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Does innovation strategy for sustainable products influence consumer trust in the sustainability claim? A study across different product types

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Abstract

Title: *Does innovation strategy for sustainable products influence consumer trust in the sustainability claim? A study across different product types*

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Sustainability is becoming a top priority in today's world. However, and even though people are starting to see sustainability as an urgent matter, there is still no significant shift in consumers' behavior. Past research points to mistrust in the environmental claim of products for this gap in behavior. Therefore, this thesis aims to understand whether co-creation can close the gap between consumer's attitudes and actual behavior towards sustainable products.

In an experimental study with two types of products: a hand sanitizer (strong related attributes) and a daily shampoo (gentle related attributes), 282 participants reported their purchase intentions for co-created sustainable products and non co-created sustainable products.

Our findings show that trust in the sustainable claim has a mediating effect between the relationship of the sustainability claim and purchase intentions of sustainable products. Additionally, we found that, even though communicating the innovation strategy (co-creation or firm internally developed products) did not have an effect on trust as significant as expected, learning that a product was co-created has an important effect on purchase intentions due to higher perceived trust in the product's functionality. Our results revealed a partially significant effect product type has, as consumers have higher trust in strong products.

These findings contribute to the literature on co-creation as an innovation strategy, placing it in a new setting, trying to understand the impact communicating co-creation may have on sustainable products. In addition, it draws important managerial implications for companies who want to pursue a more sustainable practice.

Keywords: sustainability claim, trust, functionality trust, green trust, purchase intentions, co-creation, innovation strategy

Sumário

Título: *Será que a estratégia de inovação de Produtos sustentáveis influencia a confiança do consumidor nas alegações de sustentabilidade? Um estudo entre diferentes tipos de produto*

Autor: Sara Costa

A Sustentabilidade está a tornar-se num assunto de grande relevância atualmente. Porém, e apesar da população geral começar a ver a sustentabilidade como um assunto urgente, continua a não existir uma alteração significativa no comportamento das pessoas. A literatura revela a falta de confiança na sustentabilidade dos produtos como uma das maiores barreiras à sua aceitação. Desta forma, esta tese tem como objetivo perceber se a co-criação pode diminuir o intervalo entre as atitudes do consumidor e o seu comportamento, no que toca à sustentabilidade.

Num estudo experimental com dois tipos de produtos: um desinfetante de mãos, representado produtos relacionados com força, e um champô, representado produtos relacionados com gentileza, 282 participantes reportaram as suas intenções de compra de produtos sustentáveis co-criados e não co-criados.

Os resultados obtidos levaram-nos a concluir que a confiança tem um efeito mediador entre alegações de sustentabilidade dum produto e as intenções de compra dos mesmos. Adicionalmente, e apesar da comunicação do tipo de design utilizado para desenvolver um novo produto não ter um efeito tão significativo na confiança como o esperado, a co-criação tem um efeito significativo na confiança em atributos funcionais. Os resultados revelaram um efeito parcialmente significativo do tipo de produto, pois os consumidores têm tendência a confiar mais nos produtos fortes.

Estes resultados contribuem para a literatura, expandindo a pesquisa sobre co-criação como uma estratégia de inovação, colocando-a num novo contexto ao tentarmos perceber o impacto que esta pode ter em produtos sustentáveis. Adicionalmente, fornecem sugestões importantes para a gestão.

Keywords: sustainability claim, trust, functionality trust, green trust, purchase intentions, co-creation, innovation strategy

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Introduction

It's 2020, the beginning of a new decade, environmental concerns are top priority in consumers' daily lives. People around the globe care about multiple environmental issues. Europeans (67%) are extremely worried about water pollution (Nielsen, 2019a), Asians worry about air pollution (Nielsen, 2019a). Since consumers' interest in the environment is a growing matter, so are the company's actions to address such conscientiousness. Studies have shown that consumers believe that companies should take action in helping the environment (Nielsen, 2019b). Consequently, we are seeing a shift in the way some firms and organizations produce and market their products and disclose their environmental impact. While in 2013 only 20% of the companies in S&P 500 disclosed their environmental governance information, in 2018 this number reached 85% (Nielsen, 2019b).

Lush is one of the many examples of a company that is constantly integrating the environmental and ethical causes into their business model and values (Lush Cosmetics Limited, 2019). It is a growing business, since, in 2017, it observed a profit growth of 45% (from GBP 30 million in 2016 to GBP 44 million in 2017 (Lush Cosmetics Limited, 2017). However, Lush is not being able to compete with the big players in the cosmetic industry. Even though companies as Lush, have been verifying some growth in their sales and consequent business, these environmentally friendly organizations are still no match to the long and well-established cosmetic companies around the world, as L'Oréal, which reached, in 2018, sales of 26.8 billion euros (representing a growth of 7.1% comparing to 2017 sales) and profits of 4.92 billion euros (L'oréal Finance, 2018).

This paradox between the environmental concern growth and consumers' true actions may leave organizations wondering if they should make the shift towards a greener business model or not, since this change tends to be followed by investments, increases in costs and consequent increase in the end-product's prices, which some consumers seem not to be willing to pay. Nevertheless, global warming is quickly turning into a climate crisis, something that may tell us that the environmental consciousness of consumers is not something that will fade but quite the opposite. Being aware of these issues, companies keep trying to achieve ways to connect with their audience, which may lead to the development of innovations that are closer to sustainability than to short-term profits. One way to approach this is through eco-innovations, any kind of innovation that leads to

sustainable development (European commission, 2012). Ideally, this type of innovation could be an adequate and effective way to strengthen greener consumption patterns, by providing both better functionality and environmental protections.

There is indeed a shift in the consumers' attitudes, but where is the shift in their behavior (Carrington, Neville and Whitwell, 2010)? This misalignment between attitudes and behavior of consumers at the point of purchase has been commonly denominated by "green gap" which consists in the misalignment in consumers expressing environmental concern and stating preferring environmentally friendly product over a non-environmentally friendly product but end up purchasing less green option (Boulstridge and Carrigan, 2000). Several motives can explain why this happens. Benefits from sustainable products are often directed at others (e.g. pollution reduction for society) rather than self-directed (e.g. more performance) (Bodur, Tofighi, and Grohmann, 2016). In general, sustainability is perceived as being reflected in a higher price tag, lower quality and underperforming functionality than non-sustainable products, thus decreasing purchase intentions (Luchs *et al.*, 2010). Consumers are often uncertain about the benefits of the sustainable claim as well as the trade-offs between functionality and sustainability (Luchs *et al.*, 2010). Additionally, there are several variables that keep people from purchasing green, being price, low quality perception and trust on firm motivations the main ones (Gleim, et al., 2013).

So far, studies have revealed that there are certain methods that can lead consumers to be more confident in the act of purchase and the innovation strategy followed by the company may provide strong cues about its intention. To this end, innovation researchers have looked at co-creation model, which has shown that consumers tend to believe that organizations that use co-creation are more customer-oriented (Fuchs and Schreier, 2011). Consequently, consumers can identify more with such companies (Dahl, et al., 2014). Customer co-creation takes place when stakeholders, in this case customers, of an organization get involved in the development of a new product (Hoyer *et al.*, 2010). Co-creation can both take many forms and can also occur in all the different stages of the new product development. For instance, in the ideation stage, customer participation can enhance new product financial performance (Chang and Taylor, 2016). Research on co-creation has shown that this process can generate several positive outcomes. From

providing more unique experiences to the end-consumer (Prahalad and Ramaswamy, 2004) to making consumers feel more empowered by the organization (Fuchs and Schreier, 2011). From the company side, co-creation can, therefore, strengthen the customer attitudes towards corporations (Fuchs and Schreier, 2011) which can potentially lead to higher customer loyalty.

Moreover, trust and connection have been shown to be a dimension of co-creation and are both connected with future purchase intentions (Randall, Gravier and Prybutok, 2011). Since there are already suggestions that co-creation can lead to trust (Shapiro, et al., 1992) and that trust can eventually lead to higher purchase intentions (Kang and Hustvedt, 2014), we will investigate the role of trust in sustainable co-created products to decrease the green gap.

Co-creation is not a recent phenomena with well-established companies incorporating this new product development tool in their businesses e.g. IKEA, Sephora, Starbucks, BMW or M.A.C. IKEA empowers customers through a website focused on co-creation, which has the objective of getting the company closer to the people (IKEA, 2019) with sustainability as one of the key elements of new product development (IKEA, 2018). Sephora, through their Beauty Insider Community, allows customers can share their experiences and the company takes useful insights (Sephora, 2019). M.A.C., on the other side, has partnered with influencers, as Alessandra Steinherr, in order to develop new makeup products (M.A.C., 2019). However, and even though the number of companies involved in co-creation is increasing, researchers have concluded that there are some conditions more favorable to co-creation than others. Chang's work concludes that this model is beneficial for low-tech companies, since the effect of customer participation in low-tech companies is perceived as more effective than in high-tech companies (Chang and Taylor, 2016).

We, therefore, wish to investigate whether companies that use and communicate co-creation as a tool to develop sustainable products face a diminished green gap through higher purchase intentions. Previous research on green product's desirability has shown that making a product more environmentally friendly deliberately can decrease purchase intentions of that product, since this leads consumers to believe they have lower quality than a less "green" option, due to resource allocation (Newman, Gorlin and Dhar, 2014).

Other studies have mentioned that sustainability can be both an advantage and a liability, depending on the product type (Luchs *et al.*, 2010). Research in this matter has shown that certain products which have gentleness-related attributes (perceived as safer or healthier) can benefit from the sustainability claim while, simultaneously, it can harm products with strength-related attributes (perceived as powerful and durable) (Luchs, et al., 2010). In a study on how consumers perceive eco-innovative products, Paparoidamis concluded that certain consumers are less likely to buy household cleaning products if they perceive companies intentionally changed the product so it could be more environmentally friendly. Additionally, if consumers perceive the functional value of a product is absent, that is sufficient reason for consumers not to buy that product (Paparoidamis *et al.*, 2019). Since, previously, many studies showed that green claims can affect negatively purchase intentions can co-creation be a positive mediator in this relation?

Hence, the purpose of this research is to understand what effect co-creation has on the purchase intentions of sustainable products. In order to do so, the category of sustainable cosmetic products was chosen, with two product categories in mind: a daily shampoo (representing a product associated with gentler attributes) and a hand sanitizer (associated with strength related attributes). In order to better understand the differences between product categories, we will test a daily shampoo with a product perceived as less gentle than the previous: a hand sanitizer. Both products will be presented in a sustainable and non-sustainable condition, as well as internally developed by a company and co-created.

The following discussion will begin with a theoretical view on Sustainable and Green Consumption and the Sustainability Liability. Then, the research will focus on what is the Attitude-Behavioral Gap and on what are the barriers that lead consumers not to purchase sustainable products. Here, trust will be studied with more detail, since it is one of the main variables of this study. Finally, co-creation will be presented, and it will mainly be studied the fact that co-creation can be a method to lead consumers overcome the lack of trust barrier, when buying certain types of products.

Academic and Managerial Relevance

Sustainability is not only something that has received increasing awareness from the consumer perspective but is also crucial in the future growth of an organization. Customers are becoming more aware of marketing tools companies use to attract consumers' attention. Being sustainable is starting not to be a differentiation factor for businesses, it is becoming a requirement to operate in the industries. Therefore, this study could help companies understand if the sustainability claim, which was co-created, should be communicated to their customers. Further we wish to assist managers to be aware of the circumstances where co-created sustainability draws the highest namely higher sales. We also aim to help managers understanding why this relationship takes place: higher trust in the sustainability claim. Consequently, the following research would provide managers useful information on how to communicate their innovation strategies in the best way possible.

Moreover, this research provides insights on how companies can close the attitude-behavioral gap. By using the positive effect of co-creation on consumer trust in the firm, companies could strengthen the trust in the sustainability claim particularly among product categories where sustainability can be a liability. Thus, enhancing consumers' trust in their sustainable purchase decisions while incentivizing overall further environmentally friendly choices.

For academia, this study contributes to the understanding of barriers to the adoption of sustainable products. We propose a better understand of the boundary conditions that are preventing higher rates of purchase intention of sustainable products.

Research Aim

This research has the main objective of studying the effect that co-creation can have on the sustainability claim of gentle products. In other words, the thesis investigates whether co-creation can be used by companies as a tool to overcome the lack of trust they face by consumers, regarding sustainable products. It is expected that co-creation will be positively related with customer trust which will, consequently, lead to a positive effect on the sustainability claim of the products studied and on its purchase intentions.

Therefore, the main research question of this thesis is the following: *Does innovation strategy for sustainable products influence consumer trust in the sustainability claim? A study across different product types*

Moreover, the research aim will be supported with answers of the following questions.

- What is the effect trust has on the purchase intention of products with a strong sustainability claim?
- How does co-creation affect customer trust?
- Do different co-created product types lead to a different perception regarding the sustainability claim?
- What is the effect co-creation has on the purchase intentions of sustainable gentle products?

Conceptual Framework

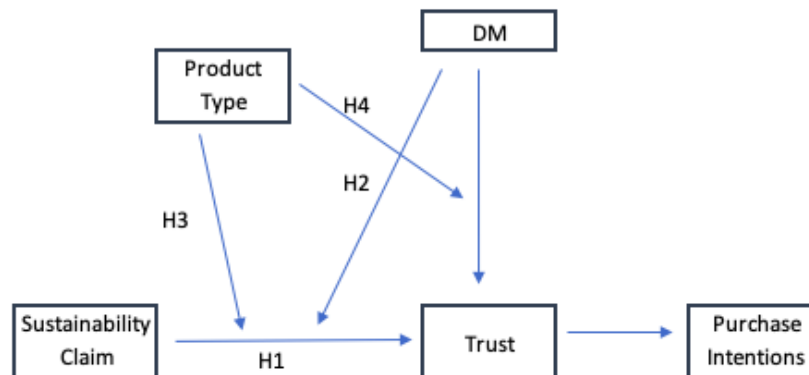


Figure 1 - Conceptual Framework

Literature Review

Sustainable and Green Consumption

Longevity is the essence of sustainability. Most definitions of sustainability, regardless of the subject of studies, acknowledge temporality with some authors correlating reductions in a system's natural longevity, with reduction in sustainability (Costanza and Patten, 1995). Arguably one of the most known and used definition of sustainability is the one developed by the United Nations, stating that sustainable consumption is "... the use of

goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, (...), so as not to jeopardize the needs of future generations” (United Nations, 1994).

Green consumption is a subfield of sustainable consumption (Xiao and Li, 2011). Moraes and colleagues (2012) defined “green consumption” as the “(...) consumer behaviour that is predominantly driven by consumers’ environmental concerns and their attempts to reduce or limit their environmental footprints”.

Since climate change has been given major coverage on the media and consumers are getting more environmentally conscious (Nielsen, 2019a), there has been an increase on the interest and purchase intentions of sustainable and green products (Strong, 1996). Studies have suggested that some of the factors that are driving this consciousness increase can be the existence of pressure groups, the bigger presence of ethical issues on the media, the increase of corporate responsibility and the existence of more alternative products available in the supermarkets (Strong, 1996). Other studies suggest that green buyers have certain types of characteristics which non-green buyers – who may still have the intentions to buy green products – do not have, as being high-trusters (Gupta and Ogden, 2009). However, research also shows that certain types of green consumers tend to be cynical towards the sustainability claim and tend to trust more in word-of-mouth and opinion leaders than in traditional marketing tools (McDonald *et al.*, 2012). This hints us that marketing may not be enough to promote sustainable consumption.

The Attitude-Behavioral Gap and Barriers for not purchasing green

The “green gap”, as it is commonly known, is an attitude-behavior misalignment (Boulstridge and Carrigan, 2000). It happens when consumers who say that are willing to purchase an environmentally-friendly product, and even willing to pay a premium for it, choose not to do so. For example, in a study related with fair-trade coffee, it is shown that, in general, the participants are not willing to pay the fair-trade price premium (De Pelsmacker, Driesen and Rayp, 2005).

Even though the environmental concern is on the rise, many people end up not choosing to buy sustainable products, otherwise the “green gap” would not have the magnitude that it has nowadays. Previous studies have shown several reasons on why this

happens. Johnstone and Tan (2015) have concluded that some of the reasons that may lead consumers not to purchase green products are lack of time, effort, or money, the fact that green behaviors are seen as unattainable, the green stereotype (which is, many times, not perceived positively by others) (Gleim and Lawson, 2014; Johnstone and Tan, 2015). Moreover, these authors have also highlighted the fact that cynicism is commonly connected with sustainable and green products, which tends to be a result of greenwashing and consequent lack of trust in the sustainability claim (Johnstone and Tan, 2015). On the other side, certain studies have concluded that evaluating the consequences that a product has for the environment takes effort for the customer (Follows and Jobber, 2000), suggesting that the way the sustainability claim is communicated may not be the clearest for the end consumer.

In addition, the price premium normally associated to sustainable products and its lack of availability can be additional elements that intensify the attitude-behavioral gap, since brand familiarity, convenience and price keep being some of the most important factors that influence purchase intentions (Boulstridge and Carrigan, 2000). Similarly, other authors have also synthesized the barriers for sustainable purchasing behaviors as research lack of time, the tendency of higher prices in green products and lack of information about the green offering (Young *et al.*, 2009).

The Sustainability Liability

Some studies have shown that the sustainability claim can increase purchasing intentions of consumers (Barroso, 2016). However, this may also be a disadvantage. For example, Luchs has shown that the sustainability claim can indeed be a liability depending on the type of product we are trying to sell our customers (Luchs *et al.*, 2010). In automobiles, for example, the sustainable claim of recycled contents has a negative impact on consumer's willingness to pay (Irwin and Spira, 1997). Also, there are cases when consumers have had negative experiences after purchasing greener options and therefore become reluctant on doing so again (Gleim and Lawson, 2014). Moreover, Newman concluded that consumers were more reluctant to purchase household cleaning products when they perceived the company made the products more eco-friendly (Newman, Gorlin and Dhar, 2014).

These are just some examples of how consumers can perceive a green product negatively. While on one side, the world is urgent on calling out companies for polluting the environment (Schleeter, 2018), on the other it seems that the end consumer keeps asking for these polluting products. Thus, doubts on whether companies should invest in sustainable products or on how can they overcome the sustainability liability persist.

Trust

Lack of trust is one of the major throwbacks for consumers not to buy environmentally friendly products and, as a consequence, develop the green gap (Gupta and Ogden, 2009). Trust exists when “(...) one party has confidence in an exchange partner’s reliability and integrity” (Morgan and Hunt, 1994) and it is seen as an important foundation for building relationships between organizations and consumers (Berry, 1995). Singh and Sirdeshmukh (2000) go further and explain that trust consists in two parts: the expectation, which is focused on the belief that the other partner would act accordingly and with integrity; and the behavioral intention, which is related with one’s intention to count on the exchange partner accepting the other’s vulnerability (Singh and Sirdeshmukh, 2000).

In a business setting, trust has already been the subject of extended research. Trust can be positively enhanced by an organization’s transparency (Kang and Hustvedt, 2014) while lack of trust can be a consequence of consumer similarity confusion, which happens when products seem identical (Walsh and Mitchell, 2010). Additionally, customer trust has been beneficial to corporations. First, trust between consumers and corporations has been connected with brand loyalty and risk aversion (Matzler, Grabner-Kräuter and Bidmon, 2008). Second, trust can be strongly correlated with higher purchasing intentions and willingness to pay (Kang and Hustvedt, 2014).

More specifically, lack of trust has been connected with one of the main drawbacks for consumers not to purchase environmentally friendly products (Johnstone and Tan, 2015) and extant research has concluded that greenwashing has a negative effect on a type of trust: Green Trust (Chen and Chang, 2013).

Additionally, positive perceptions of the functionality capability of products, in other words, the ability a product has to fulfill its objective (Bloch, 1995), has been proven to lead to higher purchase intentions (Homburg, Schwemmler and Kuehnl, 2015).

As a consequence, we believe this study would benefit from the division of the variable trust into green trust and functionality trust, since people have expectations on both the environmentally friendliness of a product and the functionality of it.

Co-creation

Co-creation has been referred as a new innovation model that brings closer consumers and companies enhancing feelings of transparency and trust (Schreier et al., 2012). Co-creation can be defined as the combining efforts of both companies and stakeholders in new product development (Hoyer *et al.*, 2010) , or, in other words, a collaborative process between peers in order to creating new value (Prahalad and Ramaswamy, 2004; Galvagno and Dalli, 2014). Thus, customer co-creation exists when the firm and customers of this firm act jointly in new product development (Gemser and Perks, 2015).

Previous research has already shown that this customer-oriented approach brings several advantages for organizations: it can not only make customers feel more empowered by the organizations – and therefore, making them identify more with the organization – but it has also been shown that consumers are more up to purchase products from companies that are more customer-oriented (Fuchs and Schreier, 2011). Prahalad and Ramaswamy mention that co-creation between consumers and organizations leads to more unique and richer customer experiences, while simultaneously believing that co-creation is the solution for the tendency to commoditization and consequent price margin destruction (Prahalad and Ramaswamy, 2004).

Trust and the sustainability claim

Marketing scholar show that trust is an extremely important variable in the decision-making process of a consumer, when buying an environmentally friendly product. Multiple studies have already concluded that lack of trust on the environmental benefits of a product can be one of the main drawbacks for a more environmentally friendly purchasing behavior (Johnstone and Tan, 2015). Others have mentioned trust to be one of the pre-requisites of buying certain categories of green products, such as organic food (Nuttavuthisit and

Thøgersen, 2017). Chen and Chang (2013) have also concluded that greenwashing has a negative impact on green trust (Chen and Chang, 2013).

Moreover, extant research has shown that a consumer will have a higher tendency to use a label in his or her decision-making process if the consumer trusts its message (Thøgersen, 2000). Moreover, trust enhances pro-environmental attitudes that derive from paying attention to environmental labels, meaning that consumers who are more trusting of environmental labels appear to have a more environmentally friendly attitude (Thøgersen, 2000).

Thus, we predict that product behavioral attitudes at the point of purchase of sustainable products will be explained by the trust on the products' sustainable claim:

H1a): Green Trust positively mediate the impact of a sustainability claim in the product purchase intentions.

H1b): Functionality Trust positively mediate the impact of a sustainability claim in the product purchase intentions.

Co-creation and Trust

Co-creation - i.e, interaction between customer and firm for new product development- has as its foundations in dialogue, access, risk-benefits and transparency which points that the values that enable co-creation can lead to a better understanding of both risk and benefits around the firm's products, (Prahalad and Ramaswamy, 2004). This possibly hints that co-creation can be the foundation for a relation of trust between firm and customer, since co-creation is based on transparency and dialogue. Moreover, researchers have pointed that trust is a dimension of co-creation, and is related with future purchase intentions (Randall, Gravier and Prybutok, 2011).

Recent studies have demonstrated that co-creation leads to higher purchase intentions (Schreier, Fuchs and Dahl, 2012) and thus higher profits (Witell *et al.*, 2011). Particularly, when the actors in the co-creation are consumers, this innovation model has shown to increase customer identification with the co-creators and, consequently, the firm (Dahl, Fuchs and Schreier, 2015). Since, Shapiro, Sheppard and Cheraskin (1992) mention that identification can be developed through co-creation, which can therefore lead to identification-based trust (Shapiro, et al., 1992), we predict that co-creation can lead to customer trust:

H2a) – The impact of the sustainability claim on green trust will be stronger in co-created products than in products that are developed only by firms’ professionals.

H2b)- The impact of the sustainability claim on functionality trust will be stronger in co-created products than in products that are developed only by firms’ professionals.

Sustainability claim and the type of Product: gentle vs strong products

In experiential consumption, consumers infer certain product qualities are connected with some attributes, and there are several examples in the literature proving this. For example, and in regards to healthy food, associate tastiness with unhealthy food even when products were not consumed (Raghunathan, Naylor and Hoyer, 2006).

Literature has already shown us several examples on how the sustainability claim can become a liability for a company that is trying to develop greener options, in spite of the fact that sustainability is becoming a greater issue in today’s world (Irwin and Spira, 1997; Luchs *et al.*, 2010; Newman, Gorlin and Dhar, 2014). Consumers tend to associate ethicality and gentleness, while the opposite happens with strong related products, with ethicality consequently weakening the perceived strength of some products (Luchs *et al.*, 2010). Paparoidamis and colleagues (2019), in his collective research, show that consumers are less likely to buy certain categories if they perceive that the company opted to invest in environmentally friendly attributes, in detriment of the functional value of the products (Paparoidamis *et al.*, 2019). Moreover, we have already seen that Trust is one of the main drawbacks keeping consumers from purchasing more environmentally friendly products (Johnstone and Tan, 2015). Therefore, we believe that trust in the sustainability claim does vary accordingly to product type namely stronger for gentle products and weaker for stronger products. This relationship has been investigated by the work of Luchs (2010) showing that sustainability can become a liability in stronger related attributes’ products. As such, we believe that the opposite happens with trust in the sustainability claim with gentler related attributes’ products. In other words, we hypothesize the following:

H3 –Trust in the sustainability claim is stronger in gentle products than in strong defined products.

Co-creation and Product Types: gentle vs strong products

Overall, research has pointed to the many advantages of co-creation to an organization (Chang and Taylor, 2016). Research has highlighted that purchase intentions for co-created products can have different outputs depending on the type of product co-created (Dahl, Fuchs and Schreier, 2015). Co-creation can even become a liability in certain situations. For example, consumers can be skeptical about the ability of the co-creators, as they may trust more professionals to develop a high quality product (Thompson and Malaviya, 2013). In this case, complex products do not benefit from being communicated as co-created. In fact, consumers' purchase intentions is diminished when consumers learn these have been co-created (Costa and Coelho do Vale, 2018). Often consumers perceive that other consumers do not have the ability to develop a high complexity product (Schreier, Fuchs and Dahl, 2012). Studies also looked at luxury products to note that labeling a luxury product as co-created diminish its perceived status and thus demand for that product (Fuchs et al., 2013).

Additionally, other researchers have concluded that there are certain differences can be seen among gentle related products and strong related products (Luchs *et al.*, 2010). Luchs (2010) in his research specifies that “gentle” and “strong” and merely representative words for correspondent cluster of words; more specifically, Luchs (2010) mentions that's gentle products tend to be associated with safety, health, or softness while strong products are related with durability, effectiveness and/or performance, attributes also related with more complex product categories (Closs *et al.*, 2008). Since Schreier, Fuchs and Dahl, 2012 state that consumers perceive certain categories for consumers to join the co-creation process, we believe that product type will moderate the relation between co-creation and trust. We therefore predict that:

H4a – The effect of co-creation on green trust will be stronger in gentle products.

H4b – The effect of co-creation on functionality trust will be stronger in gentle products.

Methodology

The following chapter provides a deeper understanding on the research topic. In order to do so, two studies were developed: a pilot study, which was focused on gentle and strong product types, and the main study. To test our hypotheses we employed an experimental design. Experimental research methods are used in social sciences for

controlled testing of cause-and-effect relationships in individuals. The overall aim is to test the influence of one factor (innovation strategy communication) on another (purchase intention), controlling for all other factors that can produce (a part of) the same effect (confounding variables).

Main Study

The main study focused on understanding the effect of co-creation on sustainable product's purchase intentions. In order to contrast our findings, we studied both gentle attribute related attributes' product category and strong related attributes' product category, to understand the differences among the two.

Selection of Product Category

The main study would focus in the comparison of 2 product categories, one representing gentle related attributes' products, and another representing strong related attributes' products. In order to do so, a pilot study was developed to inform the most appropriated products to be tested. The pilot tested four different product categories: household cleaning products, daily shampoos, hand sanitizers and hand moisturizers. With this, we also desired to obtain insights about how consumers differentiate them in terms of attributes.

76 respondents took part in the pilot (61,8% female, 38,2% male). The participants were generally young, being the majority of them millennials as 78,9% were aged between 18 and 25 years old. Regarding the country of origin, the sample was also not broad, with more than 90% of the sample being from Germany (48,7%) and Portugal (42,1%).

DEMOGRAPHICS			
		Frequency	Percent
GENDER	Female	47	61.8%
	Male	29	38.2%
AGE	18 to 25	60	78.9%
	26 to 35	15	19.7%
	36 to 45	1	1.3%
COUNTRY OF ORIGIN	Germany	37	48.7%
	Portugal	32	42.1%
	Others	7	9.2%
Total		76	100.0%

Table 1 - Pilot study's demographics

This study was developed and conducted in English, using Qualtrics platform. Due to time and monetary restraints, it was shared online and among the researcher's network. The participants (N=76) were asked to answer 7 questions about the four previously mentioned product categories. The participants start by answering about Product Involvement and Product Complexity questions. Then, they were asked about how they can relate with the product category. More specifically, participants had to rate items regarding their usage and price perception of the product category, rating them in a 7 point likert scale. Then, participants were asked to think about one attribute they relate with the product category in question, followed by two sections of questions about the eco-friendliness of the product category. After the product category questions, the participants were showed a randomized scenario about a sustainable product being developed, (Co-creation or a Professional scenario). This was designed to test scenario credibility. These would eventually help in the creation of the main survey. Before leaving, participants reported their demographic: gender, age and country of origin. In the table below, the measures that had significant impact for the development of the main study can be seen.

Construct	Item	Source
Product Involvement	1. To me X are (1) Unimportant – (7) Important	(Thompson and Malaviya, 2013) & (Zaichkowsky, 1985)
	2. To me X (1) Means nothing to me – (7) Means a lot to me	
	3. To me X (1) Does not matter to me – (7) Matters a lot to me	
Product Attributes	“What is core about Product category X?”	Own Construct
Eco-friendliness	1. Household cleaning products deserves to be labelled as green products. 2. A person who cares about the environment would be likely to buy household cleaning products Scale: (1) Strongly Disagree; (7) Strongly agree	(Gershoff and Frels, 2015)
	Rating Product X from: (1) Not green to (7) Highly Green	Own Construct
Co-Creation/ Professional Scenario	Manipulation Check - (...) Who do you say developed this product? (1) Customers; (4) Customers & Company; (7) Company	Own Construct
	How real is the scenario? (1) Very Real – (7) Not real at all	Own Construct

Table 2 - Pilot Study's measures

Pilot Findings

Generally, participants had similar thoughts about the attributes of the four different product categories. “Smell” was the main attribute when choosing a daily shampoo (n=24) followed by hair treatment (n=8) and softness (n= 5), all related to gentleness. Participants also referred to the ability to reach the objective (n=9) it was meant to (for example, ability to keep the hair not oily when the shampoo is indicated for “oily hair”). Participants also indicated gentle attributes in regards to Hand Moisturizers. Essentially, they mentioned that this product category should be gentle (n=17) and hydrate the skin (n=20).

The other two product categories were perceived to be more strong-related than hand moisturizers and shampoos, as expected. Attributes related with the ability to disinfect and clean were the most mentioned regarding both hand sanitizers (n=21) and household cleaning products (n=24).¹

The pilot’s findings informed the choice of products: daily shampoos, as a gentle product category; and hand sanitizers, related with stronger attributes.

Regarding the design of the scenarios, when presented with a sustainable scenario and professionally developed product, respondents did not perceive the intended manipulations. 26.3% answered as “Community Developed” product when the scenario represented a company designed product and 26.3% answered “Co-created”². The same happened with the remainder scenarios. As a consequence, the main survey contained more information describing both of the innovation strategy scenarios, and the scale was adapted to a multiple-choice question (with 1= “developed by customers”, 2 = “developed by customers and company” and 3 = “developed by company”).

Data Collection and Sampling

282 participants took part in the main study. A Latin Square Design ($n \times n$, here each treatment in it occurs only once in a row and in a column) was used, as it enables the researcher to get more information from fewer trials (Gao, 2005). This followed a mixed design 2 (sustainability claim: yes vs no) x 2 (innovation strategy: cocreation vs professionals) x 2 (product type (hand sanitizer vs shampoo) where sustainability claim and

¹ See table 15, appendix 1.

² See Table 16, appendix 1.

innovation strategy was a between subject design and product type a within subjects (see table 3).

Latin Square Design			
		Co-creation	Professionals
Sustainability Claim	Shampoo	G1	G5
	Hand Sanitizer	G2	G6
No sustainability Claim	Shampoo	G3	G7
	Hand Sanitizer	G4	G8

Table 3 - Main study's Design

The sample consisted of 51% female participants and 49% male participants. 60% of the participants were aged under 35, mainly from the United States (61%) and Portugal (21%). The majority had a yearly income between 45 375€ and 90 750€. The demographic sample is synthesized in Table 17, in appendix 2.

Due to constraints of time, location and budget, the survey was developed online, in Qualtrics Platform. The survey was randomly shared both in Mturk (Amazon Mechanical Turk) and among the researcher's network, between 21st and 24th of November, and the final sample consisted in 303 participants, 282 providing valid answers. Mturk was chosen due to time constraints and its reliability, as research has concluded that the platform is at least as reliable as other traditional methods, as face-to-face tasks (Casler, et al., 2013) and Mturkers tend to actually be more attentive than respondents in traditional methods when performing the task in question (Hauser, et al., 2016). However, Mturk is also connected with certain limitations, as the lack of effort that some respondents invest while answering a survey (Hauser and Paolacci, 2013). Others included the non-naiveté of Mturkers, associated with the high number of related tasks they do (Chandler, et al., 2014).

Procedure

The survey recreated a customer journey in a supermarket. The survey starts by asking participant about its involvement with the product category presented, which was randomly presented. Therefore, each person could either begin with a Sustainable or Non-Sustainable Hand Sanitizer or Sustainable or Non-Sustainable Daily Shampoo. The table below illustrates the survey design and the participant's allocation to each scenario:

	Shampoo ³	Hand Sanitizer	Sustainable	Non-Sustainable	Co-creation	Professionals	Allocation
G1	X		X		X		36
G1a		X	X		X		35
G2	X			X	X		34
G2a		X		X	X		38
G3	X		X			X	38
G3a		X	X			X	34
G4	X			X		X	31
G4a		X		X		X	36

Table 4 - Scenario's Allocation

The survey continues by placing the participant in a supermarket aisle, connected with the previously mentioned product, and describes it in either a sustainable or non-sustainable way. This description is followed by the first manipulation check: a question about the environmentally friendliness of the product. The table below illustrates the sustainable and non-sustainable scenarios.

Product	Sustainable Scenario
Daily Shampoo	"Company X is trying to bring an innovative product into the market, a new set of sustainable shampoos. It consists in 3 different shampoos, since the company understand that different clients have different needs. The first is for dry to normal hair; the second is for colored hair and the third is for oily hair. Each of them is being developed with ingredients from green vegetables, seeds and plants. Since it does not contain any preservatives, chemicals and other toxic ingredients, it doesn't harm the environment nor the consumer's health. The new range of products provides an enhanced and more natural smell to customer's hair. It also classifies as vegan as it is 100% plant based and no animal testing was developed. The company is also investing in new packages for its products, and therefore, the packages for these shampoos are made from recycled plastic found in the Atlantic Ocean."
Hand Sanitizer	"Company X is trying to bring an innovative product into the market, a new sustainable hand sanitizer. Made from natural ingredients, it is meant to bring the best to your hands, taking the worst from them. This hand sanitizer will kill the bacteria present in your skin, without leaving it dry. Since it is being developed with a new formula with natural ingredients, it is free from chemicals and other toxic ingredients, not harming the environment nor the consumer's health. It also classifies as vegan as it is 100% plant based and no animal testing was developed. The company is also investing in new packages for its products, and therefore, the packages for these hand sanitizers are made from recycled plastic found in the Atlantic Ocean."
Product	Non - Sustainable Scenario
Daily Shampoo	"Company X is trying to bring an innovative product into the market, a new set of shampoos. It consists in 3 different shampoos, since the company understand that different clients have different needs. The first is for dry to normal hair; the second is for colored hair and the third is for oily hair. Each of them is being manufactured with an enhanced chemical formula, made with ingredients that not only combat the difficulty each is assigned to (e.g.. the oily hair) but also provides a more natural scent to the consumer's hair. "
Hand Sanitizer	"Company X is trying to bring an innovative product into the market, a new hand sanitizer. Being manufactured with an enhanced chemical formula, it is meant to bring the best to your hands, taking the worst from them. This hand sanitizer will kill 99.9% of the bacteria present in your skin, without leaving it

³ Every participant was shown both product, however, the order in which the products were presented changed. For example, in G1 the first product that the respondent saw was a Shampoo, while in G1a was a Hand Sanitizer.

dry."

Table 5 - Sustainability Claim and Non Sustainability Claim scenarios

Then, participants were introduced to how the product was developed. They were randomly allocated to a product co-created with customers or a product created by company professionals. After the scenarios respondents answered the manipulation check about who they considered developed the product. Table 6 shows both scenarios.

Product	Innovation Strategy Scenarios
Co-creation	"In order to develop this (product), Company X created an online platform for customers. Here, they bring new ideas, feedback, share concerns and express their opinions about improvements to the current offering of daily shampoos of the brand. As a result of this very collaborative environment, the company and its customers created a new range of (product)."
Professionals	"Company X is a company strongly driven by its own team and employees. Therefore, in order to develop this new (product), the company relied exclusively in its Research and Development Department."

Table 6 – Innovation Strategy scenarios

After the scenarios, each participant reported how much they trusted the functionality and the environmentally friendliness of the product. Before finishing question about the first product participants reported their willingness to buy the product.

The second part of the survey focuses on the second product, either a hand sanitizer or shampoo, depending on the product that was presented first. The second part shows the participant the same scenarios of Section 1, in order to be coherent. The last section of the survey focuses on the demographics of the participant, including a question asking about how environmentally friendly the participant perceived himself.

Measures and Reliability Analysis

In the table below the constructs that have been used in the development of the main survey can be seen. All the responses were measure with a 7 point likert scale apart from the Manipulation Check of Innovation Strategy and the Familiarity with Co-creation constructs.

Construct	Item	Source
<i>Product Involvement</i>	<ol style="list-style-type: none"> 1. To me X are (1) Not needed – (7) Needed 2. To me X are (1) Useless – (7) Useful 3. To me X are (1) Not important – (7) Important 4. To me X are (1) Boring – (7) Interesting 	Thompson and Malaviya (2013) & Zaichowski (1985)
<i>Manipulation Check – Eco-friendliness of the product</i>	I find this product: (1) Very eco-destructive; (7) Very eco-friendly	Own Construct
<i>Manipulation Check – Innovation Strategy</i>	(...) Who do you say developed this product? (1) Customers; (2) Customers & Company; (3) Company	Own Construct
<i>Functionality Trust</i>	<ol style="list-style-type: none"> 1. I feel that this product is likely to perform well. 2. I feel that this product seems capable of doing its job. 3. This product seems to be functional. Scale: (1) Strongly Disagree; (7) Strongly Agree	Homburg, C., Schwemmler, M., & Kuehnl, C. (2015) (adapted)
<i>Green Trust</i>	<ol style="list-style-type: none"> 1. I feel that this product's environmental functions are generally reliable. 2. I feel that this product's environmental performance is generally dependable. 3. This product's environmental argument is generally trustworthy. 4. This product's environmental concern meets my expectations. 5. This product keeps promises and commitments for environmental protection. Scale: (1) Strongly Disagree; (7) Strongly agree	Chen (2013)
<i>Purchase Intentions</i>	How likely would you buy the previous shampoo? <ul style="list-style-type: none"> • (1) Very Unlikely; (7) Very likely • (1) Impossible; (7) Very possible • (1) No chance; (7) Certain 	Mohr and Webb (2005)
<i>Familiarity with Co-creation</i>	Are you Familiar with user innovation? Yes/No	Schreier (2012)
<i>Consumer's Eco-friendliness</i>	<ol style="list-style-type: none"> 1. It is important to me that the products I use do not harm the environment. 2. I consider the potential environmental impact of my actions when making many of my decisions. 3. My purchase habits are affected by my concern for our environment. 4. I am concerned about wasting the resources of our planet. 5. I would describe myself as environmentally responsible. 6. I am willing to be inconvenienced in order to take actions that are more environmentally friendly. Scale: (1) Completely Disagree; (7) Completely Agree	Haws, Winterich and Naylor, (2014)
<i>Demographics</i>	Gender; Age; Country of origin; Household Income	Own Construct

Table 7 - Main Study's Measures

The reliability analysis shows that all construct's corrected item-total correlation is above 0.8, an indication that the internal reliability of the scales presented is appropriate.

Cronbach's Alphas of the constructs are above 0.9, which shows that our survey produced reliable scales.

After conducting the reliability analysis we created five new variables, by using the means of the constructs in each. The new variables are the following: Product Involvement; Functionality Trust; Green Trust; Purchase Intentions; and Green Involvement.

Reliability Analysis			
Constructs	Items	Factors	Cronbach's Alpha
Involvement	To me X are (1) Not needed – (7) Needed	0.873	0.93
	To me X are (1) Useless – (7) Useful	0.845	
	To me X are (1) Not important – (7) Important	0.859	
Functionality Trust*	I trust that this product will likely perform well.	0.792	0.899
	I trust that this product is capable of doing its job.	0.8	
	I trust that this product seems to be functional.	0.812	
Green Trust*	(...) environmental functions are generally reliable.	0.885	0.947
	(...) environmental performance is generally dependable.	0.811	
	(...) environmental argument is generally trustworthy.	0.863	
	(...) environmental concern meets my expectations.	0.879	
	(...) keeps promises (...) for environmental protection.	0.842	
Purchase Intentions	Likelihood of purchase: (1) Very unlikely - (7) Very likely	0.881	0.929
	Likelihood of purchase: (1) Impossible - (7) Very possible	0.819	
	Likelihood of purchase: (1) No chance - (7) Certain	0.867	
Green Involvement⁴	I consider the potential environmental impact of my actions when making many of my decisions.	0.82	0.901
	My purchase habits are affected by my concern for our environment.	0.82	

Table 8 - Main Study's Reliability Analysis

Results

Hypothesis 1

Our first hypothesis states that *trust positively mediates the impact of a sustainability claim and the product purchase intentions*. Since the variable Trust has been divided into Green Trust and Functionality Trust, H1 has also lead to two hypotheses. Therefore, we have:

⁴ The scale goes from 1 (“Completely Disagree”) to 7 (“Completely Agree”)

H1a – Green Trust positively mediates the impact of a sustainability claim on the product purchase intentions.

H1b – Functionality Trust positively mediates the impact of a sustainability claim on the product purchase intentions.

In order to understand the role of trust in purchase intentions of sustainable products, we run a bootstrap analysis, by Preacher and Hays, was used (Preacher and Hayes, 2004). The dependent variable was Purchase Intentions and the Independent one was Sustainability Claim, with Green Trust and Functionality trust as Mediators.

Bootstrap Analysis by P&H				
Functionality Trust	<u>Variable</u>	<u>Coefficient</u>	<u>P value</u>	<u>Result</u>
	Sust_Claim	0.0969	0.2761	Not Significant
Green Trust	<u>Variable</u>	<u>Coefficient</u>	<u>P value</u>	<u>Result</u>
	Sust_Claim	1.4012	0	Significant
Purchase Intentions Model Outcome	<u>Variable</u>	<u>Coefficient</u>	<u>P value</u>	<u>Result</u>
	Model		0	Significant
	Sust_Claim	-0.3813	0.0007	Significant
	Function_trust	0.2969	0	Significant
	Green_Trust	0.6306	0	Significant
Indirect Effects of X on Y		<u>BootLLCI</u>	<u>BootULCI</u>	
	Function_trust	-0.0235	0.0853	No Mediation
	Green_Trust	0.6907	1.0941	Mediation

Table 9 - Bootstrap Analysis, studying the mediating effects of trust in Sustainability Claim and Purchase Intentions.

As it can be seen above, the variables Sustainability Claim, Green Trust and Functionality Trust have a significant effect on Purchase Intentions ($\beta_{\text{SustClaim}} = -0,3813$; $p < .05$; $\beta_{\text{GreenTrust}} = 0.6306$; $p < .05$; $\beta_{\text{FunctTrust}} = 0.2969$; $p < .05$). While higher trust in both functionality and green attributes increase consumers' purchase intentions, both have positive coefficients ($\beta_{\text{Funct_Trust}} = 0.2969$ and $\beta_{\text{Green_Trust}} = 0.6306$), the sustainability claim decreases purchase intentions of the participants. This finding refutes what has been previously said in the literature, as our study is showing that the sustainability claim itself is not enough to increase purchase intentions of a new product. On the contrary, our finding reveals that people are less prone to purchase green products than non-green products.

However, when mediated by other variables, the sustainability claim can increase purchase intentions. A bootstrap analysis at a confidence level of 95% shows mediation for green trust [0,69; 1.09] but not for trust in the functionality of the product [-0,02; 0,08] Consequently, we **accept** H1a while **rejecting** H1b.

In the bottom of the table, we have the Mediation Effects outcomes. The bootstrap analysis tells us that there is no mediation effect of Functionality Trust, as $CI_{95\%}$ ranges between -0.0235 and 0.0853, including the value zero. However, the opposite can be seen with Green Trust since the confidence interval (95%) [0.6907, 1.0941] excludes the value zero.

Hypothesis 2

H2 aims to understand whether cocreation is an innovation strategy that enhances trust in the sustainability claim of a product (a moderating effect on consumer trust). To this end, our second hypothesis states that co-creation positively influences trust in sustainable products over a professional designed product. The hypotheses are the following:

H2a – The impact of the sustainability claim on green trust will be stronger in co-created products than in products that are developed only by firms’ professionals.

H2b – The impact of the sustainability claim on functionality trust will be stronger in co-created products than in products that are developed only by firms’ professionals.

In order to test H2 we run an analysis of variance, ANOVA univariate with the variables “Green Trust”, to study H1a. The factors used to study both hypotheses were the dummy variables “Sustainability Claim” and “Innovation Strategy”.

Tests of Between-Subjects Effects		
	Variable	P value
Green Trust	Sust_Claim	0
	IS	0.722
	Sust_Claim * IS	0.927

Table 10 - Analysis of variance, studying the effects of Sustainability Claim and Innovation Strategy on Green Trust.

The ANOVA results show us that there are indeed differences between Green Trust and Functionality Trust. The moderation effect is seen if trust is enhanced in a co-creation condition, so we need to compare both innovation strategies’ conditions. Green Trust is higher for sustainable products than for non-sustainable products ($M_{Sust}=5.52$; $M_{NSust}=5.12$; $p < .05$). However, there are no significant differences between consumer trust in a co-created green product and a green product that is developed by company’s professionals, and there is no interaction effect between the Sustainability Claim and Innovation Strategy

($M_{Prof}=5.5069$; $M_{CC}=5.5333$; $F(1, 557) = 0.009$; $p > 0.05$)⁵. As a consequence, we can conclude that Innovation Strategy has no moderating effect on Green Trust, and we **reject** H2a.

To understand whether consumers trust the functionality of co-created products more, we proceeded with the same test: an analysis of variance with Functionality trust as dependent variable and, again, Sustainability Claim and Innovation Strategy as factors.

Tests of Between-Subjects Effects		
	Variable	P value
Functionality Trust	Sust_Claim	0.231
	IS	0.009
	Sust_Claim * IS	0.247

Table 11 - Analysis of variance, studying the effects of Sustainability Claim and Innovation Strategy on Functionality Trust.

It can be seen that Innovation Strategy has an effect on Functionality Trust ($M_{CC}=5.5781$; $M_{Prof}=5.3478$; $p<0.05$), while the fact that it is a Sustainable Product or not, does not have an effect on the variable ($M_{Sust}=5.5149$; $M_{NSust}=5.4131$; $p>0.05$)⁶. Similarly to our previous results, Innovation Strategy does not moderate the relation between the Sustainability Claim and Functionality Trust, since there is no significant interaction between the Sustainability Claim and Innovation Strategy ($F_{(1,558)} = 1.343$, $p>0.05$)⁷. With these results, we can conclude that even though Co-creation has a positive effect on the Functionality Trust, we **reject** H2b.



Figure 3 - Functionality Trust in Sustainable Products



Figure 2 - Green Trust in Sustainable Products

⁵ See table 18 and table 19, appendix 3

⁶ See Table 21, appendix 3

⁷ See Table 20, appendix 3

Moreover, and even though Innovation Strategy does not moderate Green Trust, we wanted to understand if co-creation has a moderator effect on the mediating effect studied in H1. Since we already concluded that Functionality Trust does not mediate the relation between the sustainability claim of the product and the product's purchase intentions, only Green Trust will be studied.

To study this effect, a bootstrap analysis was run with Purchase Intentions as dependent variable, Sustainability Claim as the independent variable, Green Trust as de mediator and Innovation Strategy as a moderator (Preacher and Hayes, 2004).

Regression Analysis by P&H				
Index of Moderated Mediation	Variable	BootLLCI	BootULCI	Result
	IS	-0.3094	0.2771	No Moderator

The index of Moderated Mediation leads us to conclude that Innovation Strategy does not moderate the Mediating effect of Trust in the Sustainability Claim and Purchase Intentions, studied in H1 (CI_{95%}:-0.3094, 0.2771). Consequently, we conclude that co-creation does not influence consumer green trust in sustainable products.

Hypothesis 3

In H3 we try to understand if consumers displayed different levels of trust according to the distinct product types (gentle vs strong related products). In other words, we want to understand if the type of product will change the mediating effect Trust has on Purchase Intentions of Sustainable Products. As previously, and since we concluded there is no mediating effect of Functionality Trust in the Purchase Intentions of Sustainable Products, our third hypothesis is the following:

H3 –Trust in the sustainability claim is stronger in gentle products than in strong defined products.

To study this hypothesis, the researcher developed a bootstrap analysis, using Purchase Intentions as Dependent Variable, Sustainability Claim as Independent Variable, Green Trust as a Mediator and Product Type as a Moderator (Preacher and Hayes, 2004). Our results, which can also be seen in Table 12, indicate that, against our theorizing, Product Type seems not to be as relevant to the level of trust. Firstly, Product Type does

has only partially significant effect on Green Trust ($\beta_{\text{ProdType}}=-0.2282$; $p<0.10$). This tells us that people tend to trust more the environmentally friendliness of hand sanitizers than of shampoos, a finding that refutes the literature. Additionally, we can see that the interaction between Product Type and the Sustainability Claim is also not significant ($\beta_{(\text{ProdType},\text{SustClaim})}=0.1909$; $F_{(1,558)}=1.1561$, $p>0.05$)⁸. Finally, the 95% confidence interval enables us to conclude that Product Type does not influence the relationship between sustainability claim and Green Trust, since $CI_{95\%}$ ranges between -0.0947 and 0.3397 and, consequently, we can **reject H3**.

Bootstrap Analysis by P&H				
	Variable	Coefficient	P value	Result
Green Trust	Sust_Claim	0.0058	0.9631	Not significant
	Product Type	-0.2282	0.0721	Partially significant
	PType*Sust_Claim	0.1909	0.2827	Not significant
Index of Moderated Mediation		BootLLCI	BootULCI	
	Product Type	-0.0947	0.3397	No Moderated Mediation

Table 12 - Bootstrap Analysis, studying the moderated mediation of Product Type on Green Trust

Hypothesis 4

Our last hypothesis aims to understand the differences caused in consumer trust due to a firm communicating an innovation strategy as co-creation according to the type of product being co-created. We argued that trust in the green and functional claim increases in co-created gentle products.

An analysis of variance was the most appropriate test to study these relations, therefore, an ANOVA Univariate was developed, with Green Trust as dependent variable for H4a and Functionality Trust for H4b, while the factors used in both were Innovation Strategy and Product Type.

Tests of Between-Subjects Effects		
	Variable	P value
Green Trust	IS	0.98
	Prod_Type	0.479
	IS * Prod_Type	0.933
Functionality Trust	IS	0.009
	Prod_Type	0.134
	IS * Prod_Type	0.763

Table 13 - Analysis of variance, studying the effect of Innovation Strategy on Trust and Product Type.

⁸ See Table 22, Appendix 3.

In the table above, we can see that innovation strategy, i.e., how the product was developed did not influence the level of green trust in the product ($M_{CC}=4.8295$; $M_{Prof}=4.8319$; $p > 0.05$) nor did this effect changed according to the type of product ($M_{HS}=4.7892$; $M_{Shamp}=4.8716$; $p > 0.05$)⁹. Looking for the interaction effect our findings did not show evidence of a moderation effect of Product Type. The interaction with Innovation Strategy is also not significant ($F(1,557)=0.007$; $p > 0.05$)¹⁰. As a consequence, we **reject** H4a.

Regarding trust in the ability of the product to perform its functions, Product Type has also no significant effect on Functionality Trust ($M_{HS}=5.531$; $M_{Shamp}=5.3995$; $p > 0.05$)¹¹. Once again, there is no moderation effect of Product Type in Functionality Trust, since its interaction with Innovation Strategy is not significant ($F(1,558)=0.091$; $p > 0.05$). These results indicate that whether the product is perceived as more gentle or strong has no impact on how much consumers trust the product to perform its task, thus we **reject** H4b.

Additional Findings

Against our theorizing, overall, co-creation did not have a significant impact on the purchase intention of sustainable products. Nevertheless, our findings show that communicating co-creation is still relevant in the commercialization of new products.

To understand better such effect we look at the pro-environmental profile of consumers. To this end we divided our sample in respondents that are high in environmental consciousness and those that are low.

Firstly, the effect was studied with the full sample. In order to study the moderation effect Innovation Strategy has on Functionality Trust, we relied on an analysis of variance with Functionality Trust as dependent variable and Innovation Strategy as independent. The test shows that the customers tend to trust the functional attributes of a product when this product is co-created ($M_{CC}=5.5781$; $M_{Prof}=5.3478$; $p < 0.05$). The same effect can be seen with consumers who are more environmentally friendliness ($M_{CC}=6$; $M_{Prof}=5.2639$; $p <$

⁹ See table 23, appendix 3

¹⁰ See table 24, appendix 3.

¹¹ See table 25, appendix 3

0.05) and with consumers who are not environmentally friendly ($M_{CC}=5.6026$; $M_{Prof}=4.5397$; $p < 0.05$)¹².

Tests of Between-Subjects Effects		
Normal	Variable	P value
	IS	0.009
Low Environmentally Friendliness	Variable	P value
	IS	0.008
High Environmentally Friendliness	Variable	P value
	IS	0.032

Table 14 - Analysis of variance, studying the effect of Innovation Strategy on Functionality Trust among different degrees of consumer's environmental friendliness.

The figures below illustrate the change of Functionality Trust, among professionally developed products and co-created products.

These final findings enable us to understand that, regardless of the degree of sustainability involvement of the consumer, innovation strategy an effect on the functionality trust of new products. Therefore, co-creation can be a way to overcome the skepticism consumers have around the functionality of sustainable products.

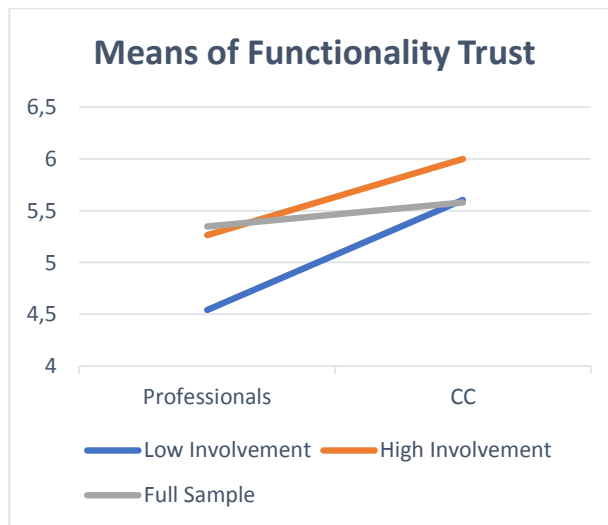


Table 15 - Functionality Trust: Full sample vs Low Sustainability Involvement Consumers vs High Sustainability Involvement Consumers

¹² See table 26 and 27, appendix 3

Conclusion

This thesis had the objective of understanding the important role co-creation and trust can have on the purchase intentions of sustainable products. This thesis shows important implications that co-creation can have in new product development. By separating trust in green trust and functionality trust, we were able to understand the important moderator co-creation can be in the relationship between functionality trust and purchase intentions.

Co-creation has been shown as a reliable method to increase purchase intentions in newly developed products (Schreier, Fuchs and Dahl, 2012). Conversely, trust has been one of the main drawbacks for the purchase of sustainable products (Chen and Chang, 2013). Our findings show that, certain types of trust - functionality, co-creation can be an important variable in strengthening trust and, consequently, increase purchase intentions of sustainable products.

Firstly, and against what was previously studied by the literature (Strong, 1996), our findings show that a sustainable product is less likely to be purchased than a non-sustainable product. However, if people trust in the environmentally friendly claim of the sustainable product, consumers are more prone to purchase it, as our results showed that purchase intentions would increase with higher levels of green trust. Additionally, we obtained similar results with functionality trust. In other words, consumers are more likely to purchase a product if they perceive a product fulfills its functional promises.

Secondly, our results show that one way to overcome lack of trust can, indeed, be co-creation. However, co-creation did not seem to be relevant when connected with green trust, but when connected with functionality trust. Our study indicates that when consumers trust the functional attributes of a product, they are more prone to purchase it.

Thirdly, co-creation has a positive effect on functionality trust, regardless of the consumer's environmental profile. Consequently, managers can take advantage of this new product design method in order to increase trust in sustainable products.

Finally, we predicted that gentler products would be more prone to benefit from the advantages of co-creation and that the sustainability claim would be stronger in daily shampoos than in hand sanitizers, we were not able to conclude it. Our findings reveal that there are no significant differences among the two.

Academic Implications

This dissertation extends the literature on both co-creation and sustainability. Following Luchs' research on the *Sustainability Liability* (Luchs *et al.*, 2010) and the differences among gentle and strong related products, the present thesis provides us an understanding of the barriers of adoption of sustainable products and of the barriers that prevent consumers from purchasing sustainable products.

In addition, we extend the literature to trust, as one of the major drawbacks for the adoption of environmentally friendly products and on how co-creation can help decreasing the lack of trust in sustainable products.

Managerial Implications

The findings of this dissertation enable the researcher to provide suggestions on how to communicate innovation strategies for its customers or potential customers. Specifically, it advises on how managers can communicate co-creation in order to increase purchase intentions of sustainable products.

In spite of the increasing awareness sustainability has nowadays, our findings enabled us to conclude that environmentally friendly products are not always preferred by consumers. Indeed, consumers need to ensure that the sustainable claim behind the product they intend to buy is trustworthy. Additionally, they need to trust that the functional attributes of the product are not deterred by the sustainability claim the company communicates. These findings provide important implications for managers and it shows they need to overcome the lack of trust surrounding environmentally friendly products.

Nevertheless, this thesis proves that one way to enhance trust in environmentally friendly products is by communicating co-creation. By using co-creation as a marketing and communication strategy, companies are able to enhance purchase intentions of sustainable products. Since communicating co-creation has proved to have a positive effect on the product's functionality trust, companies can and should use this as a tool to overcome the perceptions customers have of the lower functionality a sustainable product has, when compared to a conventional one.

Limitations and further research

Despite the additional findings that this dissertation adds to the literature on co-creation and sustainability, it was not able to overcome certain limitations. Starting with our pilot study, one of the most valuable questions for the survey was open ended, in order to understand the different associations the types of products used in the survey had. However, this can lead to both biased answers and biased interpretations of those answers.

Our main study's sample is also a drawback in this research. Even though we were able to obtain 282 valid answers, the survey contained 8 different scenarios, leading to an average of 35 answers for each of those scenarios. Additionally, the majority of these answers were obtained via MTurk, which has its downsides, as literature suggests Mturkers do not put a lot of effort in the tasks provided (Hauser and Paolacci, 2013). The sample was not representative of the general population, as 61% of its participants were Americans. Also, the respondents were chosen randomly, which may not represent the right target for this research.

Simultaneously, we faced time and budget constraints. Since this was an online survey, the researcher could not control the context and stimulus the respondents faced while answering it. This could have led to a lack of understanding the scenarios that were presented in the survey, as even though the participants did not, generally, fail the manipulation checks, some of them did not pass them successfully.

The present study would benefit from further research, both in a practical and theoretical sense. From a practical perspective, a study with real products, that people could test, and that took advantage of other research methods, as focus groups or in-store experiments, would have more insightful implications for the literature and managing parties. Furthermore, and despite the fact that this study was able to understand the differences among two product types (hand sanitizers and daily shampoos) it only focused in the cosmetics industry. Studies focusing on different types of industries and other product differences (as product complexity) could provide useful insights to the literature around co-creation.

Finally, this study lacked research on firm identification derived through co-creation and the differences among the levels of environmentally friendliness of each consumer, so we would recommend further studies to deepen the focus on and/or include these variables.

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Appendix

Appendix 1 – Pilot Study

Pilot Study’s Structure – Household Cleaning Product’s Scenario

Start of Block: Household Cleaning Products

This first section will focus on **household cleaning products**.

These are products used for cleaning, as laundry detergents, bleaches or dish washing products; they help improve cleaning efficiency and make environments more hygienic.

Please take a moment thinking when you have used one.

Q1 - Please rate the following statements according to how you feel about **household cleaning products**:

To me, this product is

	1	2	3	4	5	6	7	
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Unimportant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Important
Means nothing to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Means a lot to me
Does not matter to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Matters a lot to me

Q3 - Please rate the following statements according to how you feel about **household cleaning products**

	1. Strongly disagree (1)	2 (2)	3 (3)	4. Neither/ Nor (4)	5 (5)	6 (6)	7. Strongly agree (7)
When I purchase household cleaning products I predominantly do it for pleasure (1)	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>
When I purchase household cleaning products I predominantly do it for utility (2)	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>
The price of household cleaning products is high (3)	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>
The price of household cleaning products is low (4)	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>
Household cleaning products are expensive (5)	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>

Q3 - In your view, what is core about **household cleaning products**?

Q4 - Please rate the following statements according to how you feel about **household cleaning products**.

	1. Strongly disagree (1)	2 (2)	3 (3)	4. Neither/ Nor (4)	5 (5)	6 (6)	7. Strongly agree (7)
Household cleaning products deserves to be labelled as green products (1)	<input type="radio"/>			<input type="radio"/>			<input type="radio"/>
A person who cares about the environment would be likely to buy household cleaning products (2)	<input type="radio"/>			<input type="radio"/>			<input type="radio"/>

Q5 - How "environmentally friendly" or "green" is the product category of **Household Cleaning Products**?

	1	2	3	4	5	6	7	
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Not green	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Highly green

Start of Block: CC Scenario

Q6 - A new eco-product is going to be launched in the market soon. For confidentiality reasons we cannot disclaim the brand. But we would like to hear your views about the process. Please read the text below: The company is very concerned with the environment. To ensure compliance the company opened a platform where changes and new developments to its products are made by its community. In this very collaborative environment the company and customer created a new range of a bio product made with ingredients from green vegetables, seeds, plants and filtered water. Because it doesn't contain the normal bleach, ammonia nor hydrofluoric acid, it doesn't harm the environment. The product also classifies as vegan since no animal tests are used and is 100% plant derived.

Q7 - Who do you think was responsible for creating this new product?

	1. The community (1)	2 (2)	3 (3)	4. The community & company (4)	4 (5)	5 (6)	7. The company (7)
This product was created by: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 - How real do you think this scenario is?

	1	2	3	4	5	6	7	
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Very Real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Not Real at all

End of Block: CC Scenario

Start of Block: Company Scenario

Q9 - A new eco-product is going to be launched in the market soon. For confidentiality reasons we cannot disclaim the brand. But we would like to hear your views about the process. Please read the text below: The company is very concerned with the environment. The company created a new range of a bio product made with ingredients from green vegetables, seeds, plants and filtered water. Because it doesn't contain the normal bleach, ammonia nor hydrofluoric acid,

it doesn't harm the environment. The product also classifies as vegan since no animal tests are used and is 100% plant derived.

Q10 - Who do you think was responsible for creating this new product?

	1. The community (1)	2 (2)	3 (3)	4. The community & company (4)	4 (5)	5 (6)	7. The company (7)
This product was created by: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 - How real do you think this scenario is?

	1	2	3	4	5	6	7	
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Very Real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Not Real at all

End of Block: Company Scenario

Start of Block: Demographics

Q12 - What is your Gender?

- Male (1)
- Female (2)

Q13 - What is your age?

- (1)
- 18 to 25 (2)
- 26 to 35 (3)
- 36 to 45 (4)
- 46 to 55 (5)
- >55 (6)

Q14 What is your nationality?

▼ Afghanistan (1) ... Zimbabwe (1357)

Table 16 - Core Attributes of the 4 Product Types

	Core Attributes	
	Frequency	Percent
Household Cleaning Products	Efficiency/ Effectiveness/ Functionality	21 24.1%
	Cleaning ability	24 27.6%
	Utility	13 14.9%

	Quality	2	2.3%
	Smell	5	5.7%
	Price	8	9.2%
	Easy to use	3	3.4%
	Multi-use	3	3.4%
	Safety	2	2.3%
	Durability	1	1.1%
	Disinfection ability	3	3.4%
	Environmentally friendliness	2	2.3%
	Total	87	100.0%
Daily Shampoos	Smell	24	33.3%
	Softness/Feel	5	6.9%
	Cleaning Ability	11	15.3%
	Quality	5	6.9%
	Multi-use	2	2.8%
	Price	3	4.2%
	Hair treatment/ Safety	8	11.1%
	Efficiency/ Purpose/ Low chemical levels	9	12.5%
	Usefulness	1	1.4%
	Packaging	1	1.4%
	Environmentally friendliness	1	1.4%
	Brand	2	2.8%
	Total	72	100.0%
	Hand Sanitizer	Efficiency/ Effectiveness/ Functionality	11
Disinfection ability		21	25.3%
Hygiene		2	2.4%
Smell		14	16.9%
Price		6	7.2%
Cleaning ability		11	13.3%
Easy to use		1	1.2%
"Dissolve quickly"		2	2.4%
Utility		5	6.0%
Texture/ Skin feel/ Gentleness		5	6.0%
Environmentally friendliness		1	1.2%
Size		1	1.2%
Durability		1	1.2%
Usage		1	1.2%
Low on chemicals		1	1.2%
Total		83	100.0%

Hand Moisturizer	Skin texture/ Skin care / Feel	17	22.1%
	Moisturizer texture	5	6.5%
	Moisturizing ability	20	26.0%
	Smell	18	23.4%
	Brand	1	1.3%
	Utility	5	6.5%
	Effectiveness	5	6.5%
	"Soak in fast"	2	2.6%
	Simplicity	1	1.3%
	Environmentally friendliness	1	1.3%
	Cleaning ability	1	1.3%
	Usage	1	1.3%
	Total	77	100.0%

Table 17 - Scenarios' Credibility

Sustainable scenario's credibility															
	1. The community		2		3		4. Co-created		4		5		7. The company		Total
In. Strategy	2	5.3%	2	5.3%	3	7.9%	25	65.8%	2	5.3%	2	5.3%	2	5.3%	38
Professionals	3	7.9%	10	26.3%	8	21.1%	2	5.3%	10	26.3%	4	10.5%	1	2.6%	38
Total	5	13.2%	12	31.6%	11	28.9%	27	71.1%	12	31.6%	6	15.8%	3	7.9%	76
Non Sustainable scenario's credibility															
	1. Very Real		2		3		4. Neither		4		5		7. Not real		Total
In. Strategy	3	7.9%	10	26.3%	8	21.1%	2	5.3%	10	26.3%	4	10.5%	1	2.6%	38
Professionals	5	13.2%	11	28.9%	8	21.1%	7	18.4%	5	13.2%	1	2.6%	1	2.6%	38
Total	8	21.1%	21	55.3%	16	42.1%	9	23.7%	15	39.5%	5	13.2%	2	5.3%	76

Appendix 2 – Main Study

Main Survey's Structure – X Scenario

Start of Block: G1 - Shampoo x Sust x CC

Q1 - Company X is a well-established cosmetics company. Recently, and in order to answer to some gaps in the market, Company X has decided to invest in new product development. In the following sections you will answer questions about 2 of the products Company X is thinking about creating in the future.

Q2 - The first part of the study aims at gaining feedback about a new daily shampoo. The company is looking forward to hear your thoughts about this new product. Please answer all the questions based on your opinion.

Q3 - Please rate the following sentences regarding your attitude towards daily shampoos.

To me, daily shampoos are:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Not needed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Needed
Useless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Useful
Not important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Important
Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interesting

Q4 - Now, please imagine for a moment you are walking on the aisle of a supermarket. You are looking for daily shampoos. At some point your eyes stop on a brochure that talks about a new product that is being launched in the near future by Company X.

Q5 - Please, read part of the brochure:

"Company X is trying to bring an innovative product into the market, a new set of sustainable shampoos. It consists in 3 different shampoos, since the company understand that different clients have different needs. The first is for dry to normal hair; the second is for colored hair and the third is for oily hair.

Each of them is being developed with ingredients from green vegetables, seeds and plants. Since it does not contain any preservatives, chemicals and other toxic ingredients, it doesn't harm the environment nor the consumer's health. The new range of products provides an enhanced and more natural smell to customer's hair. It also classifies as vegan as it is 100% plant based and no animal testing was developed.

The company is also investing in new packages for its products, and therefore, the packages for these shampoos are made from recycled plastic found in the Atlantic Ocean."

Q6 - Please classify this product in terms of eco-friendliness.

	1. Very eco-destructive (1)	2. (2)	3. (3)	4. Neither/ Nor (4)	5. (5)	6. (6)	7. Very eco-friendly (7)
I find this product: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 - You keep reading the brochure and you become aware about how the company developed this new product. You read the following:

"In order to develop this set of shampoos, Company X created an online platform for customers. Here, they bring new ideas, feedback, share concerns and express their opinions about improvements to the current offering of daily shampoos of the brand. As a result of this very collaborative environment, the company and its customers created a new range of bio shampoos."

Q8 - In your opinion, who do you say developed this product?

- Customers only (1)
- Customers & Company (2)
- Company only (3)

Q9 Below is an image of the new daily shampoo.



Q10 - Please rate your level of agreement with the following statements:

	1. Strongly Disagree (1)	2. (2)	3. (3)	4. Neither/Nor (4)	5. (5)	6. (6)	7. Strongly Agree (7)
I trust that this product will likely perform well. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust that this product is capable of doing its job. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust that this product seems to be functional. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 - Please rate your level of agreement with the following statements:

	1. Strongly Disagree (1)	2. (2)	3. (3)	4. Neither/Nor (4)	5. (5)	6. (6)	7. Strongly Agree (7)
I feel that this product's environmental functions are generally reliable. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that this product's environmental performance is generally dependable. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product's environmental argument is generally trustworthy. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product's environmental concern meets my expectations. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please choose number 4. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product keeps promises and commitments for environmental protection. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12 - Now, imagine you are running low on shampoo and you need to buy one.

How likely would you buy the previous shampoo?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Very Unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely
Impossible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very possible
No chance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Certain

Q13 The second part of this research focuses on a new hand sanitizer being developed by Company X. The company is looking forward to hear your opinion about this new product. Please answer all the questions based on your opinion.

Q14 Please rate the following sentences regarding your attitude towards hand sanitizers. To me, hand sanitizers are:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Not needed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Needed
Useless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Useful
Not important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Important
Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interesting

Q15 - Now, please imagine for a moment that you keep walking towards another aisle of the supermarket and you see the hand sanitizer's section. At this point, you see another brochure from company X, this time mentioning a hand sanitizer which is being launched in the near future.

Q16 - Please, read part of the brochure:

"Company X is trying to bring an innovative product into the market, a new sustainable hand sanitizer. Made from natural ingredients, it is meant to bring the best to your hands, taking the worst from them. This hand sanitizer will kill the bacteria present in your skin, without leaving it dry.

Since it is being developed with a new formula with natural ingredients, it is free from chemicals and other toxic ingredients, not harming the environment nor the consumer's health. It also classifies as vegan as it is 100% plant based and no animal testing was developed.

The company is also investing in new packages for its products, and therefore, the packages for these hand sanitizers are made from recycled plastic found in the Atlantic Ocean."

Q17 - Please classify this product in terms of eco-friendliness.

	1. Very eco-destructive (1)	2. (2)	3. (3)	4. Neither/ Nor (4)	5. (5)	6. (6)	7. Very eco-friendly (7)
I find this product: (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q18 - You keep reading the brochure and you become aware about how the company developed this new product. You read the following:

"In order to develop new products, Company X created an online platform for customers. Here they bring new ideas, give feedback, share concerns and express their opinions about improvements to the current offering of hand sanitizers of the brand. As a result of this very collaborative environment, the company and its customers created a new hand sanitizer."

Q19 - In your opinion, who do you say developed this product?

- Customers only (1)
- Customers & Company (2)
- Company only (3)

Q20 - Below is an image of the new hand sanitizer.



Q21 - Please rate your level of agreement with the following statements:

	1. Strongly Disagree (1)	2. (2)	3. (3)	4. Neither/Nor (4)	5. (5)	6. (6)	7. Strongly Agree (7)
I trust that this product will likely perform well. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust that this product is capable of doing its job. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust that this product is functional. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22 - Please rate your level of agreement with the following statements:

	1. Strongly Disagree (1)	2. (2)	3. (3)	4. Neither/Nor (4)	5. (5)	6. (6)	7. Strongly Agree (7)
I feel that this product's environmental functions are generally reliable. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that this product's environmental performance is generally dependable. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please choose number 3. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product's environmental argument is generally trustworthy. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product's environmental concern meets my expectations. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This product keeps promises and commitments for environmental protection. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q23 - Now, imagine you are running low on hand sanitizer and you need to buy one.

How likely would you buy the previous hand sanitizer?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Very Unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely
Impossible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very possible
No chance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Certain

Start of Block: Demographics

Q24 Are you familiar with user innovation?

- Yes (1)
- No (2)

Q25 - Please rate your level of agreement with the following statements:

	1. Strongly Disagree (1)	2. (2)	3. (3)	4. Neither/Nor (4)	5. (5)	6. (6)	7. Strongly Agree (7)
It is important to me that the products I use do not harm the environment. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider the potential environmental impact of my actions when making many of my decisions. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My purchase habits are affected by my concern for our environment. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about wasting the resources of our planet. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would describe myself as environmentally responsible. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to be inconvenienced in order to take actions that are more environmentally friendly. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q26 - What is your gender?

- Male (1)
- Female (2)

Q27 - How old are you?

- (1)
- 18 to 25 (2)
- 26 to 35 (3)
- 36 to 45 (4)
- 46 to 55 (5)
- >55 (6)

Q28 Where are you from?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q29 - What is your household yearly income after taxes?

- < 10 000 \$ / 9 075€ (1)
- 10 000\$ / 9 075€ to 15 000\$ / 13 615€ (2)
- 15 000\$ / 13 615€ to 20 000\$ / 18 150€ (3)
- 20 000\$ / 18 150€ to 30 000\$ / 27 225€ (4)
- 30 000\$ / 27 225€ to 50 000\$ / 45 375€ (5)
- 50 000\$ / 45 375€ to 100 000\$ / 90 750€ (6)
- > 100 000\$ / 90 750€ (7)

Table 18 - Main study's demographics

DEMOGRAPHICS			
		Frequency	Percent
GENDER	Female	144	51.1%
	Male	138	48.9%
AGE	>55	29	10.3%
	18 to 25	84	29.8%
	26 to 35	85	30.1%
	36 to 45	56	19.9%
	46 to 55	28	9.9%
COUNTRY OF ORIGIN	Italy	12	4.3%
	Portugal	59	20.9%
	US	172	61.0%
	Others	39	13.8%
INCOME	< 10 000 \$ / 9 075€	32	11.3%
	10 000\$ / 9 075€ to 15 000\$ / 13 615€	31	11.0%
	15 000\$ / 13 615€ to 20 000\$ / 18 150€	30	10.6%
	20 000\$ / 18 150€ to 30 000\$ / 27 225€	32	11.3%
	30 000\$ / 27 225€ to 50 000\$ / 45 375€	68	24.1%
	50 000\$ / 45 375€ to 100 000\$ / 90 750€	71	25.2%
	> 100 000\$ / 90 750€	18	6.4%
Total		282	100.0%

Appendix 3 – Results

Table 19 - ANOVA Univariate, studying the effect of Innovation Strategy on Green Trust and Sustainability Claim

Tests of Between-Subjects Effects					
Dependent Variable: Green_Trust1					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	275.463a	3	91.821	65.596	0
Intercept	13011.401	1	13011.401	9295.169	0
Sust Claim	275.432	1	275.432	196.765	0
IS	0.178	1	0.178	0.127	0.722
Sust Claim * IS	0.012	1	0.012	0.009	0.927
Error	779.69	557	1.4		
Total	14146.24	561			
Corrected Total	1055.153	560			

a R Squared = .261 (Adjusted R Squared = .257)		
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Table 20 - Descriptive Statistics of Green Trust regarding Sustainable/Non Sustainable and Co-created/Professionally developed products

Descriptive Statistics				
	Dependent Variable: Green_Trust			
	Green	IS	Mean	Std. Deviation
Green Trust	Non sustainable	Professionals	4.0955	1.35477
		CC	4.1403	1.30176
		Total	4.1188	1.32514
	Sustainable	Professionals	5.5069	1.0129
		CC	5.5333	1.03583
		Total	5.52	1.02259
	Total	Professionals	4.8319	1.38086
		CC	4.8295	1.36711
		Total	4.8307	1.37266
	Total	Sustainable	5.52	1.0226
		Non Sustainable	4.1188	1.3251
		Total	4.8307	1.37266

Table 21 - ANOVA Univariate, studying the effect of Innovation Strategy on Functionality Trust and Sustainability Claim

Tests of Between-Subjects Effects					
Dependent Variable: Function_Trust					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.558a	3	3.519	3.207	0.023
Intercept	16752.414	1	16752.414	15265.156	0
Green	1.579	1	1.579	1.439	0.231
IS	7.492	1	7.492	6.827	0.009
Green * IS	1.474	1	1.474	1.343	0.247
Error	612.365	558	1.097		
Total	17407.778	562			
Corrected Total	622.923	561			
a R Squared = .017 (Adjusted R Squared = .012)					

Table 22 - Descriptive Statistics of Functionality Trust regarding Sustainable/Non Sustainable and Co-created/Professionally developed products

Descriptive Statistics					
Functionality Trust	Dependent Variable: Functionality_Trust				
	Sustainability Claim	IS	Mean	Std. Deviation	
	Non sustainable	Professionals		5.346	1.07907
		CC		5.4745	0.95149
		Total		5.413	1.01468
	Sustainable	Professionals		5.3495	1.0697
		CC		5.6831	1.08745
		Total		5.5152	1.08954
	Total	Professionals		5.3478	1.07224
		CC		5.5781	1.0248
Total			5.465	1.05375	
Total	Sustainable		5.5149	1.0897	
	Non Sustainable		5.4131	1.0144	
	Total		5.465	1.05375	

Table 23 - Bootstrap Analysis, effect of Product Type on Green Trust and Sustainability Claim

Model						
	coef	se	t	p	LLCI	ULCI
constants	5.528	0.0899	61.4939	0	5.3514	5.7046
Sust Claim	0.0058	0.1258	0.0463	0.9631	-0.2413	0.2529
Prod Type	-0.2282	0.1267	-1.8017	0.0721	-0.477	0.0206
SustClaim*PT	0.1909	0.1776	1.0752	0.2827	-0.1579	0.5397
Test(s) of highest order unconditional interaction(s):						
		R2-chng	F	df1	df2	p
SC*PT		0.0021	1.1561	1	558	0.2827

Table 24 - Descriptive Statistics of Green Trust regarding Hand Sanitizers/Daily Shampoos and Co-created/Professionally developed products

Descriptive Statistics				
Green Trust	Dependent Variable: Functionality_Trust			
	IS	Product Type	Mean	Std. Deviation

	Professionals	Hand Sanitizer	4.7957	1.4293
		Shampoo	4.8681	1.33488
		Total	4.8319	1.38086
	CC	Hand Sanitizer	4.783	1.36224
		Shampoo	4.875	1.37508
		Total	4.8295	1.36711
	Total	Hand Sanitizer	4.7892	1.39331
		Shampoo	4.8716	1.35315
		Total	4.8307	1.37266
Total	Professionals	4.8319	1.38086	
	CC	4.8295	1.36711	
	Total	4.8307	1.37266	

Table 25 - ANOVA Univariate, studying the effect of Product Type on Functionality Trust and Green Trust and Innovation Strategy

Tests of Between-Subjects Effects					
Dependent Variable: Green_Trust1					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.966a	3	0.322	0.17	0.917
Intercept	13085.797	1	13085.797	6914.138	0
IS	0.001	1	0.001	0.001	0.98
Prod_Type	0.948	1	0.948	0.501	0.479
IS * Prod_Type	0.013	1	0.013	0.007	0.933
Error	1054.186	557	1.893		
Total	14146.24	561			
Corrected Total	1055.153	560			
a R Squared = .001 (Adjusted R Squared = -.004)					
Tests of Between-Subjects Effects					
Dependent Variable: Function_Trust					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.004a	3	3.335	3.036	0.029
Intercept	16767.698	1	16767.698	15265.273	0
IS	7.471	1	7.471	6.801	0.009
Prod_Type	2.473	1	2.473	2.252	0.134
IS * Prod_Type	0.1	1	0.1	0.091	0.763
Error	612.919	558	1.098		
Total	17407.778	562			
Corrected Total	622.923	561			

a R Squared = .016 (Adjusted R Squared = .011)

Table 26 - Descriptive Statistics of Functionality Trust regarding Hand Sanitizers/Daily Shampoos and Co-created/Professionally developed products

Descriptive Statistics				
Functionality Trust	Dependent Variable: Functionality_Trust			
	IS	Product Type	Mean	Std. Deviation
	Professionals	Hand Sanitizer	5.4275	1.14411
		Shampoo	5.2681	0.99297
		Total	5.3478	1.07224
	CC	Hand Sanitizer	5.6315	0.99859
		Shampoo	5.5255	1.05083
		Total	5.5781	1.0248
	Total	Hand Sanitizer	5.531	1.07571
		Shampoo	5.3995	1.02921
Total		5.465	1.05375	
Total	Professionals	5.3478	1.07224	
	CC	5.5781	1.0248	
	Total	5.465	1.05375	

Table 27 - ANOVA Univariate, studying the effect of Innovation Strategy on Functionality, among High Green Involvement Consumers and Low Green Involvement Consumers

Low Green Involvement					
Tests of Between-Subjects Effects					
Dependent Variable: Function_Trust					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.124a	1	13.124	7.782	0.008
Intercept	1194.987	1	1194.987	708.603	0
IS	13.124	1	13.124	7.782	0.008
Error	75.888	45	1.686		
Total	1324.778	47			
Corrected Total	89.012	46			
a R Squared = .147 (Adjusted R Squared = .128)					
High Green Involvement					
Tests of Between-Subjects Effects					
Dependent Variable: Function_Trust					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.

Corrected Model	7.002a	1	7.002	4.863	0.032
Intercept	1639.618	1	1639.618	1138.697	0
IS	7.002	1	7.002	4.863	0.032
Error	71.995	50	1.44		
Total	1745	52			
Corrected Total	78.998	51			
a R Squared = .089 (Adjusted R Squared = .070)					

Table 28 - Descriptive Statistics of Functionality Trust regarding Co-created/Professionally developed products

Descriptive Statistics				
Dependent Variable: Function_Trust				
		Mean	Std. Deviation	N
Normal	Professionals	5.3478	1.07224	276
	CC	5.5781	1.0248	286
	Total	5.465	1.05375	562
		Mean	Std. Deviation	N
Low Environmentally Friendliness	Professionals	4.5397	1.33947	21
	CC	5.6026	1.26498	26
	Total	5.1277	1.39106	47
		Mean	Std. Deviation	N
High Environmentally Friendliness	Professionals	5.2639	1.56649	24
	CC	6	0.75903	28
	Total	5.6603	1.24458	52
		Mean	Std. Deviation	N