subsequently, a definition of Co-creation was made available (since it is a more specific term) and respondents were asked how much they think consumers have the necessary skill to co-create with a company in each of the product categories. To conclude, they were also asked about the ability of consumers to co-create green products, also in each of the categories.

In the table below, we reveal the measures applied.

Construct	Items	Measurement (Source)
Perceived Product Category Complexity	Please fill for each product category your perceived complexity: (1) Very Low; (7) Very High	(Vasconcelos, 2021)
Perceived product greenness	Please fill for each product category your perceived greenness/environmental friendliness: (1) Very non-green; (7) Very green	(Vasconcelos, 2021)
Credibility of Co-creation	Please rate how much you feel consumers are able to co-create with the company in that product category: (1) Very Unlikely; (7) Very Likely	(Vasconcelos, 2021)
Credibility of Co-creation in terms of green	Please rate how much you feel consumers are able to co-create a green product with the company in that product category: (1) Very Unlikely; (7) Very Likely	(Vasconcelos, 2021)
Demographics	Gender; Age	Own construct

Table 2 – Pilot Study's Measures

3.1.2. Pilot Findings

The Milkshake category was perceived as the least complex category ($M_{\text{Milkshake}} = 3.70$). We performed the One-way Anova test, in order to compare the averages of the variables (Perceived Complexity; Perceived Green; Credibility for co-creation and Credible for green co-creation) for each of the product categories.

We also carried out the Post Hoc test to find out if the averages of each variable, for each type of product category, were statistically significant, that is, to see if any product category stood out.

Regarding the complexity variable, yogurt has an average of 4.19, ice cream 4.38, milkshake 3.70, cereal 4.45 and coffee 4.41. When analyzing the p-value for each of the product categories for the complexity variable with the Post Hoc test, the values are all above the significance level ($\alpha=0.05$), demonstrating that there is no product category statistically different from the other categories in relation to the perception of complexity.

The green perception variable, yogurt has an average of 3.69, ice cream 3.41, milkshake 3.77, cereal 4.28 and coffee 4.52. The Post Hoc test told us that in relation to this variable (perception of green), by observing the p-value, there is no product category that stands out in terms of perception of green, compared to the other categories.

The variable, credibility of co-creation, has an average of 4.81 for yogurt, 5.42 for ice cream, 5.45 for milkshakes, 4.67 for cereal, and 4.19 for coffee. Once again, the p-values confirmed that all product categories are evaluated similarly in regard to the credibility to be co-created.

For the last variable, the credibility of being green co-created, yogurt has an average of 4.63, ice cream 4.92, milkshakes 5.34, cereal 4.78 and coffee 4.42. The p-values confirmed that all evaluated product categories are perceived similarly (there is no statistically different product category) in relation to the credibility of being green co-created variable.

Subsequently, and since the averages of the product categories for all the variables analyzed are not statistically different, we also performed the One-Sample Test. In order to test whether the average of the respondents' perception in relation to each of the analyzed variables was above the midpoint of the scale (3.5). However, we observed that all variables evaluated are above the midpoint of the scale. In other words, according to the initial requirements of the pilot study carried out, which was to choose a product category perceived as being not very complex, as not being green and perceived as credible to be green co-created, we concluded that it is not possible to have a category of products that is perceived as not very complex (below the midpoint of the scale) and it is also not possible to have a category of products that is perceived as not being green (below the midpoint of the scale). In this way, all product categories could have been chosen since they all have identical perception values for all variables evaluated. However, we decided to choose the least complex product category, neutral in terms of perception of green and with the most credibility to be green co-created.

Therefore, and according to our statistical analysis, of all categories, ice cream and yogurt were perceived as the least green ($M_{\text{ice cream}}=3.41$; $M_{\text{yogurt}}=3.69$). Milkshakes, the least complex category, were perceived on average as neither green nor non-green ($M_{\text{Milkshake}}=3.77$). Milkshake has the highest average for the possibility of being co-created ($M_{\text{Milkshake}}=5.45$) and being co-created in terms of green ($M_{\text{Milkshake}}=5.34$).

Finally, we will use the milkshakes category as a stimulus for our research studies because the category has a low level of complexity, in terms of perception of green it is neutral, it is reliable in terms of co-creation and also in terms of green co-creation.

3.2. Study 1

Study 1 was designed to understand whether the consumers trust in the green product claim explains higher consumer preference for the green product.

H1: The influence of a green claim on product purchase intentions is favorably mediated by trust.

A total of 121 participants took part in the study. The majority were men (74.4%), aged 25-34 (52.1%), and earned between €27,225 and €45,375 per year (26.4 percent). Our participants were mostly from the United States (71.9 percent).

This study was the result of a blended design. 2 (green claim: yes, vs no) x 1 (product type (Milkshake)). Therefore, two groups were tested.

3.2.1. Studies' Data Collection

We constructed the study for Study 1 in Qualtrics software to test the three primary hypotheses, and then shared them on Amazon's Mechanical Turk (MTurk) to collect data from customers due to time, location, and financial constraints.

MTurk helps us to quickly collect a large and diverse sample at a low cost and achieve accurate results when compared to more traditional research approaches (Follmer et al., 2017; Johnson & Borden, 2012). The platform, on the other hand, has a number of flaws, including the presence of extrinsically driven users and some users' effortless input while responding to questionnaires (Aguinis et al., 2021; Follmer et al., 2017; Hauser et al., 2019; Vasconcelos, 2021). Sample bias is a potential as a result of these issues (Follmer et al., 2017).

As a result, a question concerning paying attention is included in the survey. Participants were told that if they answered the attention question correctly, they would be compensated. Academics use attention checks on surveys frequently to eliminate unreliable responses (Vasconcelos, 2021).

3.2.2. Method

The survey began with participants learning about the debut of a new milkshake. A question was asked about the product category's involvement. The participants were then asked to imagine an advertisement for the new milkshake. Two situations (Green vs. Non-green Product) were randomized and evenly divided among participants to ensure that each received the same number of responses. The two sustainability scenarios are presented below:

Green Scenario
<p><i>“Our company is planning to create and launch an innovative product, a new green milkshake.</i></p> <p><i>The product will be made of natural ingredients, for example organic fruit. The product is gluten-free, no sugar, aspartame free, low fat, source of calcium and it's coloring and preservatives free, therefore protecting consumers' health.</i></p> <p><i>The product is environmentally friendly. It includes a new packaging made of recycled and compostable materials.”</i></p>
Non-Green Scenario
<p><i>“Company A will soon launch an innovative product, a new milkshake.</i></p> <p><i>The product is delicious and contains sugar, coloring, and preservatives to some extent.”</i></p>

Table 4 – Study 1’s Sustainability Scenarios descriptions

The participants were given a manipulation check to evaluate how green they believed the new product was.

Following that, participants expressed their willingness to buy the new product and their trust in its green claims. Finally, participants were given a unique ID, which they inserted into the Mturk platform in order to properly finish the survey and be rewarded for their work.

The table below shows the number of “consumers” assigned to each scenario.

Scenario	Frequency
Green	61
Non-Green	60

Table 5 – Study 1’s Allocation per Scenario

3.2.3. Measures

The constructs used to design the survey are listed in the table below. The responses were graded on a seven-point Likert scale.

The first constructor by Vasconcelos (2021) in the table, and the sentence was as follows: “I find this product:” It was measured, and respondents were asked to rate it on a seven-point Likert scale (1=“ very non-green” to 7=“ very green”).

Chen & Chang’s study (2013) adapted *Green Trust*, and the following questions were asked: “I feel that this product's environmental image is generally reliable.”; “This product's environmental claims are generally trustworthy.”; This product's environmental performance meets my expectations.”; “This product keeps promises for environmental improvement.” It was measured and respondents were asked to rate it on a seven-point Likert scale (1 = “strongly disagree” to 7 = “strongly agree”).

Purchase Intention was adapted from Mohr & Webb's study (2005). The sentence was the following: “How likely would you buy this product.” It was measured and respondents were asked to rate it on a seven-point Likert scale (1 = “very unlikely” to 7 = “very likely”).

Finally, based on the researcher's measures (own construct), respondents answered demographic questions including such gender, age, country of origin, and household income.

Construct	Items	Measurement (Source)
Manipulation Check - Perceived product greenness	I find this product: (1) Very non-green; (7) Very green	(Vasconcelos, 2021)
Green Trust	I feel that this product’s environmental image is generally reliable. This product’s environmental claims are generally trustworthy. This product’s environmental performance meets my expectations. This product keeps promises for environmental improvement.	Five 7-point items, anchored by “strongly disagree” [1] and “strongly agree” [7] (Chen & Chang, 2013a)
Purchase intentions	How likely would you buy this product? (1) Very Unlikely; (7) Very likely	(Mohr & Webb, 2005)
Demographics	Gender; Age; Country of origin; Household Income	Own construct

Table 6 – Study 1’s Measures

3.2.4. Manipulation Check

Manipulation tests were used to see if participants were aware of the product's environmental

impact (Green vs. Non-Green). To see if the greenness adjustment worked, we conducted a Welch Two Independent Sample t-test. The average difference between the two groups (Green and Non-green) is statistically significant ($M_{\text{Green}}=5.90$; $M_{\text{Non-green}}=4.65$; $p\text{-value} < 0.05$), showing that the scenarios were correctly understood.

Because the participants correctly understood the scenarios, we can now proceed with our analysis.

3.2.5. Reliability Analysis

Using the Cronbach's Alpha metric, we looked at the scale's dependability in multiple-item questions. Following the reliability study, no items were removed because the corrected Item-Total Correlation values were over 0.3 (*Crítica de Libros*, 2006) and we had values above 0.6. (See table 7, in the appendices section).

Cronbach's Alpha of 0.6-0.7 is considered universally acceptable for scale dependability (Vehkalahti & Tummavuori), 2000). We have internal reliability because the Cronbach's Alpha for our construct is greater than 0.8. (See Table 7).

Using Cronbach's Alpha internal consistency coefficient, the internal consistency of the trust construct was ($\alpha= 0.919$). (excellent). The categorization of Alpha values is based on Hill's reference (2014).

	Cronbach's	
	Alpha	Nr of Items
Trust	.919	4

Table 8 – Internal Consistency

3.2.6. Results

To test your H1, we performed a comparison of means using the One-way Anova test (analysis of variance). The main objective of the analysis of variances was to verify if there was a significant difference in the means and if the factors have an effect on the dependent variable (purchase intention).

We looked at the descriptive statistics, first of the variables trust and purchase intention and then we also looked at the averages of the variables for each of the scenarios (green and non-green). We also investigated the Robust Tests of Equality of Means through the welch test, in

order to observe the p-values and draw conclusions about whether, for example, the mean of the confidence variable is statistically different or not when comparing the two scenarios. Finally, a mediation analysis was carried out in order to test whether trust in green products explains the intention to purchase green products.

The values obtained by the subjects in the variables confidence and purchase intention can be seen in the following table number 9. In it, we indicate the minimum and maximum values, means and respective standard deviations. Trust and purchase intent values are significantly higher than the midpoint of the rating scale (4), $p < .001$. The trust and purchase intention variable, considering the entire sample, has a minimum value of 1.00 and a maximum value of 7.00 on the scale considered. The average confidence is 5.18 and the purchase intention value has an average of 5.51. The standard deviation of the confidence variable is 1.23 and the purchase intention variable is 1.4.

Table 9 - Descriptive Statistics

	Min	Max	Mean	SD
Trust	1,00	7,00	5,1756	1,225
Intention to buy	1,00	7,00	5,51	1,403

1 - Strongly Disagree 7 - Strongly Agree

Trust is not significantly higher in the green scenario, $p = .103 > 0.05$ (α). To obtain at the preceding result, we performed the one-way ANOVA to compare the averages of the two scenarios, as well as descriptive statistics and the Welch test. The “green” scenario has a $M_{\text{Green}} = 5.35$ average trust, whereas the “non-green” scenario has a $M_{\text{Non-Green}} = 4.99$ average trust. In terms of purchase intention, the “non-green” scenario has an average of 5.40 and the “green” scenario has an average of 5.62, with no statistically significant difference in this case, with a p-value of $0.0386 > 0.05$.

Table 10 - Comparison by scenario

	Not green		Green		Sig.
	M	SD	M	SD	
Trust	4,99	1,46	5,35	0,92	.103
Intention to buy	5,40	1,62	5,62	1,16	.386

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ M – Mean SD – Standard Deviation

3.2.6.1. Hypothesis 1

We propose that trust in new green products explains new green product purchase intentions. We used Andrew F. Hayes (Hayes, 2012) model 4 in "PROCESS" to investigate the mediation of Trust on the link between sustainability and purchase intentions.

A simple mediation study was conducted with the Purchase Intention variable as the dependent variable (outcome), the Trust variable as the mediator, and the Sustainable variable as the independent (predictor) variable to test the stated hypothesis. The Bootstrapping of 5000 samples reveals no mediation because the confidence interval includes zero, LL = -.0738; UL = .6961.

As a result, the hypothesis is not supported. The association between the type of scenario (green or non-green) and purchasing intent is not mediated by trust.

	Variable	Coefficient	P-value	Results
Trust	Sustaina	.3649	.1016	Not significant
Outcome Variable: Purchase Intentions	Sustaina	.2230	.3844	Not significant
	Trust	.8898	.0000	Significant
Indirect Effect(s) of X on Y for 95% CI		BootLLCI	BootULCI	
	Trust	-.0738	.6961	No Mediation

Table 11 – Study 1’s Mediation analysis of trust in Sustainability and Purchase Intentions

Purchase Intentions are significantly influenced by the variable Trust ($\beta_{Trust}=.8898$; $p < .05$; (see table 11). For both Trust ($\beta_{Sustaina}=.3649$; $p > .05$) and Purchase Intentions ($\beta_{Sustaina}=.2230$; $p > .05$), the sustainability variable is irrelevant.

Furthermore, our results show that trust in both products is not statistically different despite consumers reporting a mean of trust in the green claim of 5.35 in the green scenario and 4.99 in the non-green scenario ($M_{Green}=5.3566$; $M_{Non-Green}=4.9917$; $p > .05$). Regarding consumers' Purchase intentions ($M_{Green}=5.62$; $M_{Non-Green}=5.40$; $p > .05$), our results do not show any significant differences between the two groups, implying that whether a product is green or not has no bearing on Trust and Purchase intentions.

In order to obtain the previous results and conclusions, we started with a regression analysis. After that, we utilized the confidence intervals bootstrapping method, which is a robust analysis methodology that can be applied to non-normal data, to examine the significance of indirect, direct, and total effects.

As a result, we reject H1.

3.3. Study 2

Consumers did not report higher levels of trust in green products than in non-green products in Study 1. Thus, we will analyze if trust in green products is enhanced when consumers learn that the new product was co-created by other consumers.

As we hypothesized in H2, study 2 would examine whether consumers show higher trust values in co-created green products than in professionally developed green products and also analyze the impact of co-creation on trust in green products and, as a result, purchase intentions. The third hypothesis in Study 2 is to determine if the Political Orientation variable moderates the connection between Design Mode and Trust.

Study 2 received 117 responses. Females made up 34.2 percent of the participants, while men made up 65.8%. 45.3 percent of the sample is between the ages of 25 and 34, while 32.5 percent is between the ages of 35 and 44. The majority of the people in our sample came from the United States (88 percent). The average annual household income was between 27 225€ and 45 375€ (31.6%) and between 45 375€ and 90 750€ (16%). (See table 12).

This study was the result of a mixed project. 2 (design mode: co-creation vs professionals) x 1 (type of product (Milkshake)). Therefore, two groups were also tested as for the study 1.

3.3.1 Studies' Data Collection

We constructed the study for Study 2 in Qualtrics software to test the three primary hypotheses, and then shared them on Amazon's Mechanical Turk (MTurk) to collect data from customers due to time, location, and financial constraints.

MTurk helps us to quickly collect a large and diverse sample at a low cost and achieve accurate results when compared to more traditional research approaches (Follmer et al., 2017; Johnson & Borden, 2012). The platform, on the other hand, has a number of flaws, including the presence of extrinsically driven users and some users' effortless input while responding to questionnaires (Aguinis et al., 2021; Follmer et al., 2017; Hauser et al., 2019; Vasconcelos, 2021). Sample bias is a potential as a result of these issues (Follmer et al., 2017).

As a result, a question concerning paying attention is included in the survey. Participants were told that if they answered the attention question correctly, they would be compensated. Academics use attention checks on surveys frequently to eliminate unreliable responses (Vasconcelos, 2021).

3.3.2. Method

Qualtrics was used to create the survey, while “MTurk” was used to disseminate it. The survey began with participants being notified that a new Milkshake would be released, similar to the first study. The responders were then told that they had seen an advertisement for the new Milkshake. The participants were then randomly assigned to one of two scenarios: Green and Co-creation vs. Green and Professionals. The following are the two scenarios' descriptions:

Green and Co-creation Scenario

“A new milkshake is being launched by Company X.

This milkshake is the outcome of a collaboration between the specialists of Company X and the members of the Consumers Community (common people).

The best fruits and other natural ingredients for the new milkshake were recognized and chosen by the consumer community with the help of local producers.

The end result is a 100 percent natural milkshake that is ideal for the consumer's health and the environment.”

Green and Company Professionals Scenario

“A new milkshake is being launched by Company X.

This milkshake is the outcome of internal development at Company X.

Professionals from Company X identified the best fruits and other natural ingredients for the new milkshake.

The end result is a 100 percent natural milkshake that is ideal for the consumer's health and to the environment.”

Table 13 – Study 2’s Green Design Mode Scenarios descriptions

A manipulation check was given to participants, along with a question about who they thought developed the new product and a question about how much they thought the new product was green.

Following that, participants expressed their level of trust in the new product's green claim, as well as their intents to purchase it and demographics.

The following was the distribution for each scenario:

Scenario	Frequency
Green and Co-creation	60
Green and Company Professionals	57

Table 14 – Study 2’s Allocation per Scenario

3.3.3. Measures

Study 2 adds the Manipulation measures for Design Mode (Table 15) and a measure for the examination of the respondents' variable political orientation to the measures used in Study 1 for Manipulation for Green Product, Green Trust, Purchase Intentions, and Demographics. Except for the Design Mode questions, all factors were rated on a 7-point Likert scale.

The first constructor by Vasconcelos (2021) in the table, and the sentence was as follows: “I find this product:” It was measured, and respondents were asked to rate it on a seven-point Liker scale (1=” very non-green” to 7=” very green”).

The researcher produced the second construct, which you can observe in the table below, and the statement was as follows: "Who developed this product?" Respondents rated the previous question on a scale of 1 to 3, with 1 indicating "consumers only," 2 indicating "consumers and company professionals," and 3 indicating "company professionals only."

Chen & Chang’s study (2013) adapted *Green Trust*, and the following questions were asked: “I feel that this product's environmental image is generally reliable.”; “This product's environmental claims are generally trustworthy.”; This product's environmental performance meets my expectations.”; “This product keeps promises for environmental improvement.” It was measured and respondents were asked to rate it on a seven-point Likert scale (1 = “strongly disagree” to 7 = “strongly agree”).

Purchase Intention was adapted from Mohr & Webb's study (2005). The sentence was the following: “How likely would you buy this product.” It was measured and respondents were

asked to rate it on a seven-point Likert scale (1 = “very unlikely” to 7 = “very likely”). Finally, based on the researcher's measures (own construct), respondents answered demographic questions including such gender, age, country of origin, and household income.

Construct	Items	Measurement (Source)
Manipulation Check - Perceived product greenness	I find this product: (1) Very non-green; (7) Very green	(Vasconcelos, 2021)
Manipulation Check - Design Mode	(...) Who developed this product? (1) Consumers only; (2) Consumers and Company professionals; (3) Company professionals only	(Vasconcelos, 2021)
Green Trust	I feel that this product’s environmental image is generally reliable. This product’s environmental claims are generally trustworthy. This product’s environmental performance meets my expectations. This product keeps promises for environmental improvement.	Five 7-point items, anchored by “strongly disagree” [1] and “strongly agree” [7] (Chen & Chang, 2013a)
Purchase intentions	How likely would you buy this product? (1) Very Unlikely; (7) Very likely	(Mohr & Webb, 2005)
Political Orientation	Please locate yourself on the following scale of political orientation One 7-point items, anchored by “extremely liberal” [1] and “extremely conservative” [7]	One 7-point items (Fernandes et al., 2022)
Demographics	Gender; Age; Country of origin; Household Income	Own construct

Table 15 – Measures for Study 2

3.3.4. Manipulation and Reliability Analysis

Participants perceived the intended green claim ($M_{CC}=5.53$; $M_{Prof}=5.53$; $p > 0.05$) in response to the manipulations. A Welch Two Independent Sample t-test was used to test the Design Mode manipulation. The difference in averages between the two groups (Co-creation vs. Professionals) is statistically significant ($M_{CC}=2.17$; $M_{Prof}=2.60$; $p < 0.05$), indicating that the situations were correctly interpreted.

A reliability investigation was carried out. The corrected Item-Total Correlation is more than 0.6. (See Table 16, in the appendices section). We calculated Green Trust ($\alpha=.737$). (See Table

16). The construct's Cronbach's Alpha is more than 0.7, indicating that it is internally reliable (see Table 16).

Following the reliability analysis, the mean of the items on each construct was used to create the variable Green Trust.

3.3.5. Results H2

Firstly, we argue that consumers will have more trust in co-created green products.

Secondly, we also claim that when green products are co-created (rather than developed internally), consumers will have more green trust in them, raising purchase intentions.

A comparison of means was performed using the One-Way ANOVA test for the first claim. The Trust variable was placed in the “Dependent List” box, whereas the Design Mode variable was placed in the “Factor” field. Then we use descriptive statistics to determine that the average level of trust in professional-created products is 5.13, while the level of trust in co-created products is 5.56. Finally, we performed Robust Tests of Equality of Means through the Welch test, to determine whether the difference between the confidence averages between the two scenarios (co-creation vs professional) is statistically significant or not. A p-value of $0.003 < \alpha = 0.05$ was observed and, therefore, we concluded that the means are statistically different.

Descriptives			
Trust			
	N	Mean	Std. Deviation
Professionals	57	5.1272	.81026
Co creation	60	5.5583	.74698
Total	117	5.3483	.80473

Table 17 – Study 2’s Descriptive analysis of trust

We can accept hypothesis H2a, that consumers have more trust in co-created products, based on the statistics above.

Regarding the second claim, we used Andrew F. Hayes (Hayes, 2012) model 4 in “PROCESS” to investigate mediation of Trust (green) on the connection between Design Mode and Purchase Intentions. Purchase Intentions is our dependent variable, Design Mode is our independent variable, and Green Trust is our mediator in a bootstrapping analysis.

	Variable	Coefficient	P-value	Results
Trust	DM	.4311	.0034	Significant
Outcome Purchase Intentions	DM	.1219	.5240	Not significant
	Trust	.8388	.0000	Significant
Indirect Effect(s) of X on Y for 95% CI		BootLLCI	BootULCI	
	Trust	.0898	.7411	Mediation

Table 18 – Study 2's Mediation analysis of trust in Green Design Mode and Purchase Intentions

Green Trust ($\beta_{DM}=.4311$; $p < .05$) is positively impacted by the Design Mode, although Purchase Intentions ($\beta_{DM}=.1219$; $p > .05$) are unaffected (see table 18). Green Trust has a large and beneficial impact on Purchase Intentions ($\beta_{GreenT}=.8388$; $p < .05$) (see table 18).

Because the value zero is not included within the Confidence Intervals, the bootstrapping demonstrates that there is mediation for Green Trust (CI95%: [.0898, .7411]).

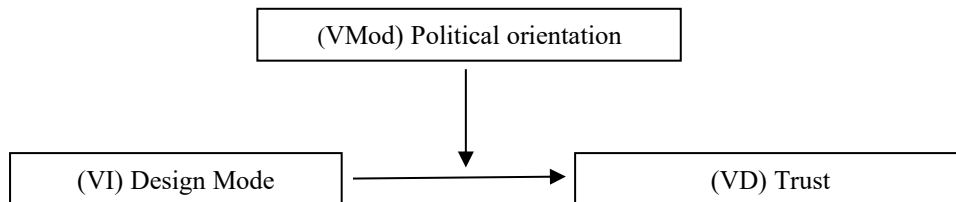
Furthermore, when we examine the Green Trust indicators ($M_{CC}=5.56$; $M_{Prof}=5.13$; $p < .05$), we can find that trust in co-creation is substantially higher than trust in the professionals' scenario (see table 17). There are no major variations between the two groups when it comes to buying intentions ($M_{CC}=6.02$; $M_{Prof}=5.89$; $p > .05$) (see table 18).

As a result, we accept H2 in this circumstance.

3.3.6. Results H3

H3: The effect of Design mode (professional vs. co-creation) on trust is moderated by political orientation.

Figure 2. Research model



In order to assess whether consumers' **Political Orientation** moderates the effect/impact of **Design Mode** on the **Trust**, a moderation model was carried out, using the PROCESS version 4.0 macro by Andrew F. Hayes (Figure 2).

The results are presented in table 18 and from its reading it is verified that it is a statistically significant model ($F_{(3; 113)}=5,985$; $p=0,000$; $R^2=0,137$) which explains 13.71% of the **trust** variation.

Regarding the components of the model, it appears that the variable Design Mode has a significant effect on Trust ($\beta=1.159$; $t=2.695$; $p=0.008$), where individuals exposed to the co-creation scenario reveal a Trust of 1.159 higher than those exposed to the Professionals scenario, through an analysis of variance.

It is also verified that **Political Orientation** has a significant direct effect on **Trust** ($\beta=0.177$; $t=2.816$; $p=0.006$), where individuals with a more conservative profile have higher levels of confidence.

From the interaction between Political Orientation and Design Mode (co-creation vs. professionals) the results show that the greater the conservatism, the smaller the influence on the differentiation of trust between co-created and professional products (or greater liberalism leading to more differentiated trusts between products co-created and professional). Furthermore, the results are partially significant ($\beta =-0.139$; $t=-1.713$; $p=0.089$), so there is evidence that political orientation moderates the effect of design mode on trust.

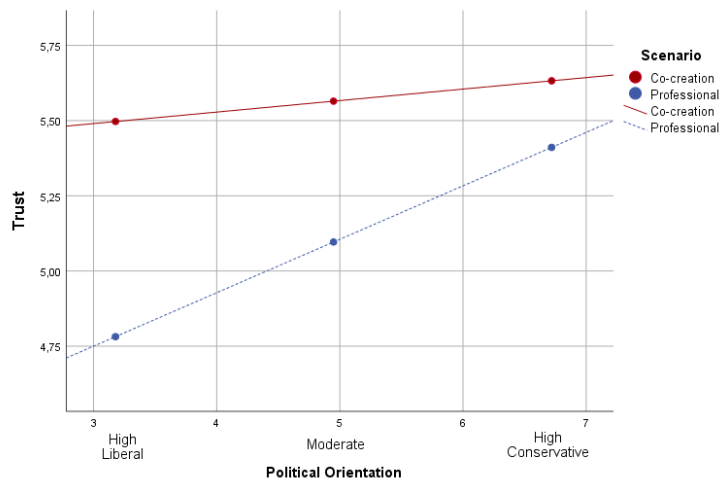
Table 19. Political Orientation moderation model, on the effect of Design Mode on Trust

Model DV Trust	Coefficient	SE	T	P
<i>Constant</i>	4,217	0,338	12,462	<0,001
Design Mode ^a	1,159	0,429	2,695	0,008
PO - Political Orientation	0,177	0,063	2,816	0,006
Design Mode * PO	-0,139	0,081	-1,713	0,089
Dependent: Trust	Model	$R^2=0,137$	$F_{(3; 113)}=5,985$	$p=0,0008$
	Interaction	$R^2_{\text{change}}=0,022$	$F_{(1; 113)}=2,933$	$p=0,089$

a. 0 Professional; 1 Co-creation

Below is the graphical representation of the data obtained:

Figure 3. Effect of Design mode on trust as a function of political orientation



As a result, hypothesis 3 is partially verified.

4. Discussion

This dissertation's main purpose is to understand whether co-creation can be a strategy to increase trust in green products and as such be used by companies to promote green product sales. The study investigated how trust influences consumers behavioral attitudes towards a green product. Research shows that learning that a product was co-created improves consumers' willingness to buy new products (See-To & Ho, 2014).

Our findings reveal that a green claim is not directly linked to purchase intent. Such evidence shows that for consumers, advertising sustainability is not enough to promote purchase. Surprisingly, our findings revealed that a product's green claim was insufficient to boost product trust (green).

Consumers' trust and purchasing intentions may be threatened in the context of corporate greenwashing (Vasconcelos, 2021; Zhang et al., 2018).

Moreover, we investigated how co-creation affects trust and, as a result, purchase intentions for green products. Our findings reveal that co-created new green products have higher levels of confidence than new green products designed by corporate specialists (green). Trust (green) is important since it increases the likelihood of making a transaction. As a result, confidence in co-created items influences purchasing intentions indirectly. The fundamentals of co-creation are trust, transparency, and communication (Pralhad & Ramaswamy, 2004c).

Companies will boost customer trust of new green products by allowing consumers to engage in various stages of the NPD because they will share the same green ideals as the users (Costa & Coelho do Vale, 2018b), lowering green skepticism.

Consumers' Political Orientation was also analyzed for moderation and demonstrated to have a moderating effect. According to the literature, when a product is less sophisticated and the consumer is conservative, the consumer is less likely to trust co-created products than products made exclusively by company employees, because they value the company's knowledge and perceive this sort of product to be of higher quality. When a customer is liberal, on the other hand, the opposite is true, since they feel that fresh ideas and better products emerge from other consumers who understand their desires (Paharia & Swaminathan, 2019b) .

According to our data, conservative consumers have high trust in both, co-created and professionally developed products (not wanting to know if the product is co-created or professional), while liberal consumers have stronger trust in co-created products, or in other words, when the political orientation is strongly conservative, the conservative strategic posture leads to product undifferentiation and, as a result, trust undifferentiation. Trust in co-created products is significantly different from trust in professional developed products when individuals have a strong liberal political orientation

Regardless of the political orientation of consumers, trust in co-created products is always higher than trust in professionally generated products.

In conclusion, business leaders should not abandon the goal of developing and marketing green products. They should make businesses more transparent, open borders, and invite environmentally conscious consumers to participate in the development of new green products.

5. Implications

5.1. Theoretical Implications

This thesis contributes to the innovation literature by researching what stops consumers from purchasing new green products and offering information on co-creation and green products.

Green skepticism, or a loss of trust in green products, is viewed as a deterrent to purchasing (Goh & Balaji, 2016e)

This research contributes to the growing body of knowledge about the importance of trust in consumer decision-making. It was observed that whether or not you believe a product's green promises, it has no influence on whether or not you buy green products. This could be due to

consumer distrust about green products as a result of greenwashing techniques and the difficulty in accessing the new product's green characteristics.

Despite the fact that previous researchers have researched co-creation extensively, we extend the co-creation literature to low-complex green products by looking at co-creation as a strategy for closing the 'green gap' by improving customer trust. We discovered that co-creation is important for the trustworthiness of green products.

We believe no other study has looked into the relationship between Political Orientation (moderator) and the variables Design mode and Trust. As a result, we investigate the impact of political orientation on new product trust.

Importantly, we extend the research to include trust as one of the primary barriers to green product adoption, as well as how co-creation might reduce lack of trust in environmentally friendly products.

Co-creation, on the other hand, is an innovative method to new product development that is based on trust (Iglesias, Markovic, Bagherzadeh, et al., 2020). Because people are hesitant to buy green products due to a lack of trust or mistrust (Goh & Balaji, 2016d), co-creation could help increase demand for new green products. Consumer trust may be improved through co-creating new green products, according to our research.

5.2. Managerial Implications

The greatest barrier to customers purchasing green products is a lack of trust or green skepticism (Leonidou & Skarmas, 2017b). This lack of trust stems from greenwashing techniques (Mustiko Aji & Sutikno, 2015b), as well as the fact that green claims are known as credibility features, which are difficult for customers to analyze and verify before and after purchasing a product (Chen & Chang, 2013f). As a result, marketers and managers will benefit from knowing how to boost consumer trust in green products.

This study provides evidence to managers that conveying co-creation can be an effective method for increasing consumer trust in new green products and, as a result, demand. This process has shown to provide benefits to businesses, such as the ability to tap into a larger pool of creativity, lowering investment costs by reducing the need to hire as many professional designers as in a conventional process of innovation; or increasing brand loyalty by empowering higher brand experience among consumers, all while reducing the power

imbalance that often exists between firms and consumers.

Given that, stating a green claim does not directly influence purchase intentions, managers should make green claims on new items that are seen as trustworthy in order to enhance consumers' intention to purchase.

When it comes to new green products, we uncovered evidence that co-creation fosters higher trust than new green products developed internally.

6. Limitations and Future Research

This thesis has certain limitations because the samples for both studies were limited with only an average of 60 replies for each scenario, in Study 1 and Study 2.

Due to time and financial restrictions, the responses were gathered through Amazon MTurk, a crowdsourcing platform with a number of downsides, including the presence of respondents who only reply for extrinsic reasons and the simplicity with which respondents can participate in surveys. Since the procedure relied on online questionnaires, we had minimal control over the participants' attention levels.

In addition, more than 70% of our samples were from the United States, implying that the results do not reflect the general population.

The survey participants were all chosen at random, so we don't know if these are the more meaningful individuals for the study or the product.

Future research could look at different products within the food category or products from a different product category, as this thesis only focused on one product category (milkshakes).

Overall, this study shows that co-creation in less complex products can be advantageous in certain situations, and we encourage further research into the topic so that the academic community can better understand the effects of adopting this innovative approach.

We concluded that larger samples should be tested in future studies to see if there is a more significant effect of political orientation on the influence of design mode (co-creation vs. professionals) on trust as a result of our investigation into whether political orientation moderates the influence of design mode (co-creation vs. professionals) on trust.

More research is needed to explore deeper into the theme of green product co-creation communication. It's critical to comprehend how to promote green co-creation.

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Appendix

Pilot Study

Table 1 – Pilot Study's Demographics

Pilot Demographics			
		Frequency	Percentages
Gender	Female	25	39.1%
	Male	38	59,4%
Age	18-24	25	39,1%
	25-31	9	14,1%
	32-38	5	7,8%
	39-45	10	15,6%
	46-52	11	17,2%
	53-59	2	3,1%
	60-66	2	3,1%
Total		64	100,00%

Study 1

Table 3 – Study 1's Demographics

Demographics			
		Frequency	Percentages
Gender	Female	31	25.6%
	Male	90	74.4%
Age	18-24	11	9.1%
	25-34	63	52.1%
	35-44	26	21.5%
	45-54	12	9.9%
	55 or older	9	7.4%
Country of origin	U.S.A.	87	71.9%
	India	21	17.4%
	Others	13	10.7%
Household YearlyIncome after taxes	< 10 000 \$ / 9 075€	11	9.1%
	10 000\$/9 075€ to 15 000\$/13 615€	7	5.8%
	15 000\$/13 615€ to 20 000\$/18 150€	10	8.3%
	20 000\$/18 150€ to 30 000\$/27 225€	30	24.8%
	30 000\$/27 225€ to 50 000\$/45 375€	32	26.4%
	50 000\$/45 375€ to 100 000\$/90 750€	28	23.1%
	> 100 000\$/90 750€	3	2.5%

Table 7 – Study 1’s Reliability Analysis

Construct	Items	Corrected Item-Total Correlation	Cronbach’s Alpha
Green Trust	I feel that this product’s environmental image is generally reliable.	0.833	0.919
	This product’s environmental claims are generally trustworthy.	0.793	
	This product’s environmental performance meets my expectations.	0.818	
	This product keeps promises for environmental improvement.	0.811	

Study 2

Table 12 – Study 2’s Demographics

Demographics			
		Frequency	Percentages
Gender	Female	77	65.8%
	Male	40	34.2%
Age	Under 18	1	0.9%
	18-24	5	4.3%
	25-34	53	45.3%
	35-44	38	32.5%
	45-54	13	11.1%
	55 or older	7	6.0%
Country of origin	U.S.A.	103	88%
	Others	14	12%
Household Income after taxes	Yearly < 10 000 \$ / 9 075€	4	3.4%
	10 000\$/9 075€ to 15 000\$/13 615€	7	6.0%
	15 000\$/13 615€ to 20 000\$/18 150€	23	19.7%
	20 000\$/18 150€ to 30 000\$/27 225€	23	19.7%
	30 000\$/27 225€ to 50 000\$/45 375€	37	31.6%
	50 000\$/45 375€ to 100 000\$/90 750€	19	16.2%
	> 100 000\$/90 750€	4	3.4%

Table 16 – Study 2’s Reliability Analysis

Construct	Items	Corrected Item-Total Correlation	Cronbach’s Alpha
Green Trust	I feel that this product’s environmental image is generally reliable.	0.508	0.737
	This product’s environmental claims are generally trustworthy.	0.568	
	This product’s environmental performance meets my expectations.	0.465	
	This product keeps promises for environmental improvement.	0.579	

Table 20 - Study 2’s Means of Green Trust and Purchase Intentions

	Variable	N	Mean	Std. Deviation	Std. Error Mean
Green Trust	Co-creation	60	5.56	.747	.096
	Professionals	57	5.13	.810	.107
Purchase Intentions	Co-creation	60	6.02	.948	.122
	Professionals	57	5.89	1.11	.147