The value of a user-design strategy:

The role of giving background information about the user-community and consumer characteristics.

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Abstract

Title: The value of a user-design strategy: The role of giving background information about the user-community and consumer characteristics

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A growing number of companies are starting to empower their user community in order to develop new products which can be afterwards labeled as user-design to the whole market. Social Identity theory explains why observing consumers prefer to buy products from firms using those type of strategies. This experimental study aims to understand the influence of communicating that a firm relies on a community of users for developing new products. Moreover this study looks at a) the impact of giving background information about the user-community b) what type of consumers, depending on their type of chronically self-construal, this strategy is most suited to.

Firstly results show that user-design strategy is preferred to the professional-design one, regardless how the community is described. Observing consumers report higher levels of identification with firms employing a user-design strategy which latter is translated in preference for user-design products.

Secondly, results indicate that when the user-community is perceived as similar by the observing consumer, feelings of identification towards the firm increase. This effect mediates product choice. Lastly, results indicate that chronically interdependent self-construal individuals are more enthusiastic about user-design effect and show higher levels of product preference for firms using a user-design approach when compared with independent individuals. These findings provides insights that not all consumers have the same preference for a user-design strategy which is relevant for managers wanting to involve user communities in new product development.

Keywords: user-design, innovation, new product development, user-community, observing consumers, Social Identity, Self-construal

Resumo

Um número crescente de empresas começa agora a dar importância as suas comunidades de consumidores para desenvolver novos produtos, que posteriormente podem ser comunicados ao mercado como "criados por um consumidor". A teoria da identidade social explica o porquê dos restantes consumidores preferirem comprar produtos de empresas que utilizam este tipo de estratégia. Este estudo tem como objetivo perceber qual é a influência de comunicar que uma empresa utiliza a sua comunidade de consumidores aquando do desenvolvimento de um novo produto. Adicionalmente este estudo investiga a) o impacto de dar informação sobre a comunidade de consumidores b) em que tipo de consumidores, dependendo da sua escala crónica de auto-interpretação, é que esta estratégia é mais indicada.

Primeiro os resultados mostram que o produto criado por utilizadores é preferido ao criado pelos profissionais, independentemente da descrição da comunidade que é feita. Os consumidores sentem níveis de identificação crescentes por empresas que usam esta estratégia o que posteriormente é traduzido na escolha do produto.

Em segundo lugar, os resultados indicam que quando a comunidade é semelhante aos consumidores, sentimentos de identificação aumentam o que no fim acaba por mediar a escolha do produto. Finalmente, os resultados mostram que os indivíduos mais interdependentes mostram maior preferência por produtos destas empresas que indivíduos independentes. Isto mostra que nem todos os consumidores têm a mesma preferência por este tipo de estratégia o que é relevante para os gestores que tencionam envolver as suas comunidades de consumidores no desenvolvimento de novos produtos.

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1. Introduction

Innovation has always been considered as one of the primary sources of organization's revitalization and growth as well as the main source of competitive advantage (Porter 1990). Since innovation profoundly affects competitiveness by directly impacting sales and profits (Jayaram et al. 2014), usually failing to innovate means a decrease in the way companies compete in their business markets (Ferauge 2012).

The world where we live today is characterized by a fast-changing pace. With shorter product and innovation cycles, consumers search for high quality products but at lower prices. This, in turn, increases dramatically R&D costs (Bindroo et al. 2012; Rubera et al. 2015). On one hand, consumers have more product alternatives than ever before, however they seem to be constantly looking for more alternatives. On the other hand, firms constantly invest in their product portfolio but they are repetitively struggling to differentiate from the competition (Prahalad & Ramaswamy 2004). Those major changes in the dynamics of the business environment conducted to an augmented interest in the concept of Open Innovation (OI) (Chesbrough 2003). Chesbrough (2003) argues that the traditional innovation model - where the entirely process of innovation takes place within the firm's boundaries - cannot be sustainable anymore due to the fast rate at which technology is evolving, costs are escalating and consumers' tastes are changing (Rubera et al. 2015). Powered greatly by the growth of internet, companies can open their boundaries to a varied range of external sources that could contribute with innovative ideas for processes and products at minimal costs (Billington & Davidson 2013). Collaborating with external parties and even with competitors has turned out to be a way to create and sustain competitive advantage (Sawhney et al. 2005).

OI highlights the role of users, who started to be valued by companies, as they detached themselves from their traditional roles in order to turn into a source of value creation (Prahalad & Ramaswamy 2004). By listening to users and actively integrate them into new product development (NPD) the company can get specific and valuable information about consumers' needs and desires. Firms can latter convert that knowledge into specific product improvements or novelties (Gemser & Perks 2015).

Companies like Dell, Adidas, BMW and Unilever have become aware of this new concept and started to integrate consumers in their way of developing new products. Relying on the advantage of the "networked world" firms started to use internet based platforms and networks to collaborate with their customers (Sawhney et al. 2005). With the help of users, Dell launched an online initiative that result in more than 10,000 new ideas for new products and product

improvement (Poetz & Schreier 2012). In 2010, Unilever launched a contest called "Unilever's Consumer Creative Challenge", where amateur filmmakers were invited to produce commercials for brands like Axe, Vaseline and Ben and Jerry's. Latter, the work of the winner was included in real campaigns displayed through the media (Weed 2010).

Research evidences that collaboration with users results in a competitive advantage for the firm, since product ideas that are created by them have more probability to be valued by the market which consequently decreases the likelihood of new product failure (Hoyer et al. 2010). Firms managing successfully this process of integrating users in the development of new products can improve product quality, increase rates of new product acceptance and decrease costs (Prahalad & Ramaswamy 1999; Hoyer et al. 2010).

While a stream of research has been focusing on accessing the impact of consumer participation in new product development other bodies of research have been investigating perceptions of participant users and observing consumers about user-design products (Liljedal & Dahlén 2015).

Fuchs and colleagues (2010) were among the firsts to study perceptions of involving users in the NPD, showing that users who are empowered to choose products that latter are sold to the market demonstrate higher willingness to pay and increased purchase intentions towards those products when compared with consumers who were not empowered. Following studies explored the effect of disclosing this strategy for observing consumers – the ones that do not participate in the NPD but who are of extremely relevance since they constitute the majority of the market and are the ones that ultimately buy the products (Fuchs & Schreier 2011).

Existent research is divided in two streams on what concerns communicating that a firm relies on a user community to develop new products or about communicating a user label on a product to the boarder market. On one hand, observing consumers might perceive companies using this strategy as more innovative (Schreier et al. 2012) and more customer-oriented (Fuchs & Schreier 2011) which ultimately leads to outcomes like higher purchase intentions, more willingness to pay and higher levels of loyalty towards the company. On the other hand, some studies show that there are cases where demand for products of user-driven firms can be compromised (Schreier et al. 2012; Fuchs et al. 2013). Furthermore in the context of user-generated content, authors found that communicating that an add was made by a user developed on consumers feelings of skepticism and identification. In the end, the two opposed feelings translated into a negative and a positive response towards the ad and towards evaluations made about the brand (Thompson & Malaviya 2013).

Recently a new study explained preference for user-design firms by drawing on social theory. Because users responsible for creating products belong to the same social category of consumers, both their social identities can easily connect and that connection forms a bond between the consumer and the organization which in the end is translated into feelings of identification with firms relying on a user-design strategy (Dahl et al. 2015).

Since extant research is not consensual about perceptions that observing consumers have about firms that rely on users to develop new products, this thesis intends to clarify observing consumer's perceptions about firms using a user-design strategy. Furthermore, is explored the importance of giving background information about the user-community and what is the impact of having observing consumers with different personal characteristics. Until this date no research has investigated in which type of person the user-design strategy might be more appealing and is in this topic that this thesis really contributes to the existent literature. In order to explore the assumptions created we rely on social identity theory (Tajfel & Turner 1986) and in the concept of self-construal (Singelis 1994).

Lastly, it is significant to point out that most of the studies investigating perceptions about firms adopting a user strategy have merely adopted a between-subject approach which means that observing consumers were not confronted with the trade-off decision between two firms using two extreme strategies: user versus professional design. This within-subject study can affect purchase intentions since individuals are facing situations of trade-off decisions (Wathieu et al. 2004).

Summing up, this thesis contributes to the existing literature by attaining a wider and richer understanding about the importance of disclosing user-design strategies to the market, mainly by:

1) Investigating perceptions of consumers regarding firms using a user-design strategy.
2) Examining why observing consumers prefer to buy products from user-design firms.
3) Exploring how giving background information about the user-community influences observing consumers.
4) Identifying if consumers have different perceptions regarding user-design firms according to their type of self-construal.

2. Literature Review and Hypothesis Development

2.1. Open innovation

Over the past few years the scope of R&D practices has been shifting from an internal to an external paradigm, as firms try to find new ways to acquire and exploit knowledge that is external to the organization (Salter et al. 2014).

According to the traditional model of "closed innovation" firms on their own should be able to generate, develop and commercialize their specific ideas (Chesbrough 2003). Firms relying on this closed model adhere to the philosophy that in order to successfully innovate a high degree of control is necessary and if companies want something well done they should do it themselves (Chesbrough 2003).

Contrasting with the old paradigm, the "open innovation" model relies on the principle that firms in order to attain and sustain innovation should rely on several types of external sources and actors. Open innovation was first introduced by Chesbrough (2003: p.43) who stated:

> "Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths".

This model proposes that advantages coming from internal R&D expenditures have decreased and that nowadays external R&D is able to create significant value (Chesbrough 2003).

Proctor & Gamble, the consumer product company, was among the first companies to adopt OI when in the year 2000 define as a goal that 50% of its innovations should come from an external source (Lafley & Charan 2008). The new strategy proved to be very successful: sales increased from 15%-20% up to 50%-60% during the first eight years of the implementation (Lafley & Charan 2008).

Actors and sources of external innovation can be found in individuals, users, academic institutions, suppliers and even in competitors (West & Bogers 2014).

Academic institutions were the first external actors to be recognized by companies as being an important tool to foster business innovation and economic development (Laursen & Salter 2004). However nowadays is the role of users as source of innovation that is being widely researched as they utilize their limited knowledge to provide value for themselves (Bogers et al. 2010) and for the firms (Morrison et al. 2000).

2.2. Users as innovators

New product commercialization is a concern by all firms since newly launched products have been found to face failures rates of 50% or higher (Ogawa & Piller 2006). Those failures rates can be attributed to the fact that, many times, companies are not able to fully understand customer needs and end up developing new products for which there is no market (Ogawa & Piller 2006). In order to reduce this failure rates when introducing new products firms have found that it is crucial to learn about customer preferences (Cooper & Kleinschmidt 2007). Earing about those preferences puts users in a passive position regarding the innovation process because firms are only interested in receiving some critical inputs in order to better match customers' desires. In this firm-centric approach the professionals at firms are the ones entirely in charge for designing products to be sold in the marketplace and a sort of market research techniques like focus groups and surveys are utilized to ask for customer input (Sawhney et al. 2005). This constricted view only gives to firms a limited comprehension of customer knowledge and implies expensive and time-consuming processes (Ogawa & Piller 2006). When firms consider customers as merely passive receivers of innovation they end up developing an incomplete understanding of their knowledge. This happens because the creative process and the discovery of new needs is constrained to episodic interactions where there is no time for customers to elaborate and improve new ideas (Sawhney et al. 2005).

An alternative approach to the one describe above is to include users in the process of innovation, this new paradigm gives to the user an active role in the innovation process as he becomes a partner engaged in a two way dialogue with the firm (Sawhney et al. 2005). Users emerge as new players in NPD since comparing with professionals their innovations are different and more functional (Bogers et al. 2010). Products made by users have been found to reflect more accurately consumers' needs and to be more valued by the market in general (Hoyer et al. 2010).

Users have been found to be able to innovate (von Hippel 1988) to contextualize with some numbers, out of 111 inventions gathered in a study by Von Hippel 80% were invented by users (von Hippel 1976). Users are able to innovate because they gain progressive knowledge from using the products – a concept called "learning by using" (Rosenberg 1976). This type of knowledge is very hard for companies to obtain, due to its *sticky* nature, which means "costly to move from the site where the information was generated to other sites" (von Hippel 2005) and also because it is *tacit* " highly personal (…) and therefore difficult to identify and evaluate" (Bogers et al. 2010).

Researchers point out that users want to innovate for companies for a variety of reasons. First because they expect to benefit from using the innovation (von Hippel 2005) and because they feel dissatisfied with the products that currently exist on the market (Ernst et al. 2010). Secondly by financial rewards coming either from selling their innovations or by monetary prizes (Hoyer et al. 2010). Thirdly because they might not like the amount of control that companies have in their lives so they request for an active involvement in the market (Fuchs et al. 2010) and finally because of psychological factors like intrinsic motivation and feelings of pride and self-expression (Etgar 2008).

2.3. User input in the New Product Development

The new product development (NDP) is defined by several authors as being a process of five stages: ideation, concept development, product design, product testing and product introduction (Ulrich & Eppinger 2003). Along those five stages is possible for the firm to introduce customer participation that can vary in *intensity* and in *scope* (Hoyer et al. 2010). The *scope* is defined by the authors as "the propensity of firms to collaborate with consumers across all stages on NDP" and the *intensity* as "the extent to which firms rely on user input to develop products within a particular stage of NPD" (Hoyer et al. 2010).

Firms can considerably improve their performance by including user input across diverse stages of the new product development (Gruner & Homburg 2000). For example in the ideation phase firms involve users in order to obtain knowledge that is related to their needs, to assess how good their new product ideas are and to create new product ideas for future conception.

Authors agree that involving consumers where the *scope* is the ideation phase can increase new product and firm performance (Gruner & Homburg 2000) as firms save time, money and reduce risk regarding new product failure (Hoyer et al. 2010). In an experimental study, Poetz and Schreier (2012) found that ideas generated by users showed higher levels of novelty and were recognize to have more benefits for the customer. Overall user ideas classify better on a quality index when compared with professional ones. Ideas of users are crucial for firms because they reflect better the needs of other consumers which in the end results in products that have higher probability to be a success in the market (Poetz & Schreier 2012). Furthermore, studies have acknowledge that collaborating with users would lead to a higher product variety (Gemser & Perks 2015). Data from Muji, a Japanese manufacturer of consumer goods, backs up this view since user-generated products have found to contain higher levels of innovation and

outperformed products created by the company designers in important market metrics like sales revenues and profit margins (Nishikawa et al. 2013).This shows that many times normal users can take on the role of firm professional designers in order to create products that will indeed perform better in the marketplace.

A company that constantly and fully empowers its user community in the ideation phase is characterized to be one that adopts "common design by users" - compared to firms that rely exclusively on firm professionals (Schreier et al. 2012). This strategy implies that users assume the role of professionals to create ideas that can be attractive to the entire consumer market and then firms sell the best of those user-designed products (Schreier et al. 2012). This type of customer empowerment approach is different from others like for example mass customization – where customers are only able to design products for themselves (Franke et al. 2010). More recently authors define user-design as "an innovation approach whereby organizations draw on their user communities (versus their own in-house designers/employees) to generate ideas for new products" (Dahl et al. 2015) which means that in the ideation phase the company relies heavily on user input.

Threadless is an example of a company that adopts a user-design approach, by selling T-shirts exclusively designed by users of the online community that submit their designs into the website. Later on, other members of the community or merely site visitors can vote on the designs that they like the most. The designs with more votes are then send to production and placed on sale.

LEGO and Threadless are some examples of firms that rely on their user base in order to develop and create more successful products. Those companies also advertise to the broader market that their products were made by users: Threadless displays the user's name on a tag inside the t-shirts and LEGO, on the packaging of its products designed by users, displays "designed by LEGO fans" (Fuchs et al. 2013). In those previous cases the market is aware that companies employ a user-design strategy however many others rely on user communities to develop new products but they do not communicate that information. Communicating that users are involved in new product design might change perceptions of consumers about those companies. Recent research acknowledges that consumers show strong demand for products of firms relying on a user-design strategy when comparing with a firm that only depends on its professionals (Dahl et al. 2015).

2.5. User-design firms: consumers' perceptions

When evaluating consumers' perceptions of firms adopting a user-design strategy it is important to make the distinction between two types of consumers – users participating in processes of new product development and non-participating consumers that are also called observing consumers. (Fuchs & Schreier 2011; Schreier et al. 2012).

Studies show that users participating in the NPD have higher demand for the final products when compared to observing consumers as they will also experience upper levels of psychological ownership for those final products (Fuchs et al. 2010).

However what is extremely important is to assess the impact of a user-design strategy on observing consumers since they constitute "the bulk of the market": they represent a majority when compared with participant users and they are the ones that ultimate buy the products (Schreier et al. 2012) . Observing consumers perceive companies that empower users in new product development as more customer oriented, those consumers develop more favorable corporate attitudes towards the company and finally these feelings and perceptions are translated in stronger behavioral intentions – purchase intentions, loyalty and positive word of mouth (Fuchs & Schreier 2011).

Schreier and colleagues (2012) assessed how observing consumers perceive firm's innovation ability of companies employing user-design strategies and found those firms are perceived as more innovative. This innovation effect coming from the user-design strategy leads to positive outcomes like purchase intention, willingness to pay and recommendation intentions (Schreier et al. 2012).

A darker side of consumer participation appears in studies showing that labeling a product as user-design can result in negative outcomes in the eyes of observing consumers (Schreier et al. 2012; Fuchs et al. 2013). For example mainstream fashion brands like Diesel were found to benefit from a user-design label, however in the fashion luxury industry labeling a product as user-design reduces the likelihood of the consumer to choose that product (Fuchs et al. 2013). Fashion luxury is associated with wealth and its consumption is used as a way to communicate a higher status, however this social distance that luxury is supposed to convey is compromised when the product is labeled as user-design (Fuchs et al. 2013).

Other boundary conditions such as product complexity and low familiarity with the user innovation have been noticed to influence consumers' perceptions (Schreier et al. 2012). In product categories as consumer electronics, robotic toys and gardening utilities the perceived innovation ability of a company using a user-design strategy is inverted since for these product

categories observing consumers believe that the degree of complexity is too high in order to a normal user to give a valuable input (Schreier et al. 2012).

This is evidence that relying on user-design strategy works in certain circumstances but in others can hurt demand for products and consumers' perceptions about the firm might become damaged. This can be an explanation why firms adopting user-design strategies do not often disclose or advertise them to the boarder market.

2.6. Social Identity Theory

2.6.1. Why consumers prefer products from user-driven firms

Collaborating with users in NPD brings internal advantages for firms. Furthermore the advantages of a user-design strategy have been studied as a potential marketing tool since identification between the consumer and the designers of the products – the user communities – appears to have implications for the market in general (Fuchs et al. 2013). Companies that rely on user communities to develop new products become more "close" to consumers (Fuchs et al. 2013) due to the fact that consumers and users share similar characteristics in terms of social identity (Dahl et al. 2015).

Marketers frequently try to connect brands with social identity aspects of the consumer. This strategy leads target consumers to evaluate those brands more positively. Brands like Old Spice uses the slogan "Smell like a man, man" and Secret uses the line "Strong like a women" (White et al. 2012).

Social identity is defined as "that part of an individual's self-concept which derives from his knowledge of his membership in a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel 1981). Social identity theory suggest that people do not completely view themselves as single individual "I" but also as a social self "we"(Turner 1999). As such people's identity is not only based on personal values and accomplishments but also on the foundation of relationships with relevant others, usually someone with whom they identify (Cialdini et al. 1976).

We understand why consumers can identify themselves more easily with other users rather than firm professionals because users and consumers share similar characteristics and experiences (Dahl et al. 2015).

Additionally, accomplishments by individuals relevant to us might impact perceptions of our own identity. For example, if a female individual receives the Nobel Prize, observing females

can easily activate their female identity and also feel praised by the award – an achievement of a relevant other becomes like our own (Cialdini et al. 1976). This activation of similarity explains why observing consumers may also feel empowered by viewing that users like themselves have the power to change the company's products.

Recently, Dahl and colleagues (2015) explained why a firm's marketplace philosophy (being user-driven as opposed to designer-driven) influences the way the consumer identifies with the firm by drawing on social identity theory. Consumers are also users so their social identity can easily be connected to the one of user-designers which is translated in a higher identification with user-design firms and higher purchase intentions for user-design products.

Consumers often engage in identity behaviors that are consistent and compatible with their own behaviors and evaluate products more favorably if those products are linked to an aspect of their social identity (Kleine et al. 1993). Since user-design products are created by people which whom the normal consumer can easily identify with, we can reason that when consumers see a user-design product they would evaluate that product more favorable. Hence we formulate that:

H1: Consumers will prefer user-design products over firm designed products.

H2: Consumers will generate more positive word of mouth for user-designed products than for firm designed products.

The concept of firm identification explain by social identity theory has been investigated in the literature (Bhattacharya & Sen 2003; Dimitriadis & Papista 2011; Fombelle et al. 2012). Consumers pursue firms for identification even when they are not members of the firm (Pratt 2000) , valuing congruency between associations conveyed by the company and the consumers' social identity (Escalas & Bettman 2003).

Authors define identification between customers and companies as "the primary psychological substrate for the kind of deep, committed, and meaningful relationships that marketers are increasingly seeking to build with their customers" (Bhattacharya & Sen 2003). This identification results in positive outcomes for the firms, Ahearne and colleagues (2005) empirically demonstrated that a stronger identification between the customer and the company lead those customers to purchase more and recommend the firm's products more frequently. Since consumers are attracted towards firms that are congruent with aspects of their social identity (Ashforth 1998) we can affirm that observing consumers will feel more identified with firms relying on a user-community because "beyond" those companies they can find individuals

that are similar to them shaping product's offerings. The stronger identification with the firm can afterwards explain why consumers prefer to buy products from a firm using a user-design strategy. Hence we formulate that:

H3: Consumer preference for user-design products is associated with higher levels of identification towards the user-design firm.

2.6.2. Background information of the user-community

A crucial assumption of the social identity theory and its influence on the preference for products of user-design firms is that participant users can be a "pool of people" with whom the observing consumer can easily identified with. It is then vital that observing consumers can feel that they belong to the same group of the participant users (Dahl et al. 2015).This sense of belongingness to the participant user group is a result of a feeling of similarity (Tajfel 1972). To test this assumption Dahl and colleagues (2015) found that when observing consumers do not feel similar to participant users their identification with the firm is lower which results in a lower preference for the products of the user-design firm.

Social identity comprises classifications such as demographic characteristics, race, group membership to clubs, religion, educational or cultural institutions (Bhattacharya et al. 1995) and those self-categorizations includes the individual into the group. This means that depending on the context people can see themselves as teenagers, students, Catholics or Hispanics (Tajfel & Turner 1986).

There are certain groups that the individual automatically belongs to due to certain characteristics like age, sex, education, marital status or profession (Bourne 1956). Those type of groups make the individual think if their actions and thoughts are appropriate according to his / her role of educated person, wife, male or a combination of all this characteristics (Bourne 1956). Those social groups are extremely important for the individual and work as a reference for social comparison (Tajfel & Turner 1979). For example when individuals are asked about who they are, their answer often reflects groups associations linked with profession, age, religion or race. Then we can assume that providing such type of information about the user-community will trigger an identity salience for the consumer and will increase feelings of identification and belongingness.

Jiang and colleagues (2010) show that judgements of individuals are shaped by people who share similar background characteristics: they prove that when salespeople are perceived as similar to the customer there would be higher purchase intentions. We can then argue that when the background information of the user-community matches the one of the consumer, there will be higher identification levels between the consumer and the user-community which in the end would be translated in higher purchase intentions.

For example, it is plausible to reason that if observing consumers are university students they will very easily activate their "university student identity" and more easily express a social collectivity concerning a user-community made of other university students since they share similar characteristics in terms of age and education. If the firm's lively user community is mainly composed by university students, a user-design strategy may resound particularly better among observing consumers that are also university students and hence they will feel more identified with the firm which would latter translate in higher preference for their products. Thus, we propose:

H4: Consumers will have higher preference for products of user-design firms when they are informed that products were made by users who share a similar background.

H5: Consumers will express higher levels of identification with the user-design firm when the user-community is described as sharing a similar background.

Past research found that consumers endorse supportive behaviors concerning organizations which they identify with and they give positive word-of-mouth (WOM) about their products (Arnett et al 2003).Hence we formulate that:

H6: Consumers will generate more positive word of mouth for user-design products when they are informed that those products were created by users who share a similar background.

2.7. Self-construal and observing consumers

Social identity explains why consumers have higher preference for products of user-design firms. However not all individuals define themselves in an equal manner regarding their social self (Kleine et al. 1993). Relying on the concept of self-construal we will show that preference for user-design products might not be universal, but depend upon individuals' characteristics.

One important characteristic regarding this domain is self-construal. Self-construal refers to the extent to which "the self is regarded as being separate and distinct from, or interconnected with others" (Singelis 1994) which means that individuals can have an independent or independent view of the self (Markus & Kitayama 1991; Singelis 1994).

People with a dominant independent self-construal usually define themselves based on their unique achievements and status, they see themselves as independent and autonomous and seek distinction from the group as they look to detach themselves from others. By contrary, people with a dominant interdependent self-construal tend to define themselves based on their social roles and relationships with others, valuing feelings of connectedness and conformity (Markus & Kitayama 1991). Culture plays an important role on individual's self-construal: Individuals in countries like US, Australia and UK are prone to be more individualistic (more independent) and not as much of collectivistic (less interdependent) than Asians, Eastern Europeans or Africans (Oyserman et al. 2002). However, the literature shows that these two profiles are not independent. Both types of self-construals can coexist inside the individual regardless of cultural aspects or ethnicity (Trafimow et al. 1991; Singelis 1994; Brewer & Gardner 1996). This means that individuals can have both chronic independent and interdependent traits of the self however the dominance of each one of those traits is an aspect of one's personality that leads to individual differences that can be evaluated and measured (Singelis 1994).

Studying self-construal is important since researcher has found that this psychological trait affects and influences consumer behavior (Zhang & Shrum 2009; Escalas & Bettman 2005; Ma et al. 2014; Millan & Reynolds 2014) as well goals that consumers have regarding their purchases (Aaker & Lee 2001; Lee & Shavitt 2006; Jain et al. 2007; White et al. 2012; Yang et al. 2015). Self-construal is reported to influence persuasion of advertising claims (Wang 2000; Agrawal & Maheswaran 2005; Zhang 2009; Zhang et al. 2011) and consumers' evaluations of brand extensions (Ahluwalia 2008). Dominant self-construal can be important in determining to what extent the consumers are concerned with their social identity when making product judgements (Lee & Shavitt 2006). Individuals with a dominant interdependent self-construal

will be more interested in their social identity and therefore more concerned with information that can mirror their social identity when compared with individuals with a dominant independent self-construal (Ho 1976; Triandis & Suh 2002).

Empirical work from Escalas and Bettman (2005) explored the association between brand connection and self-construal. The authors show that consumers with predominantly interdependent self-construal value opinions of their reference groups and are more likely to rely on their opinion to form brand judgements. Consequently, they are more likely to identify with brands that are consistent with the group. Conversely, predominantly independent individuals have higher self-differentiation objectives when considering brand choices since for such individuals the group's opinion and evaluations have less meaning (Escalas & Bettman 2005).

Research found that for independent consumers, social identity was not relevant for product evaluations however it was found to be relevant for interdependent consumers (Lee & Shavitt 2006).

Independent individuals, as they extremely value their uniqueness, are more likely to choose products that represent a unique self-image (Millan & Reynolds 2014). Thus we argue that they will be less interested in choosing a product that was made by someone that mirrors their social identity because they constantly pursue a detachment from the group. Conversely, interdependent individuals view themselves as part of the group and they highly value feelings of belongingness towards similar others. Since they are more focused on social cohesion goals (Zhang & Shrum 2009) they might have higher interest in selecting the product that was developed by those who mimic their social identity. Thus we propose:

H7a: *Interdependent individuals will prefer user-design products (vs professional products) and independent individuals will be indifferent between user-design and professional products.*

H7b: *Interdependent individuals will have higher levels of identification towards the user-design firm than independent individuals.*

3. Methodology

3.1. Design

The study was a 2 (firm design mode: professionals vs users) × 2 (background information about the user community: users vs university students) mixed model design experiment. Firm design mode was a within-subject factor and the background information about the user community a between-subject factor. The selection of a within-subject design to evaluate perceptions of the two distinct firm approaches was due to the fact that in real life behavioral intentions are operationalized as choice questions allowing consumers to choose a company over another according with their preferences (Fuchs & Schreier 2011). This method is suitable and often used in order to assess consumer preferences for companies or brands and trade-off decisions (Huber et al. 1986; Wathieu et al. 2004)

An online questionnaire using Qualtrics was administered by email and social media in order to reach a higher sample and to assure that randomization techniques worked effectively. The questionnaire was available for one week from the 15th to 22nd April.

For practical reasons and due to the purpose of the study, only university students were selected to answer the survey. The sample was selected due to convenience factors and proximity (O'Gorman & Macintosh 2014). It is also a sample that can be easily reached through social media and constitutes a group that is used to this research technique. Furthermore, we wanted to select a specific group of individuals that share the same background in order to test our assumptions.

A total of 181 people took part in the survey. The sample was composed for more males (51.9%) than females, the majority of respondents was in the age category of 18-24 years old (95%). Regarding education level, the vast majority had a Master, PhD or Doctorate (55.6%) and a Bachelor degree (43.4%). Concerning ethnicity, the sample was mainly composed by Caucasian people (89%) followed by Asiatic (5%). Most of the respondents were Portuguese students (74%).

3.2. Procedure and Stimuli

To test product preference we used ice creams as the product stimulus for several reasons: First we have come to the understanding that including user participation in low complex products is more appropriate (Schreier et al. 2012).Previous studies frequently used breakfast cereals (Fuchs et al. 2010; Schreier et al. 2012; Dahl et al. 2015) which led to the consideration of choosing a product from a FMCG industry. Second, ice creams are relevant for the population in study and finally because firms in the ice cream industry are already using this user-design approach. For example, Ben & Jerry's, allows users to submit new flavors in the website and also there advertises that two of the most popular flavors of the company were indeed created by fans of the brand.

Participants were asked to answer to a questionnaire where they were first indicated that they were participating in a marketing research study for a company in the ice cream industry in order to create a more credible scenario.

Next the participants were invited to imagine that they were in a hot summer day and that they wanted to buy an ice cream. Then they were presented with two options, two ice cream firms that had different market approaches – they had different ways of generating new products and ideas. They were informed that they would read about those firm's market approaches in the following section. Afterwards, participants were randomly assigned to one of two scenarios: user community or user community made of university students ($N_{scenario\_universitystudents}$= 85 and $N_{scenario\_users}$=96)

Scenarios.

To manipulate social identity two scenarios were introduced: in the first scenario the user-design firm was described as relying on a community made of users/consumers and in the second scenario the user-design firm was described as relying on a community made of users/consumers that were university students. It is expected that consumers' social identity will be more easily activated in the scenario where the community is described with similar background information.

A) Scenario A : User-community made of consumers/users

In this scenario, participants read the following information:

"Ice cream A was developed by Firm A. Firm A is positioned as a company that is strongly driven by its user community. The firm asks its customers/users to come up with new product ideas to be marked to the general public. Consumers/users create new flavors. The ice cream A, which will you see next, is a new flavor created exclusively by the firm's consumers/users"

"Ice cream B was developed by Firm B. Firm B is positioned as a company that is strongly driven by its professionals. The firm asks its internal professionals to come up with new product ideas to be marked to the general public. Firm B professionals create new flavors. The ice cream B, which you will see next, is a new flavor created by the firm internal professionals"

B) Scenario B: User-community made of university students.

In this second scenario, participants read the following information:

"Ice cream A was developed by Firm A. Firm A is positioned as a company that is strongly driven by its user community. The firm asks its customers/users to come up with new product ideas to be marked to the general public. This community consists mainly of university students who are dedicated to create new flavors. The ice cream A, which will you see next, is a new flavor created exclusively by the firm's consumers/users who are university students."
Information about company B was kept equal between scenarios.

After reading about the practices of the two firms, respondents were asked about their degree of identification with the two firms. Identification allowed to test for H3 and H5.
Next participants were asked to complete a question regarding perceived similarity between them and the community responsible for creating new products/ice cream flavors for the user-design firm. This was our manipulation check to guarantee that when the community was described as composed mainly by university students, other university students would consider these community of people as being more similar to them when compared with the scenario where the community is simple described as being composed by users/consumers.

Figure 1. *Stimuli for the scenario where the user-community is mainly composed by consumers/users.*

Figure 2. *Stimuli for the scenario where the user-community is mainly composed by university students.*

In line with other studies in this topic, products were presented after participants have been exposed to both firm's descriptions. This also reasons with situations in which the consumer might be aware of a firm's practices and only after see its products. After becoming familiar with the firm A and B different ways of creating new products, respondents were informed that next they would see the two ice creams produced by the two firms. They were informed that ice creams were equivalent in terms of price and calories and that the only difference was in the way that the flavors were created. To add credibility to the study participants were exposed to real product pictures of ice creams with the same flavor (black cherry) in order to avoid that this factor could influence their choice. Also the brands were deleted from both packages in order to exclude the brand effect. Furthermore to control for any kind of decision based on product's packaging and image, scenarios were randomly displayed, in which images appear differently for each respondent both in terms of mode of creation as well as image position. In the end 4 scenarios were created and none of them appeared significantly more than the others which gives to this study reliability (See appendix 1).

In order to test for H1 and H4 respondents were told to imagine that they really wanted to buy an ice cream so they had to choose between the alternatives displayed. This creates a real scenario were consumers face choices between different alternatives at the point of purchase.

Next participants were asked to evaluate positive word of mouth intentions. This was done by two equal questions, first for the product from the user-design firm and secondly for the product from the professional firm. This turn possible to test for H2 and H6.

Since it was expected that user-design claims had different impacts on people with chronically independent versus interdependent self-construal, respondents were confronted with 24 questions that measure their degree of independence and interdependence. Doing this turned possible to classify respondents and to investigate if user-design claims had different impacts regarding an individual characteristic of respondents and then verify H7a) and H7b).
In the end of the survey some demographic questions were made: gender, age, education level, nationality, ethnicity and if the participant was a university student or not.

3.3. Measures

Degree of identification with the two firms was measured by four items, examples are "I can identify more with firm A/B" "I feel more connected with firm A/B" on a seven-point scale, where 1 was the user-design firm (firm A) and 7 the professional firm (firm B). (Escalas & Bettman 2005).
Similarity between the user-community and the respondents was measured by four seven-point bipolar rating scales, examples of questions are "I feel not similar/ I feel similar" [1; 7], and "I cannot identify with the community members/I can identify with the community members" [1; 7] (Dahl et al. 2015)**.**
Positive word-of-mouth intentions was measured by two items "I have good things to say about the product" and "I will recommend my friends to buy the product" in a seven-point (strongly disagree to strongly agree), Likert-type scale (Moldovan et al. 2011).
Self-construal was measured using Singelis (1994) 24 items scale, which is composed by 12 questions measuring independence and other 12 questions measuring interdependence of individuals. Examples of interdependent items are "Even when I strongly disagree with group members, I avoid an argument" and "I will sacrifice my self-interest for the benefit of the group I am in." examples of independent items are "I enjoy being unique and different from others in many respects" and "Being able to take care of myself is a primary concern for me". The items were measured by a seven-point (strongly disagree to strongly agree), Likert-type scale.
Using Singelis continuous index computed by the following expression: $\frac{independent-interdependent}{independent+interdependent}$ (Singelis 1944) we could classify individuals in independent or interdependent type of self-construal. Appendix 2 lists all measures and items.
Table 1 indicates the level of reliability of each one of the constructs used, using the Cronbach's Alpha and the corrected item-total correlation. We can verify that firm identification and

perceived similarity constructs have Cronbach's alpha above 0.7 which will guarantee accuracy when analyzing the data. The alpha of independent and interdependent self-construal is above 0.6; authors (Mei et al. 2007) consider a Cronbach's alpha of this magnitude to be reliable. Furthermore values of the corrected item-total correlation appear to be acceptable since they are above 0.20 (Nunnally & Bernstein 1994; Field 2005).

Table 1. *Reliability measurement*

Cronbach's Alpha	Corrected item-Total Correlation	Nº of items	Construct
0.695	0.31-0.47	12	Independent self-construal
0.630	0.20-0.47	12	Interdependent self-construal
0.890	0.70-0.81	4	Firm Identification
0.936	0.83-0.86	4	Perceived similarity

Word of mouth regarding the product of the two firms was measured by two items so we used Pearson correlation for reliability measurement. The results summarized on the table 2 show that the two constructs are reliable since the Pearson correlation for them is above 0.7 with a significance level of 0.01.

Table 2. *Pearson Correlation*

Pearson Correlation	**Nº of items**	**Construct**
0.739**	2	WOM user-design product
0.842**	2	WOM professional product

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

4. Results

4.1. The main effect of a user-design claim

First we wanted to see what was the impact of a user-design claim in the whole sample (N=181). By other words, we tested if in general consumers had higher preference for the user-design products and higher positive WOM towards those products.

Previous studies focused on analyze purchase intentions, however this thesis tries to access how many people preferred the product made by the company that relies on a user-design strategy. To analyze the main effect of a user-design claim on product choice (-1= product from professional firm, 0= indifferent, 1= product from user firm) we performed several tests of differences in proportions to the number of people that choose between the options. To test our H1 that states that consumers will prefer the user-design product we first conducted a serious of identical chi-square tests.

We started by analyzing the three options together – product from user-design firm, indifferent or product from professional firm. The first chi-square test revealed that consumers are not indifferent between the three options (p-value=0.000) which means that we can reject the null hypothesis were $p_{professional} = p_{indifferent} = p_{user\text{-}design} = \frac{1}{3}$. As figure 3 illustrates 28% of the respondents choose the product from the professional firm, 14% choose the option indifferent and 59% choose the product from the user-design firm.

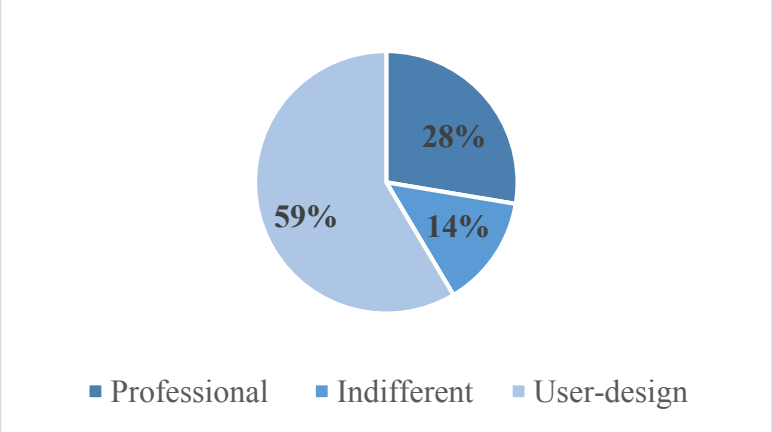


Figure 3. *Differences in product choice.*

However in order to confirm the hypothesis that the user-design product will be the preferred choice, we need to analyze if preference for the user-design product (106 out of 181) is statistically significant when compared to the indifferent option (25 out of 181) and, at the same time, to the professional product (50 out of 181).

Two chi-squared tests comparing the user-design product with each of the other options separately validates H1 (p-value=0.000 and p-value=0.000). All the results of chi-squared tests are summarized on Table 3.

Table 3. *Chi-squared tests for differences in product choice*

	Product from user-design firm VS Product from professional firm	Product from firm user-design firm VS Indifferent	Product from user-design firm VS Product from professional firm VS Indifferent
Chi-square	20.103	50.084	57.028
Asymp.Sig.	0.000	0.000	0.000
N	156	131	181

Consumers will prefer user-design products but H2 also argues that consumers would generate more positive WOM for such products. In order to test this hypothesis, we run an ANOVA within groups and results prove that positive WOM for the user-design product was significantly higher when compared with the professional design product ($M_{user\text{-}design}$=4.8508; $M_{professional}$=4.3785; p-value=0.001). Results are summarized on table 4 and thus we validate H2.

Table 4. *ANOVA for WOM*

	WOM user-design product	WOM professional product
Mean	4.8508	4.3785
N	181	181
St. Deviation	0.96024	1.13364

F = 18.298; Sig. = 0.000

After confirm that consumers have preference towards the user-design products we will try to understand if that preference can be related with firm identification. According to H3, preference for user-design products is associated with higher identification levels towards the user-design firm. So, an ANOVA was performed within subjects to see if firm identification would vary for consumers that selected one product over the other. By other words, we investigated if people that choose the product of the user-design firm were the ones that showed higher identification levels towards the firm. Results summarized on table 5, show that identification is statistically significantly different according with which type of option respondents selected. People that choose the user-design product show higher identification

levels with the user firm when comparing with the ones that choose the professional product or selected that they were indifferent ($M_{user\text{-}designed}$=1.9505; $M_{indifferent}$=2.4500; $M_{professional}$=3.0350; p-value=0.000).

Table 5. *ANOVA for firm identification according with product choice*

	Product from user-design firm	Indifferent	Product from professional firm
Mean	1.9505	2.4500	3.0350
N	106	25	50
St. Deviation	0.94455	1.08972	1.27577

F = 17.832; Sig. = 0.000. Note that firm identification was measured from 1 to 7 (1 was user-design firm and 7 professional firm).

However in order to prove that the ones that selected the user-design product are the ones who identify the most with the user firm two t-test were conducted: the first one between levels of identification from who selected the user-design product versus who selected the option indifferent and the second one between the ones that choose the user-design product versus the ones that selected the professional product. Results summarized in table 6 describe the statistical findings in detail. The mean for firm identification is statically higher towards the user-design firm for people that selected the user-design product when compared with the ones that selected that they were indifferent ($M_{user\text{-}design}$=1.9505; $M_{Indifferent}$=2.4500; p-value=0.023) and between the ones that selected the user-design product versus the ones that prefer the product of the professional firm ($M_{user\text{-}design}$=1.9505; $M_{professional}$=3.0350; p-value=0.000). Thus we validate H3.

Table 6. *T-test for firm identification according with product choice*

	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Product form user-design firm vs Indifferent	0.023	-0.49953	-0.92764	-0.07142
Product from user-design versus professional firm	0.000	-1.08453	-1.44419	-0.72486

Note that firm identification was measured from 1 to 7 (1 was user-design firm and 7 professional firm).

All the results from the statistical tests conducted prove than in general there is a preference for the user-design strategy, both in terms of product preference and positive word-of-mouth intentions towards the user-design product. We also prove that firm identification is statistically different for people that choose one option over the other. Next, we will investigate what is the impact of providing background information about the user-community that matches the one of respondents in terms of similarity.

4.3. Background information of the user-community

4.3.1 Perceived Similarity

In order to explore the assumption that identification with the user-design firm and posterior product preference will be higher for respondents when they see the scenario were the firm relies on a community that is described with a similar background information we test for the degree of similarity between respondents and the user-community.

According with Dahl (2015) it is essential that the observing consumer feel that belongs to the same group of participant users in order to more easily activate social identity. Tajfel (1972) argues that the sense of belongingness in a group is described as coming from a feeling of similarity.

To understand if participants perceived the intended difference an ANOVA on perceived similarity was computed and reveled that respondents perceived that they were more similar to the community responsible for developing new products when this community was described

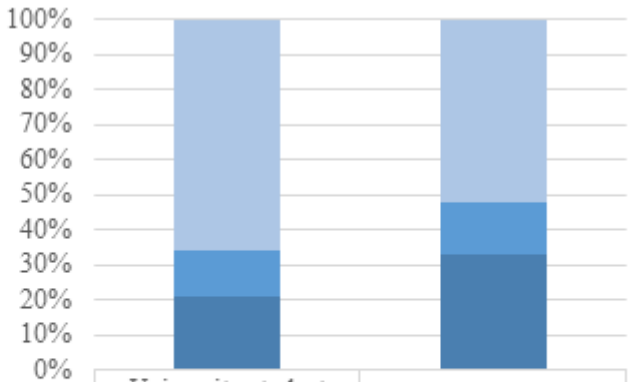
as having a similar background ($M_{similarity\_users}$=4.1; $M_{similarity\_universitystudents}$=5.36; p-value=0.000).

4.3.2 Results

In this section of the results we will analyze differences between both scenarios displayed: the one that provides background information about the user-community and the one that does not. It is expected that product preference and positive WOM towards the product will be higher in the scenario where similar background about the user-community is provided due to an enhanced identification with the user firm.

Results displayed on Figure 4 show that in the scenario where the user community is described as mainly composed by university students, 21% choose the product from the professional firm, 13% say that they were indifferent and 66% choose the product from the user-design firm. In the user scenario, 52% respondents choose the product from the user-firm, 15% say that they were indifferent and 33% choose the product from the professional firm.

Figure 4. *Differences in product choice between scenarios*



	University student scenario	User scenario
User-design	66%	52%
Indifferent	13%	15%
Professional	21%	33%

First we investigated what happens in the scenario where participants do not have background information about the user-community. Doing a chi-square test between the three options displayed (user-design product, indifferent and professional product) prove that respondents are not indifferent between the three options (p-value=0.000). Then we conducted two chi-square tests: first comparing the proportion of individuals that choose the product from user-design firm (50 out of 96) with the ones that said that they were indifferent (14 out of 96) and secondly with the ones that chose the professional product (32 out of 96). Results reveal a statistically significant preference for products of the user-design firm (p-value=0.000, p-value=0.047). All results are summarized on table 7.

Table 7. *Chi-square for product choice in the user scenario*

	Product from user-design firm VS Product from Professional firm	Product from firm A VS Indifferent	Product from firm A VS Product from firm B VS Indifferent
Chi-square	3.951	20.250	20.250
Asymp.Sig.	0.047	0.000	0.000
N	82	64	96

Next we investigate what happens in the scenario where participants have background information about the user-community that is perceived to be similar to their own. We run a serial of identical chi-square tests to prove product preference for the user-design product in the university student scenario. The first chi-square comparing the three alternatives (user-design product, indifferent and professional product) show that consumers are not indifferent (p-value=0.000). The two chi-square tests comparing respondents that selected the product from user-design firm (56 out of 85) with the ones that said to be indifferent (11 out of 85) and later the chi-square comparing individuals that choose between the two extremes of the continuum: user-design product (56 out of 85) versus professional (18 out of 85) confirm that the user-design ice cream is the preferred choice (p-value = 0.000 and p-value = 0.000). All results are summarized on table 8.

Table 8. *Chi-square for product choice in the university students' scenario*

	Product from user-design firm VS Product from Professional firm	Product from firm A VS Indifferent	Product from firm A VS Product from firm B VS Indifferent
Chi-square	19.514	30.224	41.388
Asymp.Sig.	0.000	0.000	0.000
N	74	67	85

An ANOVA between scenarios was performed in order to see if product choice changed between the two groups – the ones that had background information about the user-community and the ones that did not. According to the H4 consumers will have higher preference for the

user-design product when they are informed that the user-community is similar to them in terms of background.

Table 9. *ANOVA product choice between scenarios*

	Scenario_users	Scenario_universitystudents
Mean	0.1875	0.4471
N	96	85
St. Deviation	0.90974	0.82384

F = 5.479; Sig. = 0.047

Results described on table 9 indicate that product choice differences are statistically significantly across scenarios ($M_{scenario\_users}$=0.1875; $M_{scenario\_universitystudents}$=0.4471; p-value=0.047). However in order to confirm H4 we need to conduct a proportion test that confirms that there is a difference between perceptions according scenarios for people that selected the user-design product. To that end we performed an inference for difference of proportions for independent samples, comparing the proportion of individuals that choose the product of the user-design firm in the user scenario (50 out of 96) with the proportion of individuals that choose the product of the user-design firm in the university student scenario (56 out of 85). Results show that differences in proportions are statistically significant (p-value=0.03) which confirms H4. Results are summarized on table 10.

Table 10. *Inference for difference of proportions*

	Scenario_users	Scenario_universitystudents
Proportion	52%	66%
N	96	85

Z-score=1.88; P-value=0.03 at one-tailed test.

Next, in order to validate the hypothesis that in the scenario where similar background information is provided identification towards the user-design firm will be higher an ANOVA between scenarios was conducted. Results described on table 11 confirm that the assumption that was made has been validated: identification towards user-design firm was higher when consumers saw the scenario where the user-community was described with similar background

information ($M_{scenario\_users}$=2.5547; $M_{scenario\_universitystudents}$=2.0529; p-value=0.003), thus H5 is validated.

Table 11. *ANOVA for firm identification between scenarios*

	Scenario_users	Scenario_universitystudents
Mean	2.5547	2.0529
N	96	85
St. Deviation	1.22539	1.02578

F = 8.793; Sig. = 0.003. Note that Firm identification was measured from 1 to 7 (1 was user-design firm and 7 professional firm).

Since respondents reported higher preference for user-design products and higher identification for the user-design firm in the scenario where background information about the user-community was given we also wanted to test if in this scenario positive WOM towards user-design products was higher. To do so and to verify H6 an ANOVA between scenarios was conducted. Results summarized on table 12 show us that this assumption is not supported, although WOM for product of the user-design firm is higher in the university student scenario this value is not statistically significant which led us to reject H6 ($M_{scenario\_users}$=4.7917,$M_{scenario\_universitystudents}$=4.9176, p-value>0.10).

Table 12. *ANOVA for WOM for product from the user firm between scenarios*

	Scenario_users	Scenario_universitystudents
Mean	4.7917	4.9176
N	96	85
St. Deviation	0.96700	0.95384

F = 0.775; Sig. = 0.380

Bootstrapping analysis based on 1,000 bootstrap samples (Preacher & Hayes 2004) further support mediation of firm identification. Selecting product choice as outcome variable and background information about the user community as independent variable we found a significantly indirect effect of type of user-community on product choice ($CI_{95\%}$=0.0575;

0.2740) through firm identification. The mediator accounts for more than half of the total effect (P_M=0.57).

Doing the same procedure but selecting positive WOM towards the user-design product as outcome variable also proves the mediation effect of firm identification. We found a significantly indirect effect of type of user-community on positive WOM ($CI_{95\%}$=0.0265; 0.2201) through firm identification. The mediator accounts for more than half of the total effect (P_M=0.80). (See appendix 3)

4.4 The role of self-construal

Because the user-design effect found might be contingent on the consumer profile we will explore how different psychological characteristics of individuals will affect their reaction towards a user-design strategy. To explore those assumptions we rely on differences in individuals' self-construal.

Using the index described in the measure section we classify each participant as chronically independent or interdependent, however this calculation made us exclude 13 participants that score zero in the presented index and thus could not be classified.

In order to validate our classification we verify that independent individuals (N=90) classify significantly higher in the mean of independent items ($M_{Independent}$= 5.3065; $M_{Interdependent}$= 4.5673, p-value=0.000) when compared with interdependent individuals (N=78) and significantly lower in the mean of interdependence items ($M_{Independent}$= 4.7185; $M_{Interdependent}$=5.1731, p-value=0.000) which gives to the classification reliability.

It was hypothesize that self-construal would affect the way that observing consumers react to products of user-driven firms. According to assumptions made, independent individuals would be less concern with the favorability of their social identity and therefore less interest in selecting products that were made by a user-design firm.

To test the hypothesis we run an ANOVA (N=168). Results show that independent and interdependent show partially significantly different means of preference towards the product of the user design firm: independent self-construal individuals have less preference towards the user-design product when compared with interdependent individuals (p-value<0.1). Results are summarize on table 13.

Table 13. *ANOVA for product choice between independent and interdependent individual's self-construal*

	Independent self-construal	Interdependent self-construal
Mean	0.1444	0.3974
N	90	78
St. Deviation	0.90642	0.85796

F = 3.420; Sig. = 0.066

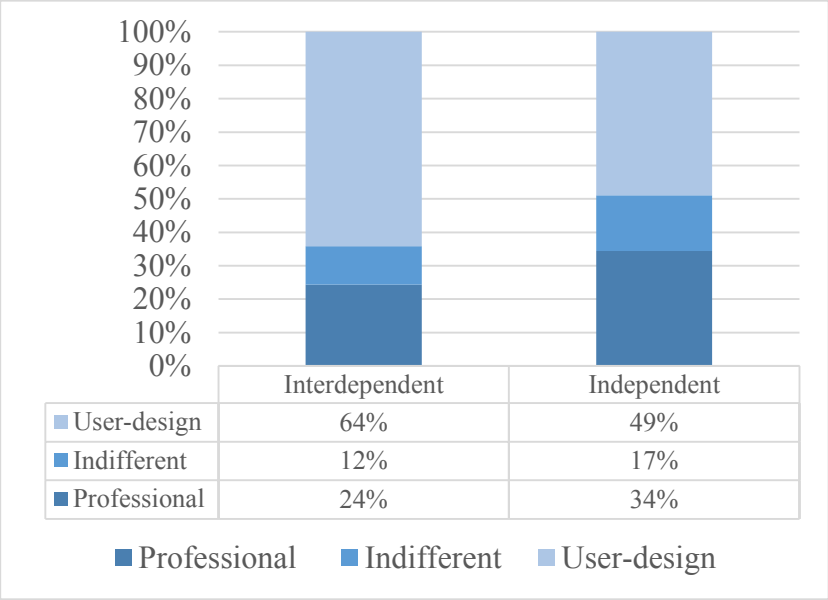


Figure 5. *Differences on product choice for independent and interdependent individuals.*

Findings with a p-value of that magnitude suggest that there are differences among preferences for both type of individuals. Figure 5 shows that the product from the user-design firm is still the preference of the majority of the independent individuals (49%). To further understand differences we run a chi-square test between independent participants that choose user-design product (44 out of 90) against the ones that choose the professional product (31 out of 90). Differences among proportions are not statistically significant (p-value>0.10) which means that $p_{professional} = p_{user\text{-}design} = \frac{1}{2}$: supporting that independent consumers are indifferent between a user-design and a professional product. We run the same analysis for interdependent individuals. A chi-square test between consumers that choose the product from the user-design firm (50 out of 78) against those that prefer the professional design product (19 out of 78) shows a clear preference for the user-design product (p-value= 0.000). Thus we validate H7a).

The two aspects of the self: independence and interdependence can coexist within the individual. One of the traits is usually dominant over the other however being high on interdependence (or independence) is not equivalent to be low on independence (or

interdependence) (Singelis 1994; Aaker & Lee 2001). This means that exists individuals that can have very similar scores in both constructs - independence and interdependence (Aaker & Lee 2001). Consistent with previous research we decide to do a further analysis with a more extreme test in order to found the most independent and interdependent individuals in the sample (Escalas & Bettman 2005). Using median splits, respondents were separated into low and high groups for each type of self-construal and only participants that were high one of the constructs and low on the other were considered for the analysis (Escalas & Bettman 2005). This left us with 69 participants: 33 with chronically interdependent self-construal and 36 with chronically independent self-construal. In order to validate our classification we confirm that independent individuals (N=36) classify significantly higher in the mean of independent items ($M_{Independent}$=5.4236; $M_{Interdependent}$=4.4444, p-value=0.000) when compared with interdependent individuals (N=33) and significantly lower in the mean of interdependence items ($M_{Independent}$=4.5185, $M_{Interdependent}$=5.2828, p-value=0.000) which gives to the classification reliability.

Running an ANOVA with these individuals we obtain statistically significant results (p-value<0.01) that show that chronically independent individuals have less demand for product of the user-design firm ($M_{Independent}$=-0.1111, $M_{Interdependent}$=0.5455; p-value=0.002).

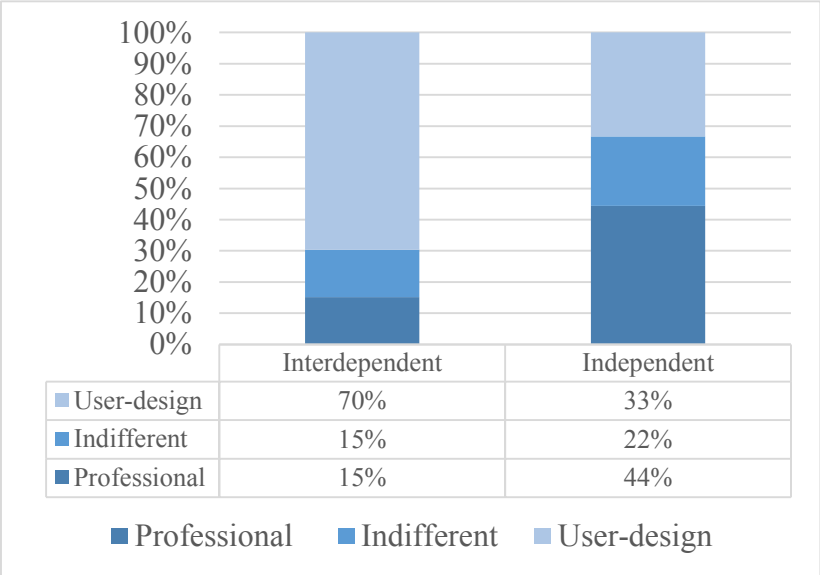


Figure 6. *Differences on product choice for independent and interdependent individuals.*

Figure 6 shows that the majority of the interdependent individuals (70%) prefer the user-design product. The chi-square test between preferences for the user-design product (23 out of 33) and the professional design product (5 out of 33) shows clear preference for the user-design one (p-value=0.001). Regarding independent individuals, 44% of the individuals choose the product from the professional firm compared with 33% that choose the user-design product. The chi-square test reveals that consumers are indifferent (p-

value>0.10) between a user-design product (12 out of 36) and the professional design product (16 out of 36). Once again results validate H7a)

To further understand this effect we investigated firm identification levels. To do so we run an ANOVA for firm identification between independent and interdependent individuals. Results summarized on table 14 support our assumption since independent individuals show less identification towards the user-design firm than interdependent individuals ($M_{Interdependent}$=1.9924; $M_{Independent}$=2.5903; p-value=0.031). Thus we validate H7b).

All the results remain statistically significant after controlling for nationality and ethnicity (See Appendix 4).

Table 14. *ANOVA for firm identification for interdependent and independent individuals*

	Interdependent	Independent
Mean	1.9924	2.5903
N	33	36
St. Deviation	1.9924	1.35377

F=4.875; Sig. =0.031 Note that Firm identification was measured from 1 to 7 (1 was user-design firm and 7 professional firm)

A Bootstrapping analysis (Preacher & Hayes 2004) further support mediation of firm identification. Selecting product choice as outcome variable and type of self-construal as independent variable we found a significantly indirect effect of self-construal type on product choice ($CI_{95\%}$=0.0104; 0.3260) through firm identification (See Appendix 5).

Interestingly in the user scenario results are not statistically significant between the two type of self-construals ($M_{independent}$= 0.1429; $M_{interdependent}$= 0.5714; p-value=0.138) however in the university student scenario interdependent self-construal individuals show statistically significantly higher preference for the user-design product than independent self-construal individuals ($M_{independent}$= -0.2000; $M_{interdependent}$= 0.5263; p-value=0.010). This might suggest that with more similarities into the equation more need for distinction is sensed by independent individuals.

5. Conclusions

Today more than ever firms are relying on their user-community in order to develop new products which can be latter communicated to the boarder market of observing consumers as user-designed. As mentioned before communicating a user-design strategy does not always work which means that firms have to be cautious in understanding if that disclosure will benefit them or not.

This thesis contributes to the existing literature by further exploring the impact of communicating to the market that a firm relies on a user-community to create new products in the following four aspects:

First of all, the results show that consumers in general have higher levels of identification towards the user-design firm. We believe that this happens because the user-design firm relies on a community of users, that are perceive as being more similar to observing consumers than firm's professionals. Using social theory we can argue that observing consumer user identity is activated when they are present with a firm that relies on this type of strategy and that is why they identify more with the firm. Also by viewing that other users have the power to change the company's offerings observing consumers might feel empowered by the indirect experience that is shared with the community of users (Dahl et al. 2015). Those results are important for managers since firm identification is associated with important outcomes like: increased loyalty, positive word-of-mouth intentions, higher likelihood to adopt new products made by the firm and increased purchase intentions towards the firm's products (Bhattacharya et al. 1995; Bhattacharya & Sen 2003; Ahearne et al. 2005).

Secondly results show that consumers have preference for the user-design products and show higher levels of positive WOM towards the product designed by users. Those findings are in line with the literature on this topic that show that there is a benefit of communicating a user involvement in products of low complexity like cereals or T-shirts (Fuchs & Schreier 2011; Schreier et al. 2012). Those results gain even a more important contribution since this study was conducted within-subjects and respondents were confronted with evaluations of extremely opposed design strategies which means that comparing advantages and disadvantages of both products and strategies the one of user-designed gain preference. As the within-subjects designs mimics a real situation where consumers face different alternatives this thesis show that observing consumers will more likely choose products of user-design firms. In a market where the consumer is today more than ever overloaded with product choices, firms might benefit from advertising their user-design strategies in order to differentiate.

Thirdly the study demonstrates that providing similar background information about the user-community to consumers influences firm identification that in turn increases preferences for user-design products. Our study reveals that in the scenario where similar background information about the user community was provided, consumers show higher levels of firm identification towards the user-design firm and higher demand for user-design products. Relying on a user-community that matches the observing consumer in terms of social characteristics evokes levels of empathy and affinity with the users responsible for developing the products and this can explain why consumers end up identify more with those firms. In the context of advertising, researchers found that attributing a generic "user-design" label could not be enough to induce a strong identification with the creator of the ad (Thompson & Malaviya 2013). If we apply the same reasoning to products, giving information about the user that matches the observing consumer will increase the shared identity between them and increase the probability that the consumer will think in a positive way about the user responsible for creating the product. Those findings can be of extremely relevance to managers when communicating their user-design initiatives because firms can match their user-community with their broader consumer base and with their targets in order to increase observing consumers' levels of identification with the firm. Companies might then elaborate on their slogans for user-design products by using sentences that appeal to the social identity of their target markets. Summing up managers should activate consumers' social identities by highlighting the idea that products are created by someone that consumers perceive as being similar.

We developed the work of Dahl and colleagues (2015) by showing that user-design firm identification and afterwards product preference is not the same for all consumers. Understanding consumers' self-construal allows a better understanding of the effectiveness of communicating a user-label and a user-design strategy to the boarder market. No study until today had tried to investigate in what type of consumer the effect of a user-design strategy could be stronger or weaker. Independent individuals since they value less their connections with others are less attracted to the effect of designed by "someone like me". Those type of individuals have higher needs of differentiation so for them buying a product that appeals to their social connection is not something that they value. We thus found that independent individuals in our sample are indifferent between a professional and a user-design product. Conversely, interdependent individuals prefer user-design products to professional ones. That can be explained by their relationship oriented approach and by their need to express points of similarity with others (Kim & Hyun 2013).

Analyzing the most independent and interdependent individuals in our sample confirms the results described above. Additionally, we also show that individuals have different levels of firm identification accordingly with their type of predominantly self-construal. Product choice is then explained by the mediation effect of firm identification. Results suggest that independent individuals even with firm identification levels towards the user-design firm are indifferent between products (user vs professional) which means that for them higher identification with the user-design firm does not translates into actual purchase intentions. Conversely, for interdependent individuals firm identification towards the user design firm actually translated into the purchase of user-design products.

Interestingly we found that there is no statistical significance difference for product choice in the scenario where the community is described as being composed by normal "users". One possible explanation is that for independents the user scenario does not induce sufficient levels of connection with the community in order to trigger needs of differentiation and social distance. However in the scenario where the community is mainly described as composed by university students results gain statistical significance. A plausible reason is that independent individuals might have higher needs of distinctiveness and uniqueness when similarities are putted in evidence. As studies show those individuals have more nonsocial motives than social ones (Kim & Hyun 2013) and are more oriented to "self-others differentiation" (Kwon & Mattila 2015) which can indicate that as more similarities are putted in the equation higher need for differentiation is sensed by those individuals.

These results can be of extremely importance to managers that wish to employ and advertise user-design strategies. They should be aware that not all consumers are equally responsive and enthusiastic about the user-design phenomenon so they should segment the market by choosing to disclose user-design strategies in countries where was found to exist more interdependent individuals than independent ones like for example China . Additionally they should be more careful when choosing to disclose those strategies in countries like for example United States where literature affirms that exists more independent individuals (Aaker & Lee 2001).

6. Limitations and Further Research

Although this research provided valuable insights on the topic of Open Innovation more particularly in investigating the outcomes and mechanisms of disclosing user participant involvement in creation of new products it also presents some limitations. First of all, the study utilizes a product that people are familiarized with, that can be easily done by normal consumers which means that user participation in this type of product can be more acceptable and credible. Researchers have found that familiarity with the user innovation is one of the moderators affecting perceptions of user-design products (Schreier et al. 2012). Thus it would be interesting to replicate this study in more complex products like cars, gardening tools or consumer electronics where more complex knowledge is necessary. Also the phenomenon of social identity could be more prominent in categories of products that are relevant for the social identity of the individual like clothes or watches (Dahl et al. 2015).

The second limitation is the sample size since researchers usually recommend to have a sample of at least 200 (Hogarty et al. 2005) , adding to this due to randomization scenarios only 96 and 85 individuals were left in each scenario. A large scale study could then produce more accurate and reliable results. Also the sample was only composed by university students, which might be more familiarized with the concept of the user-innovation phenomenon and this could also compromise the results obtained.

Finally, this study only explores reactions of consumers in a neutral scenario where no information was given about who was the user community and other one where the user-community was described as similar to consumers. It could be very interesting also to explore reactions of observing consumers to firm's relying on communities where the background information induces dissociation or dissimilarity. Consumers many times avoid to purchase products that have any sort of connection with dissociative groups from whom they want to distance themselves (Hammerl et al. 2015). Consumers' reactions to dissociative background information could invert findings of positive outcomes coming from a user-design strategy however only further research could explore deeply this issue.

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8. Appendix

1) Randomization of products

1.1) Number of scenarios generated

Scen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	User_scenario	96	53,0	53,0	53,0
	Student_scenario	85	47,0	47,0	100,0
	Total	181	100,0	100,0	

Scenarios_randomization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	User_label1	48	26,5	26,5	26,5
	User_label2	48	26,5	26,5	53,0
	Student_label1	43	23,8	23,8	76,8
	Student_label2	42	23,2	23,2	100,0
	Total	181	100,0	100,0	

1.2) Effectiveness of randomization procedures.

Student_labels

	Observed N	Expected N	Residual
Label1	43	42,5	,5
Label2	42	42,5	-,5
Total	85		

User_labels

	Observed N	Expected N	Residual
Label3	48	48,0	,0
Label4	48	48,0	,0
Total	96		

Test Statistics

	Student_labels	User_labels
Chi-Square	,012[a]	,000[b]
df	1	1
Asymp. Sig.	,914	1,000

a. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 42,5.

b. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 48,0.

2) Construct of items

Independent self-construal (Singelis 1994)

Twelve items, seven-point (strongly disagree to strongly agree), Likert-type scale

- (1) I enjoy being unique and different from others in many respects. (2) I can talk openly with a person who I meet for the first time, even when this person is much older than I am. (3) I'd rather say "No" directly, than risk being misunderstood. (4) Having a lively imagination is important to me.
  (5) I prefer to be direct and forthright when dealing with people I've just met. (6) I am comfortable with being singled out for praise or rewards. (7) Speaking up during a class (or a meeting) is not a problem for me. (8) I act the same way no matter who I am with. (9) I value being in good health above everything. (10) Being able to take care of myself is a primary concern for me. (11) My personal identity, independent of others, is very important to me. (12) I act the same way at home that I do at school (or work).

Interdependent self-construal (Singelis 1994)

Twelve items, seven-point (strongly disagree to strongly agree), Likert-type scale

- (1) Even when I strongly disagree with group members, I avoid an argument. (2) I have respect for the authority figures with whom I interact. (3) I respect people who are modest about themselves. (4) I will sacrifice my self-interest for the benefit of the group I am in. (5) I should take into consideration my parents' advice when making education/career plans. (6) If my brother or sister fails, I feel responsible.
  (7) I often have the feeling that my relationships with others are more important than my own accomplishments. (8) I would offer my seat in a bus to my professor (or my boss). (9) My happiness depends on the happiness of those around me. (10). I will stay in a group if they need me, even when I am not happy with the group.
  (11) It is important to me to respect decisions made by the group. (12) It is important for me to maintain harmony within my group.

Firm Identification (Escalas & Bettman 2005)

Four-items, seven-point each (from 1 to 7), Likert-type scale

- (1) "I can identify more with Firm A / B" [1; 7], (2) "I feel more connected with Firm A / B" [1; 7], (3) "I feel closer to Firm A / B" [1; 7], and (4) "I feel a stronger bond to Firm A / B" [1; 7] (where 1 = Firm A and 7 = Firm B)

Perceived Similarity (Dahl et al. 2015)

Four-items, four seven-point bipolar rating scales

- (1) "I feel not similar/ I feel similar" [1; 7], (2) "There are no similarities between me and members of the community/ There are many similarities between me and the members of the community" [1; 7], (3) "I feel not close to the members of the community / I feel very close to the members of the community" [1; 7], and (4) "I cannot identify with the community members/I can identify with the community members" [1; 7]

Positive Word-of-Mouth (Moldovan et al. 2011)

Two-items, seven-point each (from strongly disagree to strongly agree), Likert-type scale

- (1) "I have good things to say about the product" (2) "I will recommend my friends to buy the product"

3) Mediation outcomes

3.1) Mediation with Product choice as outcome

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************************** TOTAL EFFECT MODEL ****************************
Outcome: PC_T

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,1480      ,0219      ,7577     4,0083     1,0000   179,0000      ,0468

Model
              coeff         se          t          p       LLCI       ULCI
constant      ,1875      ,0888     2,1104      ,0362      ,0122      ,3628
S_CEN         ,2596      ,1296     2,0021      ,0468      ,0037      ,5154


 ****************** TOTAL, DIRECT, AND INDIRECT EFFECTS *********************

 Total effect of X on Y
      Effect         SE          t          p       LLCI       ULCI
       ,2596      ,1296     2,0021      ,0468      ,0037      ,5154

 Direct effect of X on Y
      Effect         SE          t          p       LLCI       ULCI
       ,1097      ,1226      ,8947      ,3722     -,1323      ,3517

 Indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
 F_IDENT      ,1498      ,0536      ,0556      ,2740

 Partially standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
 F_IDENT      ,1707      ,0611      ,0602      ,3042

 Completely standardized indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
 F_IDENT      ,0854      ,0305      ,0313      ,1537

 Ratio of indirect to total effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
 F_IDENT      ,5773     5,8982      ,1781     4,4216

 Ratio of indirect to direct effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
 F_IDENT     1,3657    17,0695     -,6171   102,9066
```

3.2) Mediation with WOM for user-design firm as outcome

```
************************** TOTAL EFFECT MODEL ****************************
Outcome: WOMA

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,0657      ,0043      ,9232      ,7750     1,0000   179,0000      ,3799

Model
              coeff         se          t          p       LLCI       ULCI
constant     4,7917      ,0981    48,8617      ,0000     4,5982     4,9852
S_CEN         ,1260      ,1431      ,8804      ,3799     -,1564      ,4084

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,1260      ,1431      ,8804      ,3799     -,1564      ,4084

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,0252      ,1428      ,1764      ,8602     -,2566      ,3069

Indirect effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,1008      ,0488      ,0265      ,2201
Completely standardized indirect effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0525      ,0250      ,0129      ,1102

Ratio of indirect to total effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,8001     7,7400     -,3575    52,7536

Ratio of indirect to direct effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT     4,0013    11,4972     1,7785   147,3962

R-squared mediation effect size (R-sq_med)
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0041      ,0090     -,0089      ,0317

Preacher and Kelley (2011) Kappa-squared
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0523      ,0245      ,0132      ,1087

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
     1000

Level of confidence for all confidence intervals in output:
    95,00
```

4) Mediation with self-construal as independent variable

```
************************** TOTAL EFFECT MODEL ****************************
Outcome: PC_T

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,3737      ,1396      ,6826    10,8724     1,0000    67,0000      ,0016

Model
              coeff         se          t          p       LLCI       ULCI
constant     -,1111      ,1377      -,8069      ,4226     -,3860      ,1637
S_CRIT        ,6566      ,1991      3,2973      ,0016      ,2591     1,0540

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,6566      ,1991     3,2973      ,0016      ,2591     1,0540

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,5258      ,1984     2,6503      ,0101      ,1297      ,9219

Indirect effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,1308      ,0781      ,0089      ,3220

Partially standardized indirect effect of X on Y
            Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,1479      ,0878      ,0091      ,3584

Partially standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,1479      ,0878      ,0091      ,3584

Completely standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0744      ,0439      ,0057      ,1811

Ratio of indirect to total effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,1992      ,1710      ,0098      ,6647

Ratio of indirect to direct effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,2487     1,6985      ,0033     1,7200

R-squared mediation effect size (R-sq_med)
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0562      ,0378      ,0064      ,1599

Preacher and Kelley (2011) Kappa-squared
           Effect    Boot SE   BootLLCI   BootULCI
F_IDENT      ,0775      ,0440      ,0099      ,1830

******************** ANALYSIS NOTES AND WARNINGS *************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
     1000
```

5) Control variables

Tests of Between-Subjects Effects

Dependent Variable: F_IDENT

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6,279[a]	3	2,093	1,611	,195
Intercept	9,727	1	9,727	7,486	,008
Nationality	,024	1	,024	,019	,892
Ethnicity	,125	1	,125	,096	,757
S_CRIT	6,232	1	6,232	4,796	,032
Error	84,454	65	1,299		
Total	457,125	69			
Corrected Total	90,734	68			

a. R Squared = ,069 (Adjusted R Squared = ,026)

Dependent Variable: PC_T

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7,827[a]	3	2,609	3,741	,015
Intercept	,518	1	,518	,742	,392
Nationality	,384	1	,384	,550	,461
Ethnicity	,022	1	,022	,032	,858
S_CRIT	7,493	1	7,493	10,743	,002
Error	45,333	65	,697		
Total	56,000	69			
Corrected Total	53,159	68			

a. R Squared = ,147 (Adjusted R Squared = ,108)

Tests of Between-Subjects Effects

Dependent Variable: PC_T

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4,629[a]	3	1,543	2,629	,068
Intercept	,212	1	,212	,362	,552
Nationality	,078	1	,078	,132	,718
Ethnicity	,070	1	,070	,119	,732
S_CRIT	4,240	1	4,240	7,225	,012
Error	17,606	30	,587		
Total	28,000	34			
Corrected Total	22,235	33			

a. R Squared = ,208 (Adjusted R Squared = ,129)