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Perceptions of Expertise: A Determinant Factor on the Acceptance of User-Designed Products

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Abstract

Challenging the traditional paradigm of innovation in which consumers are merely buyers, firms are increasingly drawing on their user communities to conceptualize new products.

Innovation scholars acknowledge this process as beneficial for both firms and observing consumers (consumers not involved in the conceptualization process). However, some caveats were made regarding the expertise of users when conceiving products that are either complex, luxurious or when knowledge about technical details such as materials or components is needed.

This research aims to investigate whether observing consumers perceive users (*vis-à-vis* professional designers) to possess enough expertise to design products ideated around technical and functional details. Additionally, two moderators of this effect are studied: observing consumers' uncertainty avoidance beliefs and perceptions of similarity these have towards the creators of new products.

We conducted an experimental study using two design modes: products designed by users or by firms' professionals. The data have been collected in MTurk measuring participants' perceptions of expertise and purchase intentions.

The results show that consumers prefer professionals' input for these products due to higher perceptions of expertise (that also lead to higher quality perceptions). Additionally, we find that this preference is exacerbated for high uncertainty-avoiding consumers and that expertise perceptions mediate purchase intentions differently depending on the perceptions of similarity that observing consumers have towards the creators of a product.

This study adds to the innovation literature by showing that consumers' involvement in NPD is not universally beneficial and that uncertainty avoidance beliefs and perceptions of similarity are two critical boundary conditions.

Keywords: User Design; Company Design; Expertise; Quality; Observing Consumers; Uncertainty Avoidance; Perceived Similarity; Purchase Intention.

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Sumário Executivo

Desafiando o paradigma tradicional da inovação, em que consumidores são apenas compradores, as empresas recorrem cada vez mais às suas comunidades de consumidores para conceptualizar novos produtos.

Investigadores de inovação reconhecem que este processo traz benefícios para as empresas e para consumidores observadores (não envolvidos no processo de conceptualização). Contudo, existem ressalvas relativamente à competência dos consumidores para conceber produtos complexos, luxuosos, ou que necessitem de conhecimento sobre detalhes como materiais ou componentes.

Pretende-se analisar se os consumidores observadores vêem os consumidores (face a profissionais) como competentes para conceber produtos assentes em detalhes técnicos e funcionais. Adicionalmente, são estudados dois moderadores deste efeito: aversão à incerteza dos consumidores observadores e percepções de semelhança que estes têm relativamente aos criadores dos produtos.

Realizou-se um estudo utilizando dois modos de concepção de produtos: concebidos por consumidores ou por profissionais. Os dados foram recolhidos no MTurk, medindo percepções de competência e intenções de compra.

Verifica-se que os consumidores preferem o contributo de profissionais para estes produtos, devido a maiores percepções de competência (levando a percepções de maior qualidade). Adicionalmente, esta preferência é exacerbada para consumidores altamente avessos à incerteza e as percepções de competência explicam as intenções de compra de forma diferente, dependendo das percepções de semelhança que estes têm relativamente aos criadores de um produto.

Este estudo reforça a literatura sobre inovação ao mostrar que a participação de consumidores na concepção de novos produtos nem sempre é benéfica e que a aversão à incerteza e percepções de semelhança são dois fatores fundamentais.

Palavras-Chave: Produtos Desenhados por Consumidores; Produtos Desenhados por Profissionais; Competência; Qualidade; Consumidores Observadores; Aversão à Incerteza; Percepções de Semelhança; Intenção de Compra.

Título: Percepções de Competência: Um Fator Determinante na Aceitação de Produtos Desenhados por Consumidores

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Table of Contents

List of Tables

List of Figures

1. Introduction

In 2013, the number of designers of Threadless, an American apparel company, was four times greater than the number of textile employees in the whole U.S. (Franke, Keinz, & Klausberger, 2013). Threadless abandoned the traditional paradigm of relying solely on internal creativity (through professional designers) and launched an online business model that allowed anyone to create and submit new t-shirt designs. This led to more than 1.5 million users submitting new designs for the company and double-digit growth rates. Such success raises the question: how would one feel about having a product designed by another ordinary consumer? Does an ordinary consumer have enough expertise to design a product effectively?

Launching new products successfully is one of the hardest challenges for companies, as it is hard to perfectly understand what the market demands (Rindfleisch & O'Hern, 2019; Schemmann, Herrmann, Chappin, & Heimeriks, 2016). Despite playing a major role in the success of a firm, academics still debate about the "ideal" idea generation process (Poetz & Schreier, 2012).

In the traditional innovation model, designers employed by firms are in charge of the design/conceptualization of new products (Fuchs, Prandelli, Schreier, & Dahl, 2013). However, companies are increasingly relying on third-party individuals to generate ideas for new products, challenging the conventional innovation paradigm (Dahl, Fuchs, & Schreier, 2015). In a user-driven design process, firms rely on their user communities to create new product designs that have the broader consumer market as target (Schreier, Fuchs, & Dahl, 2012; van Dijk, Antonides, & Schillewaert, 2014). The idea that some users are able to innovate and share ideas with firms is a phenomenon that has been studied by innovation scholars (e.g., von Hippel, 2005) with evidence showing that users can come up with commercially-viable designs. Companies like Threadless rely solely on its users to generate new ideas and no longer employ any in-house designers (Nishikawa, Schreier, & Ogawa, 2013). Well-established brands such as Dell or Muji combine in-house New Product Development (NPD) with design initiatives where the idea generation is outsourced to their community of final users (Nishikawa et al., 2013).

From the standpoint of firms that employ such practices, shifting the idea generation from internal professional designers to a community of users can bring benefits such as

lowering NPD costs and being perceived as more innovative and customer-oriented (Dahl et al., 2015; Fuchs et al., 2013; Fuchs & Schreier, 2011).

Innovation scholars have started to investigate the broader appeal of involving users in the ideation of new products, namely understanding the impacts that shifting the source of creativity has on the consumers who were not involved in the design process (observing consumers) (e.g., Schreier et al., 2012). Close attention has been paid to the impacts of labeling, informing, and explaining to observing consumers that other users were directly involved in the conceptualization stage. This raises concerns on whether consumers would react favorably or negatively knowing that a peer consumer was involved in the conception of a new product (Thompson & Malaviya, 2013).

On the one hand, user participation in NPD has positive effects on observing consumers (Chang & Taylor, 2016). Firstly, observing consumers perceive firms that employ such practices as more innovative than traditional firms since ideas coming from users arise from a more extensive and unconstrained community than when coming from a closed community of professionals (Schreier et al., 2012). Secondly, consumers at large identify with those users involved in the creation process, and, therefore, feel an identification with firms that employ such practices (Dahl et al., 2015). Finally, scholars have also noted that observing consumers perceive greater customer orientation from firms due to the empowerment of consumers in the innovation process (Fuchs & Schreier, 2011). These positive perceptions lead to positive behavioral intentions towards firms that engage consumers in NPD.

On the other hand, there is evidence that disclosing consumers as the creators of new products might also trigger negative reactions (Chang & Taylor, 2016; Thompson & Malaviya, 2013). One important aspect is the competency of the agents who develop the new product, i.e., the extent to which creators are perceived to have enough expertise about the product they are developing (Moreau & Herd, 2010). Awareness that a product is generated by a consumer can make observing consumers skeptical about the competencies of the designers and thus, wary of a user-driven design process (Fuchs et al., 2013; Thompson & Malaviya, 2013). Extant studies that documented positive outcomes of user-driven design processes included caveats about perceptions of expertise that could trigger negative reactions in observing consumers. Downsides in expertise perceptions by involving users in the development of new products have been tackled in (1) complex products (Schreier et al., 2012), (2) in luxury products (Fuchs et al., 2013), and (3) in product ideation that is based on technical and functional details of a

product (e.g., components, materials) rather than on a usage problem (where novelty is appreciated) (Nishikawa et al., 2013; Poetz & Schreier, 2012).

This study aims to strengthen the growing literature on the effectiveness and acceptance of the involvement of consumers in the development of new products. Specifically, we investigate the role of perceptions of the creator's expertise on the preference for a specific design mode (products designed by professionals *versus* products designed by consumers). Although for simple products, perceptions of lack of expertise might not constitute a relevant factor to hurt product evaluation (Fuchs & Schreier, 2011), for other, more complex products, these perceptions play a central role. We argue that for products ideated around technical and functional details (in which knowledge about, for example, its components or materials is highly relevant), perceptions of expertise constitute a major factor underlying observing consumers' perceptions. As professionals are perceived to have higher expertise, credibility, and knowledge than users to come up with satisfactory ideas for new products (Ulrich, 2007), in these cases, a user label might not be beneficial for observing consumers' perceptions.

Additionally, our study investigates whether valuing company expertise varies upon contextual variables, namely observing consumers' uncertainty avoidance beliefs and perceptions of similarity to those designing for the firm.

Firstly, as most consumer behaviors are cultural-bound, consumers' cultural beliefs also influence the perceptions and acceptance of user-designed products (de Mooij & Hofstede, 2011; Paharia & Swaminathan, 2019). Paharia and Swaminathan (2019) investigated user design strategies in the U.S. and in contexts where consumers exhibit different cultural beliefs, namely different power-distance. We followed the authors' call for further research on other cultural dimensions. Specifically, we investigate the role of uncertainty avoidance on the preference (or not) for user-designed products. This cultural trait is related to a preference for structured environments, distrust of the unknown, and belief in expertise (Hofstede, Hofstede, & Minkov, 2010; Reimann, Lnemann, & Chase, 2008). Such assumptions are likely to impact the acceptance of a product that has been ideated by other consumers. Indeed, the involvement of users in the ideation of new products is a new NPD paradigm, which raises uncertainty regarding its outcomes (Swait & Valenzuela, 2006). Additionally, a user label might lead to observing consumers' skepticism about the new product due to lower perceptions of the expertise of users when compared to professionals (Thompson & Malaviya, 2013). Hence, observing consumers' uncertainty avoidance beliefs are likely to moderate the adoption of such

innovation mode. High uncertainty-avoiding consumers prefer fixed habits and have stronger convictions in experts (de Mooij & Hofstede, 2011), which, *a priori*, contributes to their relative preference for products designed by professionals. Conversely, as uncertainty-accepting consumers display less anxiety in the face of ambiguous situations and consider expertise as less essential, *a priori*, they would more easily adopt products ideated by users. Therefore, this study aims to understand if the cultural context of observing consumers influences the effect of design mode on their purchase intentions.

Secondly, we further investigate the role of perceived similarity between observing consumers and the designers of a product on the preference for a specific design mode. Similarity has been studied as a moderator in the context of consumer generated-ads (Thompson & Malaviya, 2013). Perceptions of similarity will attenuate the impact of the perceptions of expertise on the acceptance of a user label in NPD. Despite users might be perceived to have less expertise to design a new product effectively, it seems reasonable to admit that if observing consumers feel more similar to users, the skepticism that observing consumers might display towards users in the development of new products might be inhibited. According to social identity theory (Tajfel & Turner, 1986), there is a positive effect of involving users in NPD. Since users belong to the same social category of observing consumers, the latter might feel similar to the users who create a product and feel indirectly involved and represented in the creation process (Dahl et al., 2015).

Understanding the impact of perceived expertise, uncertainty avoidance beliefs, and perceived similarity is important because it can guide managers to determine which contexts enhance or refrain the impacts of stressing user input in NPD. If managers decide to involve users in the development of new products, either to reduce costs or to have a wider source of creativity, it is highly relevant to understand under which conditions these practices are harmful to firms due to negative behavioral attitudes from consumers.

2. Literature Review and Hypotheses Development

2.1 New Product Development: Past and New Trends

Traditionally, firms' internal marketers, engineers, and/or designers are the ones responsible for developing new product ideas (Fuchs & Schreier, 2011). Although it is relevant to interact with customers to understand their unmet needs, professional designers employed by companies usually hold the responsibility to generate new ideas for new market offerings, since they have the expertise and knowledge needed to conceptualize promising ideas (Moreau & Herd, 2010; Nishikawa et al., 2013; Schreier et al., 2012). The most common processes in NPD entail extensive market research and theoretical creativity approaches performed by company professionals (Poetz & Schreier, 2012). Such investments are needed to identify consumer needs or problems that are not yet met through commercially available products and bring to the market new ideas that address such gaps (von Hippel, 2005). This traditional and closed innovation model is referred to as the *company design mode*.

In contrast to the mainstream view that posits that an idea for a new product is "very often out of the scope of the normal experience of the consumer" (Bennett & Cooper, 1981), a more recent stream of research advocates that it is plausible that ordinary users can generate ideas for new products (Füller, Matzler, & Hoppe, 2008). Extant research found that users can generate innovative ideas for new products, which are commercially attractive (Franke, Hippel, & Schreier, 2006; Nishikawa et al., 2013; von Hippel, 2005). Thus, consumers do not need to rely only on firms' professionals that act as imperfect agents of consumers to come up with the products professionals believe will meet the users' needs (von Hippel, 2005).

Innovation scholars have defined this emerging approach, where companies shift the idea generation for new products from the professionals to their user community, as the *user design mode* (Dahl et al., 2015; Moreau & Herd, 2010). This process allows firms to leverage internal innovation capabilities by tapping into the firms' user communities (that in traditional NPD would serve the company merely as buyers). The firms' roles shift more towards the production and distribution of the products designed by the users (Schreier et al., 2012; Dahl et al., 2015).

An example of this concept is LEGO that started by selling products designed by members of its user community (Moreau & Herd, 2010). In the software domain, open-source

software such as Linux, Apache, and Mozilla Firefox are also developed by users rather than professional software developers employed by firms (Füller, Schroll, & Hippel, 2013).

2.2 Preference for User-Designed Products

Under certain conditions, consumers prefer user-designed products (Allen, Chandrasekaran, & Basuroy, 2018). This line of thought shows that the positive attitudes towards user-generated ideas are driven by perceptions of higher innovation ability or customer-orientation, leading to behavioral outcomes such as higher purchase intentions (Fuchs & Schreier, 2011; Schreier et al., 2012).

Building on this premise, observing consumers (the ones that do not participate in the design process) might be inclined to buy products that are user-designed due to an increased identification with the firm (Dahl et al., 2015; Schreier et al., 2012). Dahl *et al.* (2015) argue that firms that integrate consumers in NPD, namely in the idea-generation phase, activate a feeling of social identification among observing consumers. This process triggers feelings of empowerment, as consumers feel indirectly involved in the innovation process.

The involvement of users in NPD reduces the perception of the power imbalance between consumers and firms since by doing so, firms are perceived as more customer-oriented, which enhances behavioral attitudes of observing consumers towards firms that employ such practices (Fuchs & Schreier, 2011).

Extant research also suggests that involving users in the ideation stage leads to positive perceptions of innovation ability (Nishikawa et al., 2013; Schreier et al., 2012). The rationale behind this premise relies on several factors.

Firstly, users are the ones who have firsthand experience with a company's product, assessing their attributes and limitations (Chatterji & Fabrizio, 2014). Therefore, the fact that consumers possess knowledge that differs from the professionals' perspective might allow users to uncover needs and further improvements for new products (Schemmann et al., 2016).

Secondly, having a greater number of people behind the idea generation when this is performed by a community of users, as opposed to a closed community of professionals, leads to a greater number of ideas (Schreier et al., 2012). As stated by the authors, "the more ideas on the table, the more likely it is that highly creative new products will result".

Thirdly, a user community might be composed of people coming from completely different backgrounds. Therefore, consumers might perceive a user community as more diverse and unconstrained than a group of professionals (Nishikawa et al., 2013; Paharia & Swaminathan, 2019).

Lastly, a well-known issue in problem-solving is the familiarity with the problem, that blocks creativity and the emergence of novel solutions (Franke, Poetz, & Schreier, 2014). Therefore, companies relying solely upon internal expertise might be restrained from finding alternative and potentially successful ideas (Chatterji & Fabrizio, 2014). Poetz and Schreier (2012) admit that beyond a certain point, the additional exploitation of internal expertise might lead to a drop in successful new product outputs.

However, user participation on its own may not always lead to positive perceptions by observing consumers (Costa & Vale, 2018).

2.3 Preference for Company-Designed Products

A different research stream argues that the positive perceptions by observing consumers can be overshadowed by some degree of skepticism towards users' expertise, which can even hurt product evaluation (Thompson & Malaviya, 2013). Indeed, one of the arguments used in Schreier *et al.*'s study (2012) to explain why user-generated ideas are associated with higher perceptions of innovation ability is the fact that more people are designing for a specific company than when this task is performed by professionals, which increases the likelihood of generating promising ideas. However, as proposed by the authors, this does not imply that the average quality of user ideas is expected to be higher than when professionally generated, as it only means that having more people designing for a company increases the likelihood of having some ideas with exceptionally high quality.

Indeed, in the case of a simple design task, such as designing a new t-shirt or a cereal mix, the perceived need for expertise of the creator might not be relevant (Schreier et al., 2012). However, as the design task becomes more complex (i.e., when a variety of skills and knowledge about materials, technology, and processes to achieve success is needed) it might be hard for observing consumers to perceive users as capable of making a meaningful contribution when designing a product (Schreier et al., 2012). Therefore, the ability of users to create satisfactory new products is likely to vary across industry or product category, since the

knowledge required to do so might vary as well (Meißner, Haurand, & Stummer, 2017; Poetz & Schreier, 2012).

The same effect is found across luxury items. Consumers do not expect aesthetics and style to be tainted by common users' involvement in the innovation processes, which, in turn, harms their purchase intentions by drastically reducing perceived quality and status feelings (Fuchs et al., 2013).

Furthermore, Nishikawa *et al.* (2012) found that Muji's user-generated products can be commercially more attractive than products designed by the company's professionals. However, most of the user-generated ideas that led to new products were based on a "clear usage problem" (Nishikawa et al., 2013). The authors speculate that if generating ideas for new products were based on technical details (such as materials, components, or technology) rather than on specific guidelines for a certain usage-problem, Muji's professionals would be likely to have an advantage over users. The latter are likely to be more successful in solving needs-based problems (e.g., coming up with novel functionalities for a product to cover unmet needs) than in the ideation of products around technical and functional details (where knowledge regarding components and materials is needed) (Poetz & Schreier, 2012). This is due to the fact that users have more information regarding their unmet needs when compared to designers, but, conversely, companies are more familiar with and its professionals have more expertise regarding a given product's technology, components, and materials to generate ideas to enhance its performance (Poetz & Schreier, 2012).

2.4 Perceptions of Expertise

When evaluating a product, consumers make inferences about some missing links to draw conclusions about the product (Brown & Dacin, 1997; Gürhan-Canli & Batra, 2004; Hoeffler, 2003; Mishina, Block, & Mannor, 2012). Inferences are formed when consumers use specific cues (e.g., prior beliefs or available information) to evaluate a firm or a product (Kardes, Posavac, & Cronley, 2004). An activation of knowledge base or mental representation helps consumers to compare, evaluate, and infer the new product's attributes (Goode, Dahl, & Moreau, 2013; Hoeffler, 2003).

By looking at product-related variables, some properties communicate characteristics to consumers and differentiate them from competitors (Bloch, 1995). Labeling a product as user-designed (*versus* company-designed) also communicates product characteristics and affects

consumers' preferences, as they will be able to infer information about a product based on their perceptions of the creators' ability to develop a new product (Fuchs et al., 2013; Liljedal, 2016).

Corporate information – the information that a person holds about a company – can be crucial for the inferences that consumers make when evaluating missing information about new products' attributes and is likely to influence consumers' preference for a given company (Fuchs & Schreier, 2011). Focusing on the expertise of employees has been noted as an effective way for consumers to form positive corporate ability associations (Brown & Dacin, 1997). Therefore, a company that enhances expertise to deliver quality outputs can reinforce the associations that consumers make regarding this company's corporate ability in creating new products (Brown & Dacin, 1997). As a result, positive corporate associations are a basis for strong behavioral outcomes, such as purchase intentions, that are higher when consumers trust brands to deliver on its promises, namely its features and services, as it reduces costs of information gathering and processing and purchasing risks (Brown & Dacin, 1997; Rajavi, Kushwaha, & Steenkamp, 2019).

As mentioned, professionals employed by firms have (or, at least, are perceived to have) a superior advantage over users regarding knowledge, experience, expertise, and skills to perform design tasks more effectively (Moreau & Herd, 2010). Users might be able to identify what a possible new product should do, but due to their (potential) lack of expertise, they might not be able to define how it should work, as this should be performed by capable professionals to ensure quality and effectiveness (Poetz & Schreier, 2012). Unlike users, professionals are usually perceived to have the expertise to come up with successful ideas for new products (Nishikawa et al., 2013), as the need for a certain level of design knowledge when developing new products is always assumed by consumers (Ulrich, 2007; Ulrich & Eppinger, 2008). Moreover, *a priori*, as professionals increase their expertise, a better understanding of the products' components is ensured and a higher technical and procedural knowledge is achieved, which makes professionals reliable in the conceptualization of new products (Poetz & Schreier, 2012).

Extant research has demonstrated this to be the case in some circumstances. When the underlying product of the design task is a luxury one (Fuchs et al., 2013); when the design task complexity is high (Schreier et al., 2012); and, lastly, when the innovation is not driven by a needs-based problem (where novelty is highly appreciated) but rather based on technical and functional details (where knowledge regarding materials, components or technology is relevant) (Poetz & Schreier, 2012). As mentioned, Nishikawa *et al.* (2013) speculated that if Muji's new

furniture products were ideated around its technical attributes, its professional designers would most likely outperform users.

In these cases, professionals' input prevents triggering critical thoughts in observing consumers while labeling a product as user-designed draws attention to the abilities of users to design products effectively (Moreau & Herd, 2010). Observing consumers might be skeptical about customer involvement in NPD due to a lack of trust in the technical capabilities of consumers innovating on behalf of professionals (Franke, Keinz, & Steger, 2009; Thompson & Malaviya, 2013) and, thus, it is reasonable to admit that, traditional inferences of skill and expertise will work against positive perceptions of user design processes (Schreier et al., 2012).

Thereby, in products which require a set of characteristics beyond aesthetics, because they are ideated around technical and functional details (e.g., components, materials, etc.) one can argue that expertise is a relevant factor for its development, such that:

H_1: *Observing consumers will display a higher preference for company-designed products than for user-designed products.*

H_{2a}: *The preference for company-designed products is explained by the higher perceived expertise of those involved in the innovation process.*

Information about products is very often limited which, as mentioned, forces consumers to make inferences, combining the limited information available with their beliefs to evaluate a product (Kardes et al., 2004). The assessment of new products' quality illustrates such limited information. Quality is often imperfectly observable and, thus, consumers tend to look for alternative cues to infer information and evaluate it (Swait & Valenzuela, 2006).

According to signaling theory, signals can solve problems under information asymmetry (Kirmani & Rao, 2000). For instance, providing an observable signal can communicate unobservable quality (Liljedal, 2016; Walters & Hershfield, 2019). Signaling if a product is company or user-designed might, therefore, be a signal to make such inference (Brown & Dacin, 1997; Dahl et al., 2015). This is mainly because consumers tend to evaluate a product based on the perceptions they have about the competencies of its creators (Liljedal, 2016; Mishina et al., 2012; Thompson & Malaviya, 2013).

A professional label might be important to make inferences especially when the product that is being evaluated requires specific knowledge (regarding its materials, components, and functionalities) to avoid critical thoughts in observing consumers about the product's quality (Mishina et al., 2012). Conversely, as mentioned, since users might not always be perceived as competent enough (Poetz & Schreier, 2012; Schreier et al., 2012), quality perceptions might decrease and critical thoughts are much more likely to be developed, as product quality is not always observable to consumers prior to purchasing (Rao, Qu, & Ruekerp, 1999).

Since labeling a product as company or user-designed can be a cue to infer the expertise of those innovating for a company (Dahl et al., 2015), which determines purchase intentions, we predict that perceived expertise determines purchase intentions due to quality perceptions since perceptions of expertise are a signal to draw inferences about product quality. Thus, we expect:

H_{2b}: *Higher perceptions of expertise lead to higher purchase intentions due to higher quality perceptions.*

The effect of labeling a product as company or user-designed has consequences on purchase intentions. However, it is unlikely that this effect is universal. In the following sections, we explain the conditions that magnify/attenuate the effect of perceived expertise on purchase intentions. Specifically, two boundary conditions with opposing effects are explored: (1) the uncertainty avoidance beliefs of observing consumers and (2) the perceptions of similarity these have towards those in charge of NPD.

2.5 The Impact of Uncertainty Avoidance Beliefs

Although perceptions of expertise in a specific design mode are important for consumer behavioral attitudes, these are also influenced by cultural factors (Paharia & Swaminathan, 2019). Culture influences consumers' interpretation of environmental cues and marketing signals (Rajavi et al., 2019) and, thus influences the preference for user or company-designed products (Paharia & Swaminathan, 2019).

Uncertainty avoidance beliefs constitute one of the six dimensions that characterize a culture and can be defined as "the extent to which the members of a culture feel threatened by ambiguous or unknown situations" (Hofstede et al., 2010). It concerns the level of anxiety about

the future and the unknown) and this feeling can be expressed by a need for predictability, written and unwritten rules, and a wish to have fixed habits (Kailani & Kumar, 2011).

Uncertainty-avoiding cultures avoid ambiguity by looking for structures in organizations, institutions, and relationships and maintaining rigid behaviors so that events can be easily interpretable and predictable (Hofstede, 1980; Yoo & Donthu, 2002). Typically, uncertainty-avoiding individuals tend to adopt stronger systems of rules, norms, and formality to structure life so that unknown situations are less likely to happen (Yeniyurt & Townsend, 2003).

Citizens with low uncertainty avoidance beliefs are more tolerant of new ideas and practices that are less common, such that "what is different is curious" thoughts are typical of uncertainty-accepting beliefs (Steenkamp, Ter Hofstede, & Wedel, 1999). Conversely, high uncertainty-avoiding citizens tend to feel that "what is different is dangerous", therefore, anything that comes from unorthodox ideas and behaviors is not tolerated (de Mooij & Hofstede, 2011; Tellis, Stremersch, & Yin, 2003).

Companies only started to incorporate consumers in the innovation process in the last few years, challenging the traditional paradigm that established that NPD was exclusively held by professionals (Gemser & Perks, 2015; Liljedal & Dahlén, 2018; Thompson & Malaviya, 2013).

Since user-designed products differ from the normal paradigm of product design in the way they are, at least, conceptualized, they entail some degree of misfit with the *status quo*, which might lead to a less obvious assessment of attributes (Rindova & Petkova, 2007). Consequently, as consumers encounter information that is incongruent with prior expectations (products designed by users and not by professionals, as would be expected), they engage in more effortful processing to assess products' attributes, which might hinder the adoption of such products (Hoeffler, 2003; Thompson & Malaviya, 2013).

Thereby, the adoption of products that are designed in this new way might be resisted by uncertainty-avoiding consumers as they might perceive user-designed products as uncommon and be reluctant to adopt them (Rindova & Petkova, 2007). Since people in such a cultural context have less willingness to change, they might feel threatened by ambiguous and uncertain assessments about products' attributes, as opposed to uncertainty-accepting people

who are more tolerant to try new things and take more risks (Swait & Valenzuela, 2006; Yeniyurt & Townsend, 2003). Therefore, we predict:

H_3: *Uncertainty avoidance beliefs moderate the effect of design mode on purchase intentions. When uncertainty avoidance beliefs are high, there is a preference for company-designed products. However, when uncertainty avoidance beliefs are low, this effect is attenuated or reversed.*

Additionally, as mentioned, uncertainty-avoiding citizens feel comfortable in structured environments and have a wish to have fixed habits to prevent anxiety (Hofstede et al., 2010). This desire for formality leads to a search for truth and belief in experts, which, in turn, translates into less openness to change and innovation (Reimann et al., 2008).

Hofstede *et al.* (2010) found that in high-uncertainty avoidance cultures, students expect teachers to have high levels of expertise and, conversely, the ones belonging to uncertainty-accepting cultures do not find any problems in having less expert teachers. Similarly, people in uncertainty-avoiding cultures tend to play safe, leaving performing household tasks (e.g. painting) to experts, while in uncertainty-accepting contexts, people would more easily perform these jobs themselves (Hofstede et al., 2010). This reasoning suggests that uncertainty-avoiding cultures have a stronger belief in expertise, which explains why organizations in these countries employ more specialists.

As mentioned, the design mode can be a cue to draw inferences about products' attributes due to different perceptions of expertise, since professional designers usually convey a degree of skills that not all users possess (Dahl et al., 2015; Schreier et al., 2012).

Thereby, since perceptions of expertise might vary on the basis of the design mode, and the belief in expertise also varies upon uncertainty avoidance beliefs, it is proposed that high-uncertainty-avoiding consumers will find company-designed products relatively more attractive because of their greater value for expertise. Therefore, the effects proposed in H_{2a} will vary on the basis of uncertainty avoidance:

H_4: *The effects of design mode on purchase intentions due to perceptions of expertise are moderated by the uncertainty avoidance beliefs of observing consumers. These effects are stronger (weaker) when the uncertainty avoidance beliefs are high (low).*

2.6 The Impact of Perceived Similarity

Although users are perceived to possess less expertise than professionals when developing a new product, the user design mode can trigger positive effects in observing consumers (Fuchs et al., 2013; Moreau & Herd, 2010; Schreier et al., 2012).

Consistently with the literature on social identity (Tajfel & Turner, 1986), there is a positive effect of involving users in NPD. According to this theory, in addition to the individual "I", people usually view themselves also as a social self "we" (Costa & Vale, 2018). People usually relate themselves to similar others, being likely to adopt their behaviors and opinions because of a social relationship with these people (Thompson & Malaviya, 2013; Wilson & Sherrell, 1993).

As the developers of user-designed products belong to the same social category as observing consumers, the perceived level of similarity between observing consumers and consumers participating in NPD increases (Dahl et al., 2015; Thompson & Malaviya, 2013). Consequently, labeling a product as user-designed might be a salient cue in the evaluation of such product, as consumers might feel more similar to the users who developed the product, and, consequently, feel empowered, by feeling they are indirectly involved in the development of the new product (Dahl et al., 2015).

In conclusion, we suggest that for a product that is ideated around technical and functional details, perceptions of similarity between observing consumers and the people who develop a new product attenuate the negative effect of labeling such product as user-designed, such that:

H_5: *Perceived similarity with those designing for the company moderates the effect of design mode on purchase intentions. When perceived similarity is low, there is a preference for company-designed products. However, when perceived similarity is high, this effect is attenuated or reversed.*

Additionally, Thompson and Malaviya (2013) showed that perceptions of similarity not only directly moderate the effect of design mode on behavioral outcomes of observing consumers but also indirectly moderate this effect by inhibiting observing consumers' potential

skepticism about the expertise of users as creators of a product. Therefore, similarly, we predict that for products ideated around technical and functional details:

***H*$_6$**: *The effects of design mode on purchase intention due to perceptions of expertise are moderated by the perceived similarity with those designing for the company. These effects are stronger (weaker) when the perceived similarity is low (high).*

Because one can expect a strong preference for company design processes on products that require combined technical and functional inputs due to the lack of expertise of users, we predict that uncertainty avoidance beliefs and perceived similarity only moderate this preference – whether such preference is fully reversed (consumers preferring user-designed products) might depend on how these and other factors (such as psychological processes) operate in conjunction.

3. Methodology

3.1 Design

This study aimed to test the impact of one factor (design mode) on another (purchase intention). This was further investigated by accounting for variables that might explain such relationship and its conditional effects upon different levels of two moderators. Thereby, we conducted an experimental study, as this is a common method used in social sciences for controlled testing of cause-and-effect relationships in individuals (Costa & Vale, 2018). This study followed a two-group between-subjects design experiment (design mode: company design and user design).

3.2 *Stimuli*

A major objective of this study was to understand perceptions of expertise by observing consumers and the impact it has on the preference for user-designed products (*vis-à-vis* company-designed). Therefore, when deciding which product should be used as the *stimuli* for our survey, several aspects were considered.

Firstly, the design task complexity: on the one hand, the product chosen should not be an extremely simple product to design such as a t-shirt (requiring few technical capabilities to achieve a successful design (Dahl et al., 2015)); on the other hand, it should not be an extremely complex product such as a robot in which it was not expected that the average user could generate a satisfactory design (Schreier et al., 2012).

Secondly, the product chosen should require consumers to evaluate it in more than one dimension to be able to associate perceptions of the expertise of its designer with the outcome. Therefore, the product chosen had to require consumers to evaluate it by considering several dimensions (e.g., design appeal, materials, comfort, and reliability).

Lastly, the idea was to lead respondents to focus the analysis on the design process in terms of characteristics, features, and attributes, as opposed to analyzing it from the perspective of creating a cutting edge/disruptive idea or brining a novel utility for a product. That is to say, the product chosen should somehow lead participants to assess the technical ability regarding materials, components, processes of the responsible to develop a new product.

Taking these aspects together, a couch was chosen as the *stimuli* for the study. It does not represent extreme ends of design complexity (it is neither an extremely simple nor an extremely complex product (Fuchs & Schreier, 2011)). Also, when evaluating it, consumers will most likely consider several attributes such as the ability to ideate adequate materials or ergonomics besides an appealing design, which would require them to assess if the designers would possess the knowledge needed to come up with a satisfactory product.

Moreover, despite furniture has been used as the *stimuli* in several studies, in some cases, customer empowerment has been used as the single mediator to explain purchase intentions (while maintaining quality constant across scenarios). Additionally, to our knowledge, the specific case of couches have only been examined in the context of Muji (Nishikawa et al., 2013), and their investigation differs from the present one in two aspects. Firstly, that study is based on the perspective of the performance of Muji (comparison of revenues between the user and company-designed products). Secondly, the development of all the user-designed products assessed in that study was based on a clear "usage problem" that favors user design since users have an advantage over designers regarding needs-based information. The authors even speculate that if the design was based on the technical details of products, the results would possibly be different.

3.3 Method

The survey started with all participants reading the same standardized background information about a company (designated Company A). The company was specialized in developing and selling furniture and, as common practice nowadays, has an online community of enthusiastic consumers. This cue was included so that any confounding effects from having a community could be avoided (Schreier et al., 2012). Then, participants were asked to imagine a hypothetical scenario where they wanted to buy a new couch and that after searching on the web, they would come across products produced by Company A. The same scenario was presented in both conditions to avoid any scenario-related effect. Moreover, there were purposely no visual images of a specific couch, so that respondents' perceptions would not be based on a subjective image.

Then, participants were evenly and randomly assigned to either the company design or user design condition. Participants were presented with specific information regarding the way

Company A developed new products and this was the only information that changed in the survey, as all the other sections were the same for all respondents.

Participants in the company design condition read: “The design, features, and functionalities of the new products of Company A are always exclusively designed by its professionals (designers and engineers employed by company A). Company-internal designers and engineers are the ones who come up with new product ideas/designs to be marketed to the general public.”. Conversely, participants assigned to the user design condition read the following: “The design, features, and functionalities of the new products of Company A are always exclusively designed by consumers of its online community. Ordinary consumers from Company A’s online community network are the ones who come up with the new product ideas/designs to be marketed to the general public.”.

After reading this information, the participants completed the manipulation check indicating who they perceived to be responsible for the development of Company A’s products (“Who do you think is responsible for creating Company A’s products?”; 1 = Company A’s professionals, 2 = Company A’s professionals and consumers of Company A’s online community, and 3 = Consumers of Company A’s online community).

Then, participants were asked to complete a questionnaire about Company A and its products, followed by a set of personality and demographic questions, including age, gender, level of education, and country of origin.

3.4 Measures

All items were measured by asking participants to rate their level of agreement with sets of statements on a 7-point Likert scale (1 = “strongly disagree” to 7 = “strongly agree”).

Expertise was adapted from Paharia and Swaminathan’s study (2019), Ratneshwar and Chaiken’s study (1991), and Klink and Athaide's study (2010). The set of sentences regarding the expertise perceptions they had about those developing products for Company A was the following: “*I value Company A’s expertise.*”; “*The people who develop Company A’s products have very high expertise.*”, “*The people who develop Company A’s products are very competent.*”; “*I am sure that the people who develop Company A’s products are able to meet my standards for a couch.*”; and “*I am sure that the people who develop Company A’s products are able to develop a satisfactory couch.*”.

Quality was adapted from Allen, Chandrasekaran, and Basuroy's study (2018) and the group of sentences was the following: "*Company A's products are high in quality."* and *"Company A's products are reliable."*.

Purchase Intention was adapted from Schreier *et al.*'s study (2012) and Costa and Vale's study (2018). The group of sentences was the following: "*I would actively search for products of this company.*"; "*I would seriously consider purchasing products from this company.*"; and "*I would seriously recommend Company A to other people.*".

Identification was borrowed from Dahl *et al.*'s study (2015) and Escalas & Bettman' s study (2005). The set of sentences was: "*This company reflects who I am.*"; "*This company suits me well.*"; "*I feel a personal connection to this company.*"; and "*I can relate to this company.*".

Similarity between respondents and those who develop Company was measured through a set of items adapted from Thompson and Malaviya's study (2013). The sentences were the following: "*I can relate myself to those who develop Company A's products.*" and "*I feel my preferences are similar to the ones of those who develop Company A's products.*".

Then, participants were asked to rate their level of agreement with the following sentence: "*The way Company A develops new products is completely innovative.*", adapted from Schreier *et al.*'s study (2012).

As Hofstede's original cultural items measured work-related values, the measurement of uncertainty avoidance beliefs was adapted to the purpose of our study. Therefore, participants were asked to report their uncertainty avoidance beliefs on a five-item scale adapted from Yoo and Donthu's study (2002): "*It is important to have instructions spelled out in detail so that I always know what I'm expected to do.*"; "*It is important to closely follow instructions and procedures.*"; "*Rules/regulations are important because they inform me of what is expected of me.*"; "*Standardized work procedures are helpful.*"; and "*Instructions for operations are important.*".

It is important to note that this survey included two measures of uncertainty avoidance beliefs: country of origin and a five-item uncertainty avoidance measure. By asking participants their country of origin, uncertainty avoidance beliefs could be measured across countries. Complementarily, the aforementioned five-item scale was included to measure this cultural

dimension individually, as a subjective self-reporting measure. The country has been used in many-cross cultural studies. However, it is reasonable to collect individual respondents' cultural orientations, as there might be a great heterogeneity among individuals from the same country. If such happens, national culture may not be appropriate to describe uncertainty avoidance beliefs. Also, in the original Hofstede (1980) work, typology of culture was measured at an individual level (Donthu & Yoo, 1998).

3.5 Scale Reliability

To ensure internal reliability and credibility of the study, for scales with more than two items, a scale reliability analysis was conducted (Table 1). For scales with only two items, Pearson product-moment correlation coefficients were analyzed.

Scale Reliability Analysis			
Constructs	Items[a]	Corrected item-total correlation	Cronbach's Alpha
Expertise	I value Company A's expertise	.770	.923
	The people ... have very high expertise	.828	
	The people ... are very competent	.804	
	I am sure … meet my standards for a couch	.809	
	I am sure … to develop a satisfactory couch	.797	
Purchase Intention	I would actively … products of this company	.780	.888
	I would seriously consider … company	.817	
	I would seriously … to other people	.754	
Identification	This company reflects who I am	.805	.913
	This company suits me well	.778	
	I feel a personal connection to this company	.825	
	I can relate to this company	.809	
Uncertainty Avoidance	It is important to … what I'm expected to do	.675	.895
	It is important … instructions and procedures	.827	
	Rules/regulations are … expected of me	.788	
	Standardized work procedures are helpful	.657	
	Instructions for operations are important	.774	

a. Scale: 1 = strongly disagree to 7 = strongly agree

Table 1 - Scale Reliability Analysis

To ensure that the scales presented are reliable, we used a corrected item-total correlation threshold above .70. Furthermore, to guarantee the credibility of the study, for

multiple-item questions, we used a Cronbach's alpha coefficient threshold above .70, since it is a good indication of scale reliability (Nunnally & Bernstein, 1978).

The constructs *expertise*, *purchase intention,* and *identification* reported in Table 1 had a Cronbach's alpha above .70 with corrected item-total correlations above .70. For those scales, three new variables were created using the mean of the items comprised in each of the constructs. Regarding the *uncertainty avoidance* scale, one of its original five items ("*Standardized work procedures are helpful.*") was dropped, due to its low corrected item-total correlation. A new variable was created using the mean of the four items. The Cronbach's alpha of this scale with four items was .89, with every corrected item-total correlation above .70.

In addition, the constructs *quality* and s*imilarity* only had two items. By analyzing the Pearson product-moment correlation coefficient between both items of the construct *quality*, we found a positive correlation [$r(337)= .84$, $p < .001$], thus, both items were collapsed into a new variable, using the average of both items. Likewise, when analyzing this correlation coefficient for the items of the construct *similarity*, the results indicate a positive correlation [$r(337) = .75$, $p < .001$], therefore, a new variable was created using the average of both items as well.

4. Analysis and Results

4.1 Sample

Since one section of this study entailed studying differences across nationalities, participants were recruited from Amazon Mechanical Turk (Mturk), as this is a platform that comprises respondents from several countries. To improve the quality of our data, an attention check item was included in the survey.

After removing the answers that failed the attention check, the survey had a usable sample of 339 individuals, of which 171 were assigned to the company design condition whereas 168 were assigned to the user design one.

Overall, 51% of the participants were female and the majority of the individuals (59%) fell into the 21-34 age bracket (19% 35-44 years old, 9% 45-54 years old, 6% were 21 years old or younger, 5% 55-64 years old, and only 3% of the respondents were 65 years old or older). Regarding the education level, 51% had a bachelor's degree, 32% had a high-school diploma, 15% held a master's degree, and only 1% of the respondents had a PhD. Culturally, 56% of the respondents were American, 24% Brazilian, 10% Italian, 6% Indian, 4% Spanish, and the remaining 6% were spread among 15 other nationalities.

4.2 Manipulation

As participants were randomly assigned to one of two different conditions, it was important to analyze if the respondents perceived the scenario they were allocated to. Therefore, an independent-sample t-test was performed to compare the means of the answers of the manipulation check across both conditions. The results indicated that participants understood the intended differences regarding who was responsible for developing Company A's products, thus validating that participants understood the scenario they were assigned to [$M_{Company} = 1.26$, SD = .50 *versus* $M_{User} = 2.30$, SD = .76; $t(289.60) = -14.93$, $p < .001$].

4.3 Perceptions of Expertise

To firstly test H_1, H_{2a}, and H_{2b}, we conducted a series of independent-sample t-tests (summarized in Table 2).

Independent-sample t-test analysis			
	Company design	User design	
	Mean	Mean	p-value
Purchase Intention	5.39	4.91	< .001
Expertise	5.56	4.84	< .001
Quality	5.56	5.12	< .001

Table 2 - Independent-sample t-test means and p-values:
Company design versus User design conditions

When testing the main effect of the design mode on purchase intentions, the results indicated a significant difference in purchase intentions across scenarios. Consumers' purchase intentions were significantly lower in the user design condition than in the company design condition [$M_{Company}$ = 5.39, SD = 1.02 *versus* M_{User} = 4.91, SD = 1.22; t(323.80) = 3.94, p < .001]. These findings suggest that, on average, respondents prefer products that are exclusively developed by professionals, which supports H_1.

To understand the impact of the design mode on the perceived expertise of those creating new products for company A, an independent-sample t-test indicated a significant difference across both conditions. Perceived expertise was significantly higher in the company design condition than in the user design condition [$M_{Company}$ = 5.56, SD = 1.00 *versus* M_{User} = 4.84, SD = 1.19; t(324.85) = 6.02, p < .001]. Our findings suggest that, when compared to professional designers, users are perceived to possess lower expertise when developing new products.

Similarly, our results show that the impact of the design mode on quality perceptions was significantly different across scenarios. Our results suggest higher perceptions of quality when products are company-designed than when they are user-designed [$M_{Company}$ = 5.56, SD = 1.07 *versus* M_{User} = 5.12, SD = 1.12; t(337) = 3.65, p < .001].

H_{2a} states that the effect of communicating a product as company or user-designed on purchase intentions is influenced by the levels of perceived expertise. Therefore, to understand the specific impacts of this variable, we performed a series of mediation tests using bootstrapping procedures (Preacher & Hayes, 2008). The existence of mediation is confirmed when the following criteria are met: (1) the relationship between the independent variable and the dependent variable is statistically significant; (2) the independent variable has a statistically

significant effect on the mediator; (3) the mediator has a statistically significant effect on the dependent variable; and (4) the direct effect of the independent variable on the dependent loses its significance (full mediation) or becomes weaker (partial mediation) when the mediator is included so that the effect of the dependent variable on the outcome variable is explained through the mediator (Baron & Kenny, 1986).

To formally test H_{2a}, we conducted a mediation model using bootstrapping procedures. The design mode was specified as the independent variable, purchase intention as the dependent variable, and perceived expertise as a mediator of this effect. The results show that the effect of design mode on purchase intention is fully mediated by perceived expertise. The regressions analyses showed a statistically significant negative effect of design mode on perceived expertise (β = -.72, t(337) = -6.03, $p < .001$). Additionally, expertise was a significant predictor of purchase intention (β = .83, t(336) = 25.51, $p < .001$) and the direct effect of design mode on purchase intention was no longer significant in the presence of the mediator (β = .12, t(336) = 1.55, p = .12). The bootstrap analysis showed a significantly partially standardized indirect effect of perceived expertise (bootstrap 95% confidence interval [CI] = [-.81, -.40]), which supports H_{2a} since user-designed products lead to lower purchase intentions due to lower perceptions of expertise[1].

H_{2b} suggests that higher perceptions of expertise lead to higher purchase intentions due to higher quality perceptions. To test this, we conducted a mediation model in which perceived expertise was set as an independent variable, purchase intention as the dependent variable, and perceived quality as a mediator of this effect. The regression analyses showed that quality partially mediates the effect of perceived expertise on purchase intention. We found a statistically significant positive effect of perceived expertise on quality (β = .77, t(337) = 24.95, $p < .001$). Additionally, perceived quality was a significant predictor of purchase intention (β = .38, t(336) = 7.65, $p < .001$) and expertise a predictor of purchase intention (β = .52, t(336) = 10.69, $p < .001$). The bootstrap analysis identified a significantly partially standardized indirect effect of expertise on purchase intention via perceived quality (bootstrap 95% confidence

[1] We also assessed if the user design condition could lead to higher purchase intentions due to an increased identification with the firm, as proposed in Dahl, Fuchs and Schreier's study (2015). However, for the type of products analyzed in this study, we did not find any evidence of such effect. Indeed, the difference in terms of identification with the firm across scenarios was not significant (p = .44), and when testing for mediation, the bootstrap analysis did not identify a significantly partially standardized indirect effect of perceived identification (bootstrap 95% confidence interval [CI] = [-.24, .10]).

interval [CI] = [.21, .39]. Therefore, these results support H_{2b}, since perceived expertise determines purchase intentions due to perceived quality.

4.4 The Impact of Uncertainty Avoidance Beliefs

To understand the extent to which uncertainty avoidance impacts the effect of design mode on purchase intention, two measures were used: one with the country of origin of the respondents and, alternatively, one with uncertainty avoidance beliefs measured individually.

4.4.1 Country as a Proxy for Uncertainty Avoidance Beliefs

We started by analyzing the impact of uncertainty avoidance beliefs at the country level. Since we had the country of origin of participants, we used an online source (https://geerthofstede.com/research-and-vsm/) that provides uncertainty avoidance ratings across countries, updated in 2015[2].

H_3 suggests that the effect of design mode on purchase intention is moderated by uncertainty avoidance since consumers with such beliefs tend to avoid situations that deviate from the status quo. To be able to test this, we first conducted an independent-sample t-test to assess if the user design scenario was perceived as a more unusual way of developing new products. The results showed, indeed, that a company that develops products solely based on user-generated ideas is perceived as having a much more novel way of NPD than a company only employing professional designers [$M_{Company}$ = 4.80, SD = 1.36 *versus* M_{User} = 5.31, SD = 1.25; t(337) = -3.58 p < .001].

Having established that user design is perceived as a more novel innovation model we then tested if the effect of design mode on purchase intentions would be conditional upon uncertainty avoidance beliefs. We conducted a multiple regression, in which as independent variables we specified the design mode, uncertainty avoidance beliefs (derived from the country of origin of the respondents), and the interaction terms between these two while purchase intention was set as the dependent variable. The results showed no significant main effects of design mode (β = -.58, t(331) = -1.21, p = .23) nor uncertainty avoidance beliefs (β = .00, t(331)

[2] The analyses using country as a proxy for uncertainty avoidance beliefs were conducted using only 335 observations instead of 339 (number of the respondents), as four of the respondents were from countries that had no correspondence in the online source used that provides the uncertainty avoidance index by country.

= .88, p = .38) on purchase intention, and no significant interaction term between them (β = .00, t(331) = .22, p = .82), thus not providing support for H_3.

In addition, H_4 suggests that the effects of perceived expertise on purchase intentions vary on the basis of uncertainty avoidance. Therefore, a moderated mediation model (Model 7 of the Process Macro for SPSS) using bootstrapping procedures (Hayes, 2013) was conducted to analyze whether the indirect effect of design mode (independent variable) on purchase intention (dependent variable) through perceived expertise was conditional on different levels of uncertainty avoidance beliefs (moderator). The moderated mediation index was not significant for perceived expertise (bootstrap 95% CI = [-.01, .02]), suggesting that the effect of design mode on purchase intention through perceived expertise does not vary on the basis of uncertainty avoidance beliefs, thus not providing support for H_4.

It may be the case that the results of these two analyses happen due to heterogeneity regarding uncertainty avoidance among individuals of one country. Therefore, we then analyzed if these results would be different with individual uncertainty avoidance beliefs.

4.4.2 Uncertainty Avoidance Beliefs as Individual Differences

Since one could argue that participants across different conditions (user or company design) had different uncertainty avoidance beliefs we performed an independent-sample t-test to confirm the sample was not imbalanced. The results showed no significant differences of uncertainty avoidance beliefs between conditions [$M_{Company}$ = 5.61, SD = 1.11 *versus* M_{User} = 5.68, SD = 1.01; t(337) = -.67, p = .50], which confirms that uncertainty avoidance individual beliefs do not vary across scenario.

After assessing these differences, the same two analyses were performed, but this time using the variable that captures the individual differences in uncertainty avoidance beliefs. The results were slightly different compared to the ones using the country of origin as a proxy for uncertainty avoidance.

Having already established that user design was perceived as a more novel ideation approach we were able to test H_3. We conducted a multiple regression, in which design mode, uncertainty avoidance individual beliefs, and the interaction term between these two were specified as independent variables, while purchase intention was set as the dependent variable. The results showed no significant main effect of design mode on purchase intention (β = .76,

t(335) = 1.23, p = .22), a significant main effect of uncertainty avoidance individual beliefs on purchase intention (β = .49, t(335) = 6.75, p < .001) and, importantly, a significant interaction term between design mode and uncertainty avoidance individual beliefs (β = -.22, t(335) = -2.09, p = .04), thus providing support for H_3. To examine the simple effects of design mode on purchase intentions across different levels of uncertainty avoidance individual beliefs, we applied the Johnson-Neyman procedure to identify regions of significance (Figure 1).

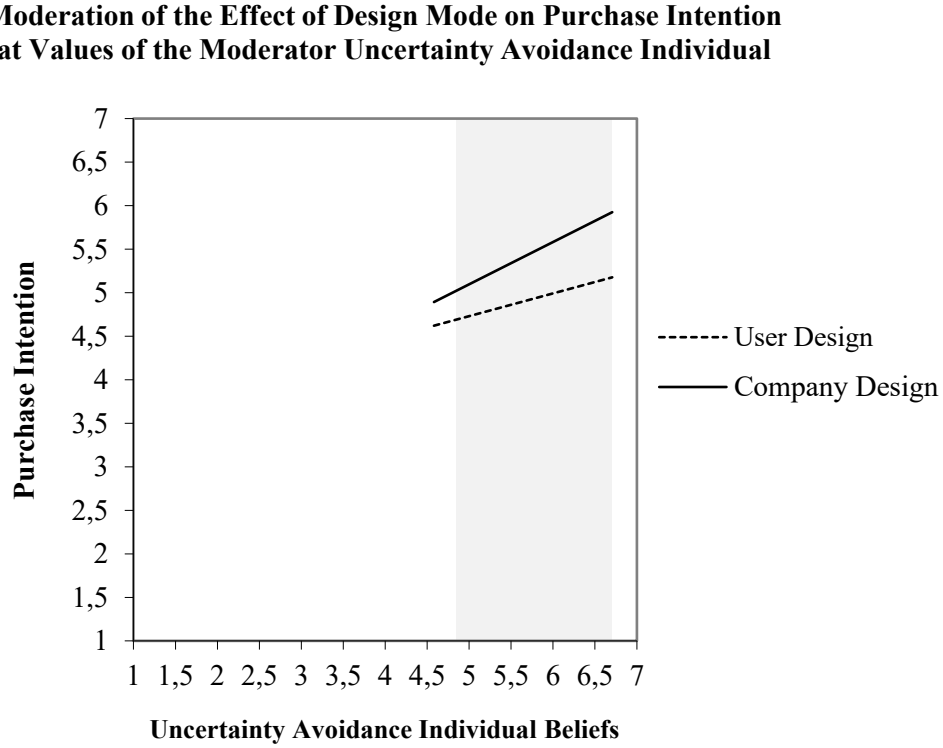

Figure 1 – Effect of Design mode on Purchase Intention at Values of Uncertainty Avoidance Beliefs (*Note*: Shaded area indicates the region of significance (at values above 4.70))

The results suggest that at values above 4.70 on the seven-point uncertainty avoidance scale, respondents prefer a company-designed product (in contrast with the user-designed one) and that this relative preference is stronger for higher uncertainty-avoiding respondents. At low levels of uncertainty avoidance (below 4.70), we found no significant differences in the preference for the user or company-designed product.

These results are also confirmed when analyzing the conditional effects of design mode on purchase intention at different levels of uncertainty avoidance individual beliefs (Figure 2).

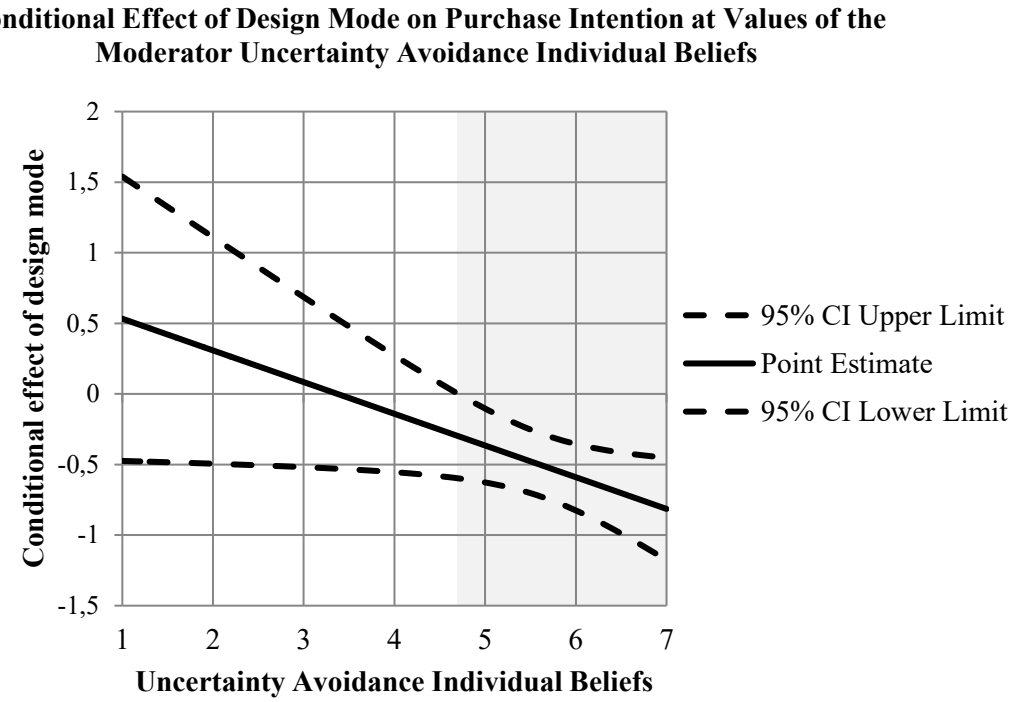

Figure 2 – Conditional Effect of Design Mode on Purchase Intention at Values of Uncertainty Avoidance Beliefs
(*Note*: Shaded area indicates the region of significance (at values above 4.70))

The results indicate that for values above 4.70 on the uncertainty avoidance scale, the higher these beliefs, the more accentuated the negative effects of having a user-designed product.

To formally test H_4, we ran process Model 7 of the Process Macro for SPSS with individual measures of uncertainty avoidance as a moderator. The results indicate a moderated mediation index that was not significant for perceived expertise (bootstrap 95% CI = [-.37, .03], thus not supporting $H_{4.}$ Our findings indicate that the indirect effect of design mode on purchase intention through perceived expertise does not vary across different levels of uncertainty avoidance individual beliefs.

4.4.3 Uncertainty Avoidance Individual Beliefs: Further Analyses

We further analyzed the uncertainty avoidance beliefs in our sample to gather a greater understanding of the moderation effect. We ran a series of descriptive statistics summarized in Tables 3 and 4. For analyses of the individual items of this scale, please see Appendix III.

Uncertainty Avoidance Individual Beliefs Scale	
Statistic	Value
N	339
Mean	5.64
Median	5.75
Std. Deviation	1.06
Skewness	-1.09

Table 3 – Descriptive Statistics of the Uncertainty Avoidance Individual Beliefs Scale

Uncertainty Avoidance Individual Beliefs Scale Percentiles	
Percentiles	Scale Point
10	4.25
20	5.00
30	5.25
40	5.50
50	5.75
60	6.00
70	6.25
80	6.50
90	7.00

Table 4 – Percentiles of Answers for the Uncertainty Avoidance Individual Beliefs Scale

The data shows that the distribution of this scale is negatively skewed, as most of the respondents report high scores on the scale. The scale's mean is 5.64 with only ten percent of the respondents with a level of uncertainty avoidance below 4.25. This is a strong indication that most of the respondents have very high uncertainty avoidance beliefs. This can be an explanation for the limited support found regarding the uncertainty avoidance hypotheses. Since it was not possible to collect a balanced sample in terms of uncertainty avoidance beliefs, the survey resulted in a very homogeneous sample towards uncertainty avoidance and it was not possible to have a large variance for this scale. In this study, it was not possible to assess if

the negative effects of perceived expertise were higher for high uncertainty-avoiding consumers. As a speculation, it could even occur that beyond a certain level of uncertainty avoidance beliefs, the belief in experts is so determinant, that it is not possible to assess if this effect is amplified, as these cultural beliefs increase.

4.5 The Impact of Perceived Similarity

H_5 suggests that the effect of design mode on purchase intention is moderated by the perceived similarity of observing consumers towards those responsible for conceiving new products. To test this hypothesis, we conducted a multiple regression with design mode, perceived similarity, and their interaction as independent variables and purchase intention as the dependent variable. The results showed a significant main effect of design mode on purchase intention ($\beta = -1.57$, $t(335) = -4.59$, $p < .001$), a significant main effect of perceived similarity on purchase intention ($\beta = .39$, $t(335) = 7.70$, $p < .001$) and, importantly, a significant interaction term between design mode and perceived similarity ($\beta = .23$, $t(335) = 3.28$, $p = .00$), thus providing support for H_5. To examine the simple effects of design mode on purchase intentions across different levels of perceived similarity, we applied the Johnson-Neyman procedure to identify regions of significance (Figure 3).

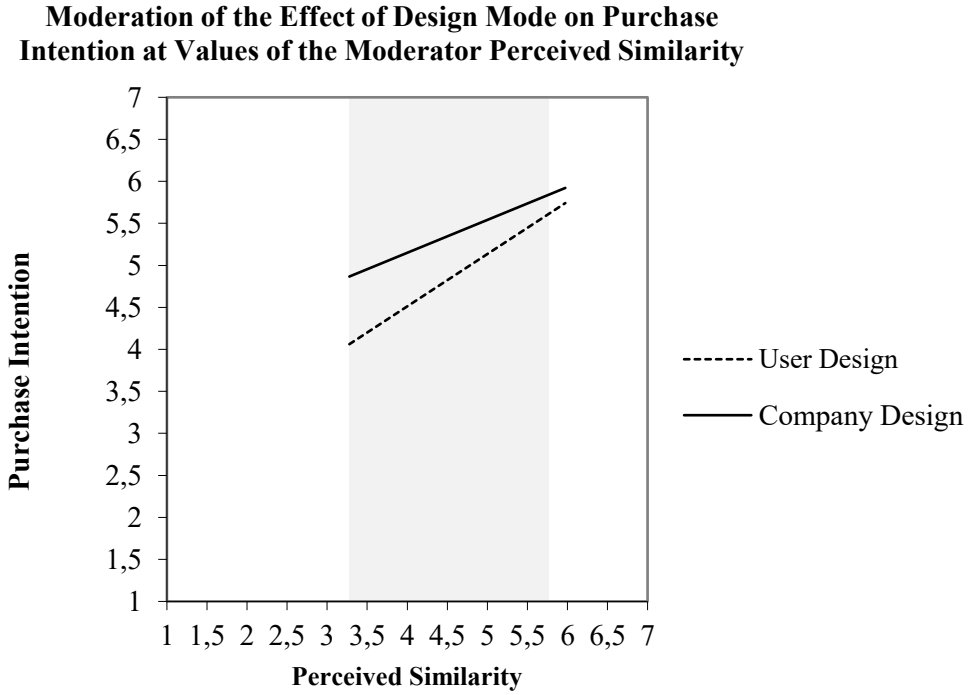

Figure 3 – Effect of Design Mode on Purchase Intention at Values of Perceived Similarity
(*Note*: Shaded area indicates the region of significance (at values below 5.71))

The results suggest that respondents have a preference for company-designed products (in contrast with the user-designed ones) at values below 5.71 and that this relative preference is weaker for individuals that perceived the creators of the product as more similar to themselves. At high values of perceived similarity (above 5.71), we found no significant differences in the preference for the user or company-designed product.

These results can also be confirmed when analyzing the conditional effects of design mode on purchase intention at different levels of perceived similarity (Figure 4).

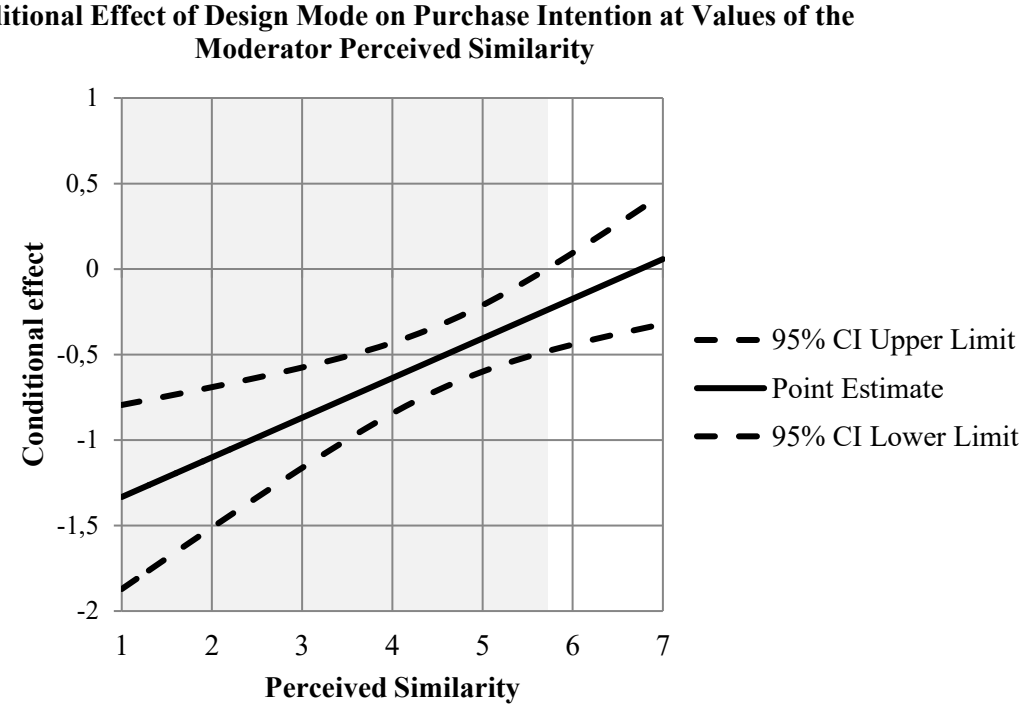

Figure 4 – Conditional Effect of Design Mode on Purchase Intention at Values of Perceived Similarity (*Note*: Shaded area indicates the region of significance (at values below 5.71))

The results indicate that for values below 5.71 on the perceived similarity scale, the higher these perceptions, the more attenuated the negative effects of having a user-designed product.

H_6 suggests that the effects of design mode on purchase intention due to perceptions of expertise vary upon perceptions of similarity between observing consumers and the creators of the product. Therefore, to test this, a moderated mediation model (Model 7 of the Process Macro for SPSS) using bootstrapping procedures (Hayes, 2013) was conducted to analyze whether the

indirect effect of design mode (independent variable) on purchase intention (dependent variable) through perceived expertise (mediator) was conditional on different levels of perceived similarity (moderator). The results indicate a statistically significant moderated mediation index (bootstrap 95% CI = [.00, .32]) and can be seen in Table 5.

Moderated Mediation Analysis

A: Indirect Effects of Design Mode and Perceived Similarity

	Dependent Variables					
	Perceived Expertise			Purchase Intention		
	b	t(335)	p-value	b	t(336)	p-value
Regression 1						
Design Mode	-1.64	-4.47	<.001			
Perceived Similarity	.31	5.58	<.001			
Interaction Term[a]	.20	2.58	.01			
Regression 2						
Design Mode				.12	1.55	.12
Perceived Expertise				.83	25.51	<.001

B: Conditional Indirect Effects of Design Mode Through Perceived Expertise

	Purchase Intention	Bootstrap 95% CI
At 1 standard deviation below the perceived similarity mean	-.83	(-1.14,-.51)
At the perceived similarity mean	-.61	(-.78,-.44)
At 1 standard deviation above the perceived similarity mean	-.38	(-.61,-.16)

a. Interaction term between Design Mode and Perceived Similarity

Table 5 – Moderated Mediation Analysis

Consistent with H_6, higher levels of perceived similarity mitigated the negative effects of disclosing a product as user-designed, as perceptions of expertise mediated purchase intentions in favor of the company-designed couch, but less so for those who felt more similar to its creators, as also revealed in Figure 5.

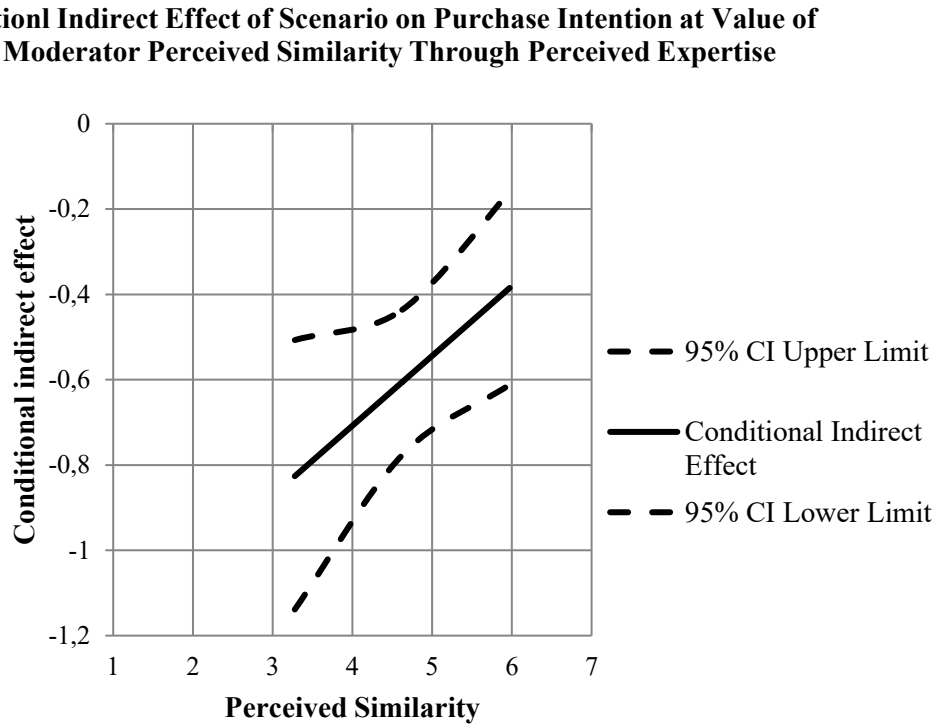

Figure 5 – Conditional Indirect Effect of Design Mode on Purchase Intention Through Perceived Expertise

5. Discussion and Conclusions

The purpose of this research is to examine observing consumers' reactions to products that are labeled as user-designed (*versus* company-designed) by understanding the role of perceptions of expertise in the design of new products that require functional and technical knowledge (for example regarding components or materials). To fully understand this effect, we explored two boundary conditions: uncertainty avoidance beliefs and perceptions of similarity towards those designing the new product.

Our findings provide several insights regarding the preference for a specific design mode.

First, our results suggest a negative effect of labeling a product as user-designed when functional and technical attributes of the product such as adequacy of materials, ergonomics, or components are relevant. As hypothesized, this effect can be explained by lower levels of perceived expertise associated with user-designed products which contrast with the higher levels of expertise that observing consumers perceive in products developed exclusively by professionals. Hence, consumers display higher purchase intentions towards company-designed products. We also find that perceived expertise determines purchase intentions due to quality perceptions. As such, the findings support the idea that for products ideated around functional and technical details, signaling them as completely user-designed leads to a perceived lack of expertise, which decreases purchase intentions (because consumers perceive lower quality). In conclusion, this study supports the view that for user ideation for products requiring functional and technical attributes, perceptions of expertise need to be assured so that user-designed products can be a valid choice for observing consumers.

Second, one of the purposes of this study is to explore the role of culture on the preference for a user or company-designed product, particularly observing consumers' uncertainty avoidance beliefs. We demonstrate that uncertainty avoidance individual beliefs have an impact on the preference for a specific design mode, motivated by the fact that at values above 4.70 of this scale, the negative effect of labeling a product as user-designed is amplified for higher uncertainty-avoiding individuals. The analysis suggests that, for products that are ideated around its technical and functional details, consumers prefer company design processes and that this preference is stronger among higher uncertainty-avoiding individuals. Moreover, it was expected that the mediating effect of perceived expertise on the preference for company-

designed products would be more severe for uncertainty-avoiding individuals, as these individuals have a greater belief in experts than the uncertainty-accepting ones. However, this study is not able to support this hypothesis, as we did not find any evidence for such effect. This could be due to the high uncertainty-avoiding sample of our study. When analyzing the moderating role of culture by measuring uncertainty avoidance using the country of origin of each respondent as a proxy, this study is not able to shed light on the impact of this cultural dimension on the preference for a specific design mode. As mentioned, there might be a great heterogeneity among individuals of each country regarding uncertainty avoidance beliefs, so it could be the case that the respondents of this study showed different cultural beliefs than the average individual of the country they belong to.

Finally, our results reveal that as observing consumers feel more similar to the creators of a new product, the negative impact of labeling a product as user-designed is attenuated (for values above 5.71 on the perceived similarity scale, we found no significant differences in the preference for the company or user-designed product). Furthermore, we demonstrate that perceived expertise mediate purchase intentions in favor of company-designed products for all the respondents, but less so for the respondents who felt more similar to the developers of a new product. Therefore, an increased perceived similarity mitigates the skepticism of observing consumers due to the lack of expertise of users.

6. Implications

6.1 Theoretical Implications

This study provides three important contributions to the emerging stream of research on the effects of engaging consumers on NPD.

Our study demonstrates that when communicating that a product is user-designed, observing consumers become skeptical and this skepticism is due to a diminished perceived expertise of users when compared to firms' professionals. This happens in products that require knowledge of technical and functional attributes since users are perceived to have lower levels of competency to develop a satisfactory product. Thereby, this study reinforces the findings of Thompson and Malaviya's study (2013) that suggest a negative effect of a user design label that is consistent with a pattern of greater skepticism towards the ability of users as the creators.

Additionally, our study confirms the caveat introduced in Nishikawa *et al.*'s study (2013) that stated that if the ideation of the furniture items analyzed in that study were based on its technical details (such as components or materials) professionals would most likely outperform users. Indeed, for a product that requires knowledge about components and materials to be developed, professionals outperform users. This also adds to the work of Poetz and Schreier (2012) that demonstrate that professionals surpass users in technical solution ideation as opposed to usage solution ideation in which users might be better suited to come up with novel solutions to overcome their unmet needs.

This study further explores the effects of cultural dimensions on the perceptions of user-designed products. The effect of power-distance beliefs had been shown to moderate brand and product preference for user design processes (Paharia & Swaminathan, 2019) and this study expands research on this field by uncovering another cultural dimension (uncertainty avoidance beliefs) as a new moderator of the preferences for new products labeled as internally or externally designed. While the impact of uncertainty avoidance beliefs had been priorly studied in consumer behavioral contexts, this study explores its role in user design perceptions, thereby providing new insights about boundary conditions for perceptions of user design philosophies. This study adds to the emerging stream of research in this field by demonstrating that individual uncertainty avoidance beliefs determine the level of preference for company design products.

Finally, this study further extends prior research on the role of similarity perceptions on the acceptance of user-designed products (Dahl et al., 2015; Thompson & Malaviya, 2013). Similar to what has been shown in other studies, the present study reveals that the negative effect of disclosing users as the developers of this type of products is mitigated (albeit not reversed) when observing consumers perceive the creator of the product to be similar to them. Furthermore, it demonstrates that this perceived similarity reduces the skepticism of user-designed products that arise due to the perceived lack of expertise of users.

6.2 Managerial Implications

By investigating consumers' perceptions of expertise in user design processes *vis-à-vis* traditional NPD, this study provides important implications for managers in domains such as consumer behavior and marketing that constitute two pillars of management.

There is a growing tendency for companies to actively involve users in NPD. These processes have been proven to offer benefits for firms, such as being able to rely on a wider source of creativity; reducing investment costs by decreasing the need to employ as many professional designers as in a traditional innovation process; or increasing brand loyalty, allowing for a greater brand involvement among consumers, while mitigating the discrepancy in power that is usually observed between firms and consumers.

However, advertising this kind of practice to the broader market can, sometimes, produce different results. In case managers want to employ such initiatives, this study provides insightful results that can guide how to put them in practice.

Firstly, it suggests that the specific perceptions of observing consumers regarding expertise and quality should be taken into consideration when deciding to employ and communicate user design approaches. For a product like a couch (in which technical details as ergonomics, materials, and components play a significant role) the results indicate that publicizing it as being user-designed undermines the purchase intention of consumers. Although for less complex products such as cereal mixes or t-shirts, stressing users' input might be less relevant, for products that require technical and functional knowledge, it might be more impactful, since observing consumers perceive participating users as having less expertise to develop a high-end product.

Therefore, managers need to either adapt the user-label specifically by assuring quality standards or, on the other hand, carefully understand how to minimize the negative effects of employing a user design process and the skepticism found among observing consumers regarding the lack of expertise of users.

To this end, the levels of similarity that observing consumers perceive between them and the creators of a given product could play an important role. We found that the skepticism found among observing consumers due to the lack of expertise of users is attenuated as the levels of perceived similarity increase. Hence, for a product in which technical and functional details are relevant, if managers want to involve consumers in its development, they should be advised to elicit similarities between their user-community and the broader market that constitutes the target of the new product. Emphasizing characteristics of the users involved might enhance the levels of perceived similarity among observing consumers. A company wishing to launch a new product targeted for a youth audience could use a user design process disclosing that a teenager user-designer was in charge of its development. By doing so, the levels of similarity between the target audience and the creator could be enhanced, and thus, the negative effects of employing such practice and the skepticism towards the ability of the creators would be reduced.

Our results regarding the moderating role of uncertainty avoidance suggest that managers should take these beliefs into account for consumer segmentation, as different levels of this trait have different impacts on the preference for user-designed products. Thus, our findings provide evidence for managers to avoid user design approaches (or at least to minimize the visibility of users in NPD) when targeting high uncertainty-avoiding consumers. One way to possibly minimize the negative effects that we found in this type of innovation practice could be to target uncertainty-accepting consumers (e.g., young consumers, early adopters).

When employing user design practices targeting uncertainty-accepting consumers is not feasible (due to the lack of variables to consumer segmentation) or when there is a high probability of facing uncertainty-avoiding groups of consumers, managers should emphasize characteristics of user-designers that might raise similarity feelings on observing consumers (e.g. same jobs, hobbies or age bracket).

7. Limitations and Future Research

Although the present study offers substantial implications, five main limitations might bound its findings and stimulate future research.

Firstly, when looking at the product and its attributes, it is understandable that the choice of the product used as the *stimuli* for the study might have consequences in the results. As mentioned, several underlying reasons made us opt for a couch as a centerpiece for the survey. One the one hand, couches are neither a very simple product to design (such as a t-shirt) nor a very complex one (such as a robot), and on the other hand, it requires consumers to look for several dimensions to evaluate it (ergonomics, materials, etc.) which would lead them to assess the expertise of those creating it. Although we have indications that results would hold if a different product type was chosen (e.g., Schreier et al., 2012), we acknowledge that our study would benefit from learning if the results would hold for different levels of product complexity or if the product chosen was centered on a usage base rather than ideated around technical and functional details.

Secondly, although the literature points to perceptions of expertise as one of the most relevant factors underlying consumers' perceptions to explain the preference for a specific design mode, the set of explanatory variables might be enlarged with the inclusion of variables such as perceptions of customer empowerment and innovation ability. It could even occur that the inclusion of such omitted mediators could change the effects found in this research.

Thirdly, it can be argued that despite having an adequate configuration, the survey was not conducted in the most appropriate time. This survey was intended to examine consumers' perceptions regarding a specific NPD model, which should be done under neutral and ideal conditions. However, this study was conducted precisely amidst the COVID-19 pandemic and, therefore, the survey might not have been completed at the most recommendable time. The survey was answered by people from different parts of the world, and the pandemic's rapid spreading across the globe might have impacted emotional and behavioral reactions. COVID-19 has led to high levels of fear, concern, anxiety, stress, self-harm, and depression among the population (World Health Organization, 2020). This context might have prevented an ideal collection of responses, which, for example, can be seen in the very high levels of uncertainty avoidance beliefs that respondents displayed. One consequence of this context could be the fact that as levels of fear and concern increase, consumers might feel less prone to show preferences

for a product that is developed in an unconventional way (user-designed). Thus, they might have opted for a choice that feels safer (i.e. company-designed since it does not deviate substantially from what consumers are used to), which might compromise the generalizability of the results of this study.

Fourthly, concerning one of the moderators identified when analyzing the literature, this study was not able to capture a balanced sample in terms of uncertainty avoidance, as 90 percent of respondents recorded a score of 4.25 or above (on a scale from 1 to 7), which may have undermined the results regarding this factor. Therefore, as a *stimulus* for future research, an adjustment to the present study could be, for example, using quota sampling to recruit large numbers of participants in both extreme ends of this scale. As a suggestion, one adjustment could be prescreening for respondents' uncertainty avoidance beliefs in an initial survey and only allow participants to answer the main study if their responses indicated either very low or high uncertainty avoidance beliefs. This would allow more variance in the uncertainty avoidance scale and it could even be that the negative effects found for user-designed products would be reversed among the very low uncertainty-avoiding respondents.

Lastly, the results suggest that the negative effect of labeling a product as user-designed given the lower levels of perceived expertise is mitigated as the levels of similarity between observing consumers and creators increase. It could be that reaching very high levels of similarity could reverse the effect found for this innovation mode. Thereby, a call for further research would be to replicate this study by emphasizing characteristics of users. As an example, one suggestion would be to study this effect among young students consumers by comparing a control group (company design) with two treatment groups: (1) one group disclosing solely that the new products were designed by common users and (2) another one communicating that a community of students was responsible to develop the new products. It could be that this moderator would even reverse the effect found in the present study, i.e., it could happen that these consumers would display higher purchase intentions for products designed by users that shared similar characteristics with the targeted audience.

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9. Appendices

9.1 Appendix I: Research Survey

As mentioned, participants were randomly and evenly assigned to one of the two conditions (user-designed products or company-designed products). Therefore, each participant was presented with either Block “User Design” (Q6-Q9) or block Company design (Q9-Q11), as shown below.

Start of Block: Introduction

Q1 **New Product Evaluation Study**

Thank you for taking part in today's study.

This study is part of a research project for an established company. It is about people's evaluations of new product and it takes approximately 5 minutes to complete.
There are no right or wrong answers.

Confidentiality

All data gathered from participants will be kept confidential and will only be reported on the aggregate format. All questions will be concealed and no one other than the primary researchers will have access to the information.

Thank you again for participating!

End of Block: Introduction

Start of Block: Presentation

Q2 The first section is about Company A. You will learn about how the company brings new products to the market. Then, we will ask for your opinion about Company A.

Page Break

Q3 **Company A is a company specialized in designing and selling furniture**. Company A often brings new products to the market.

As with many companies nowadays, **Company A has an online community of enthusiastic consumers**.

End of Block: Presentation

Start of Block: Presentation 2

Q4 **Please imagine that you want to buy a new couch.**

After searching on the web, **you find several couches that are from company A.**

End of Block: Presentation 2

Start of Block: User Design

Q6 Now you will learn how Company A develops its new products. **Please read carefully the information in the next section:**

Page Break

Q7 The design, features, and functionalities of the new products of Company A are **always exclusively designed by consumers of its online community**.

Ordinary consumers from Company A's online community network are the ones who come up with the new product ideas/ designs to be marketed to the general public.

Q8 Timing

End of Block: User Design

Start of Block: Company Design

Q9 Now you will learn how Company A develops its new products. Please read carefully the information in the next section:

Page Break

Q10 The design, features, and functionalities of the new products of Company A are **always exclusively designed by its professionals (designers and engineers employed by company A)**.

Company-internal designers and engineers are the ones who come up with new product ideas/ designs to be marketed to the general public.

Q11 Timing

End of Block: Company Design

Start of Block: Manipulation Check

Q12 Who do you think is responsible for creating Company A's products?

(Select one of the options below)

- ○ Company A's professionals (1)
- ○ Company A's professionals and consumers of Company A's online community (2)
- ○ Consumers of Company A's online community (3)

Page Break

End of Block: Manipulation Check

Start of Block: Expertise

Q13 In this section, we would like to hear your opinion about **your perceptions regarding the expertise of the people who develop Company A's products.** Please rate your agreement with the following sentences.

	Strongly disagree (15)	Disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Agree (20)	Strongly agree (21)
"I value Company A's expertise." (1)	○	○	○	○	○	○	○
"The people who develop Company A's products have very high expertise." (2)	○	○	○	○	○	○	○
"The people who develop Company A's products are very competent." (3)	○	○	○	○	○	○	○
"I am sure that the people who develop Company A's products are able to meet my standards for a couch." (4)	○	○	○	○	○	○	○
"I am sure that the people who develop Company A's products are able to develop a satisfactory couch." (5)	○	○	○	○	○	○	○

End of Block: Expertise

Start of Block: Quality

Q14

In this section, we are going to ask you some questions about your **perceptions regarding the quality of Company A's products.**

Please rate your agreement with the following sentences.

	Strongly disagree (8)	Disagree (9)	Somewhat disagree (10)	Neither agree nor disagree (11)	Somewhat agree (12)	Agree (13)	Strongly agree (14)
"Company A's products are high in quality." (1)	○	○	○	○	○	○	○
"Company A's products are reliable." (2)	○	○	○	○	○	○	○

End of Block: Quality

Start of Block: Purchase Intention

Q15

Please imagine that you would like to buy a product from this category (e.g. a new couch).

Please rate your agreement with the following sentences.

	Strongly disagree (18)	Disagree (19)	Somewhat disagree (20)	Neither agree nor disagree (21)	Somewhat agree (22)	Agree (23)	Strongly agree (24)
"I would actively search for products of this company." (1)	○	○	○	○	○	○	○
"I would seriously consider purchasing products from this company." (2)	○	○	○	○	○	○	○
"I would seriously recommend Company A to other people." (3)	○	○	○	○	○	○	○

End of Block: Purchase Intention

Start of Block: Identification

Q16
In the next sections, we are going to ask you some questions to understand how much you relate to Company A and to those who develop its products.

Please rate your agreement with the following sentences.

	Strongly disagree (8)	Disagree (9)	Somewhat disagree (10)	Neither agree nor disagree (11)	Somewhat agree (12)	Agree (13)	Strongly agree (14)
“This company reflects who I am.” (1)	○	○	○	○	○	○	○
"This company suits me well.” (2)	○	○	○	○	○	○	○
“I feel a personal connection to this company.” (3)	○	○	○	○	○	○	○
“I can relate to this company.” (4)	○	○	○	○	○	○	○

Page Break

Q17 Please rate your agreement with the following sentences.

	Strongly disagree (15)	Disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Agree (20)	Strongly agree (21)
"I feel I am similar to those who develop Company A's products." (1)	○	○	○	○	○	○	○
"I feel my preferences are similar to the ones of those who develop Company A's products." (2)	○	○	○	○	○	○	○

Page Break

End of Block: Identification

Start of Block: Attention/ Salience

Q18 Please rate your agreement with the following sentence.

	Strongly disagree (15)	Disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Agree (20)	Strongly agree (21)
"The way Company A develops new products is completely innovative." (1)	○	○	○	○	○	○	○

End of Block: Attention/ Salience

Start of Block: Uncertainty Avoidance

Q20 **Now, we would like to know a little bit more about you**. Please answer the questions in the next section.

Page Break

Q21 Please rate your agreement with the following sentences.

	Strongly disagree (15)	Disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Agree (20)	Strongly agree (21)
"It is important to have instructions spelled out in detail so that I always know what I'm expected to do." (1)	○	○	○	○	○	○	○
"It is important to closely follow instructions and procedures." (2)	○	○	○	○	○	○	○
"Rules/ regulations are important because they inform me of what is expected of me." (3)	○	○	○	○	○	○	○
Please select "Strongly disagree" in this item. (4)	○	○	○	○	○	○	○
"Standardized work procedures are helpful." (5)	○	○	○	○	○	○	○
"Instructions for operations are important." (6)	○	○	○	○	○	○	○

End of Block: Uncertainty Avoidance

Start of Block: Demographics

Q22 Gender

- Male (1)
- Female (2)

Q23 Age

- Under 21 (1)
- 21-34 (2)
- 35-44 (3)
- 45-54 (4)
- 55-64 (5)
- 65+ (6)

Q24 Education

▼ Less than high school (1) ... Doctorate (5)

Q25 Country of origin

▼ Afghanistan (1) ... Zimbabwe (1357)

End of Block: Demographics

Start of Block: Block 13

9.2 Appendix II: Sample Distribution

Scenario		
	Frequency	Percentage
Company design	171	50.44%
User design	168	49.56%
Total	339	100.00%

Table 6 – Study Sample: Scenario Distribution

Gender		
	Frequency	Percentage
Male	165	48.67%
Female	174	51.33%
Total	339	100,00%

Table 7 – Study Sample: Gender Distribution

Age		
	Frequency	Percentage
Under 21	21	6.19%
21-34	200	59.00%
35-44	63	18.58%
45-54	29	8.55%
55-64	16	4.72%
65+	10	2.95%
Total	339	100.00%

Table 8 – Study Sample: Age Distribution

Level of Education		
	Frequency	Percentage
Less than high school	2	0.59%
High school diploma	107	31.56%
Bachelor's degree	175	51.62%
Master's degree	50	14.75%
Doctorate	5	1.47%
Total	339	100.00%

Table 9 – Study Sample: Level of Education Distribution

Country of Origin		
	Frequency	Percentage
United States of America	188	55.46%
Brazil	82	24.19%
Italy	35	10.32%
Spain	13	3.83%
United Kingdom	1	0.29%
Mexico	1	0.29%
Japan	1	0.29%
Sweden	1	0.29%
France	4	1.18%
Venezuela	1	0.29%
India	2	0.59%
Albania	1	0.29%
Philippines	2	0.59%
Germany	1	0.29%
Peru	1	0.29%
Paraguay	1	0.29%
Bangladesh	2	0.59%
Republic of Moldova	1	0.29%
Georgia	1	0.29%
Total	339	100.00%

Table 10 – Study Sample: Country of Origin Distribution

9.3 Appendix III: Uncertainty Avoidance Individual Items

Uncertainty Avoidance Item 1			
Scale point	Frequency	Percentage	Cumulative Percentage
1	3	0.90%	0.90%
2	7	2.10%	2.90%
3	14	4.10%	7.10%
4	29	8.60%	15.60%
5	82	24.20%	39.80%
6	120	35.40%	75.20%
7	84	24.80%	100.00%
Total	339	100.00%	

Table 11 – Uncertainty Avoidance Item 1 Sample Distribution

Uncertainty Avoidance Item 2			
Scale point	Frequency	Percentage	Cumulative Percentage
1	3	0.90%	0.90%
2	4	1.20%	2.10%
3	12	3.50%	5.60%
4	35	10.30%	15.90%
5	78	23.00%	38.90%
6	114	33.60%	72.60%
7	93	27.40%	100.00%
Total	339	100.00%	

Table 12 – Uncertainty Avoidance Item 2 Sample Distribution

Uncertainty Avoidance Item 3			
Scale Point	Frequency	Percentage	Cumulative Percentage
1	7	2.10%	2.10%
2	3	0.90%	2.90%
3	12	3.50%	6.50%
4	38	11.20%	17.70%
5	77	22.70%	40.40%
6	124	36.60%	77.00%
7	78	23.00%	100.00%
Total	339	100.00%	

Table 13 – Uncertainty Avoidance Item 3 Sample Distribution

Uncertainty Avoidance Item 5			
Scale Point	Frequency	Percentage	Cumulative Percentage
1	3	0.90%	0.90%
2	2	0.60%	1.50%
3	4	1.20%	2.70%
4	28	8.30%	10.90%
5	71	20.90%	31.90%
6	131	38.60%	70.50%
7	100	29.50%	100.00%
Total	339	100.00%	

Table 14 – Uncertainty Avoidance Item 5 Sample Distribution

9.4 Appendix IV: Correlation Matrix

Correlation Matrix[a]							
		Expertise	Quality	Purchase Intention	Uncertainty Avoidance Individual	Identification	Similarity
Expertise	Pearson Correlation	1	.805**	.820**	.399**	.593**	.473**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	339	339	339	339	339	339
Quality	Pearson Correlation	.805**	1	.791**	.417**	.576**	.492**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	339	339	339	339	339	339
Purchase Intention	Pearson Correlation	.820**	.791**	1	.348**	.714**	.598**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	339	339	339	339	339	339
Uncertainty Avoidance Individual	Pearson Correlation	.399**	.417**	.348**	1	.182**	.189**
	Sig. (2-tailed)	.000	.000	.000		.001	.000
	N	339	339	339	339	339	339
Identification	Pearson Correlation	.593**	.576**	.714**	.182**	1	.760**
	Sig. (2-tailed)	.000	.000	.000	0,001		.000
	N	339	339	339	339	339	339
Similarity	Pearson Correlation	.473**	.492**	.598**	.189**	.760**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	339	339	339	339	339	339

a. **. Correlation is significant at the 0.01 level (2-tailed).

Table 15 - Correlation Matrix