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Breaking Down the Barriers

A Quantitative Study of Co-Creation under Different Levels of Product Complexity

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Abstract

Involving consumers in the new product development process is becoming increasingly common and research has shown several benefits associated with adopting such a strategy. However, recent research, investigating the perception of co-created products among non-participating consumers, indicates that the positive effects of co-creation are absent for complex products. The present study aims to clarify the role of complexity in consumer co-creation. Additionally, based on signaling theory the authors investigate whether using advertising creativity in the communication of the product could circumvent this supposed complexity barrier. A quantitative study does not provide empirical support for the hypothesized complexity barrier. The findings show that the success of co-creation is not determined by the complexity of the product, but rather by the perceived expertise of the developers, which acts as a mediator. Regardless of product complexity, consumer involvement has a significant positive impact on product perception, brand perception and purchase intention, although the effect on product perception is fully mediated by perceived expertise. Meanwhile, advertising creativity increases perceived advertising effort, which in turn positively impacts product perception, brand perception and purchase intention, and moderates the effect of co-creation on brand perception.

Keywords: Co-creation; product complexity; advertising creativity; participant expertise; advertising effort

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Definitions

Co-creation

The concept of co-creation has been presented and named in different formats in research history. In this study, different formulations will be used, although they will not be seen as different aspects of the phenomenon co-creation. The terms “co-creation”, “user-driven” and “consumer involvement” are used more or less interchangeably in the text. The concept of “lead users” indicate somewhat more involved consumers than the average person.

Internally developed product (IDP)

Internally developed products are defined as products which has not been developed together with the customers. It can also be described as the traditional way of developing new products.

New product development (NPD)

New product development is the process of creating new products. It can be seen as a strategy on how to develop new products in an efficient way. The product development process differs among companies and it is usually a competitive advantage to have a well-developed NPD process.

Ideation

Ideation is the process of coming up with ideas and suggestions for new products or product features.

Selection

Selection is the process of selecting among a number of ideas, deciding which to proceed with.

Product complexity

This construct describes the perceived inherent degree of complexity of the product category. More complex product categories are perceived by consumers to be more technically complicated and more demanding to design, develop and produce.

Signaling effects

Theory about signaling effects concerns the interpretation of visible aspects of a product, company or person as indications of less tangible characteristics, in order to compensate for a lack of information about the characteristic in question.

1. Introduction

1.1 Background

Involving consumers in the different steps of the value chain is becoming more and more popular among companies across all kinds of industries. McDonald's, General Electric and Microsoft are just a few examples of companies which have adopted a strategy of engaging and interacting with consumers (Roth, 2012).

Studies have confirmed the problems of new product commercialization, with new products suffering from high failure rates, often reaching 50 percent or higher (Ogawa and Piller, 2006). To avoid costly product failures, companies can integrate consumers into the innovation process (Ibid). In the past, companies typically relied on traditional forms of market research to test new product concepts. That is not the case anymore, and the inclusion of consumers in the NPD phase, the launch/advertising phase and the after-sales phase can now be observed. Due to the globalization and new technologies the world is becoming more connected and companies connecting with consumers all over the world and using their creative minds is something that can be expected to increase in the future.

One of the pioneers of consumer co-creation is LEGO. In 2004, when the company was on the brink of bankruptcy, they announced their new CEO Jorgen Vig Knudstorp hoping he could turn around the situation. Knudstorp completely changed the development strategy and started to focus on actively involving consumers in the new product development process. This new innovation approach quickly became an important cornerstone in LEGO's strategy. By adopting an open innovation and consumer co-creation approach LEGO managed to come back and successfully transform the business (Feloni, 2014).

Today, LEGO has created successful initiatives such as LEGO Mindstorms, Design By Me, Cusoo, LEGO Architecture and LEGO Ideas. Through the online platform, LEGO Ideas is encouraging their fans and consumers to contribute with ideas for new LEGO sets (Naidu, 2016). This approach reduces the risk of launching a new product since they know it will be popular before the actual launch.

This success story illustrates how co-creation can be a powerful strategy. By relying on co-creation, companies can create valuable products that meet consumer needs, and eventually increase sales.

1.1.1 The Evolution of Co-creation

Consumer participation per se is not new. Supermarkets, which are models of customer co-production with customers selecting, carting, and transporting groceries date to the 1930s (Bendapudi & Leone, 2013). However, academic work within the field of consumer participation in the production stage only dates back to the 1970s (Ibid).

In 2000, the scholars Prahalad and Ramaswamy popularized the concept of co-creation in their Harvard Business Review article "Co-Opting Customer Competence". In the article they distinguish between passive and active customers. It was not until early 2000 that studies started to conceptualize and investigate customers as active players in the NPD process.

Early research focused on the individual consumer as the innovator (von Hippel, 2001; Kristensson et al., 2004). Research then moved into exploring distinctive groups or communities (Jeppesen, 2005; Hienerth and Lettl, 2011; Füller et al., 2008; Franke et al., 2008).

This represents a shift in the development of new products. One of the logics behind this shift is that consumers' ability to innovate is radically and rapidly improving (von Hippel, 2009). Von Hippel also argues that even though producers have the expertise to produce and sell products, consumers possess the abilities to understand the actual needs and desires they have. Riggs and von Hippel conducted a study in 1994 and found that users tend to develop innovations that draw heavily on their own information about need and context of use, while manufacturers tend to develop innovations that draw on the types of solutions in which they specialize. In the study, Riggs and von Hippel illustrate how companies can generate products that better meet consumer needs by involving the consumers in the NPD process. Other researchers have supported these findings, when demonstrating how successful cases of consumer involvement in NPD can outperform in-house developers (Nishikawa et al. 2013; Poetz and Schreier, 2012).

Another reason behind the rise of consumer co-creation is the advent of digital technology. Internet has helped to empower consumers in three ways: *access* to knowledge, *ability* to apply knowledge, and *connecting* co-creating consumers with each other (O'herm and Rindfleisch, 2010). The Internet has facilitated the interaction between companies and their customers (Sawhney et al., 2005). The rise of social media in recent years has opened up a debate where some researchers argue that a fifth P, participation, should be added to the classical 4P marketing mix model (Tuten and Solomon, 2014).

1.1.2 The Evolution of Creative Advertising

Much like co-creation, creativity in advertising is by no means a new phenomenon. Indeed, one could argue that it is as old as advertising itself. However, a significant shift – a “creative revolution” – occurred in the 1960s, as advertising moved from being predominantly research based towards an increasing focus on conveying emotions (O'Barr, 2011). The key success factor became less about what was said and more about how it was said, and advertisements evolved from simply communicating value propositions into building brand and product image (ibid.). While there was a bit of a backlash against the new ways of thought during the 1970s, creativity has been a principal component of advertising since the creative revolution.

There has been an ongoing debate in the advertising industry about whether to prioritize advertising effectiveness or creativity. Advertisers and managers typically argue for predictable and effective advertisements, while creatives argue that effectiveness is a consequence of creativity. However, Kover et al (1995) found that the two are not distinct or opposed to each other.

As competition intensifies and the media environment grows more cluttered, consumers are constantly bombarded with messages. As a result, advertisers find it increasingly difficult to get themselves noticed, creative advertising has been promoted as a means to break through the noise and catch consumers' attention (e.g. Pieters et al, 2002).

1.2 Problem Area

Prior research has shown that non-participating consumers' perceptions tend to suffer when the complexity of the product goes from low to high (Schreier et al., 2012; Liljedal, 2016). Thus, it might be challenging for companies producing more complex products to adopt a successful co-creation strategy, even though co-creation is a good way to create engagement. No matter if the company is producing low or high complexity products, customer engagement is something to strive for, since it has an impact on marketing metrics such as customer lifetime and customer equity (Verhoef et al. 2010). Additionally, research has found that customer orientation has positive effects on new product development (Salomo et al. 2003).

While research is limited regarding how consumer co-created products and co-creating companies are evaluated by non-participating consumers, this is arguably more relevant from a business standpoint, as most potential consumers are unlikely to have participated in the development process. As such, this study will focus on non-participating consumers, aiming to investigate if the effects of co-creation differ between low- and high complexity products. Schreier et al. (2012) identified a boundary condition, where the positive outcomes of co-created products were attenuated for more complex products. Liljedal (2016) found that the positive effects of co-creation do not hold for high complexity products when the brand is unfamiliar. The aim of this study is to further investigate the effects of co-creation in both high- and low complexity product categories. In case the results are in line with prior research, the goal is to investigate if it's possible for high complexity products to overcome the barrier by using creative advertising.

It could be argued that companies making complex products should simply avoid engaging in consumer co-creation or circumvent disclosure of information regarding the product development, as it does not appear to be of any benefit for them. However, involving consumers in the development process has been shown to have numerous advantages beyond the variables affected by the proposed complexity barrier, which would be highly beneficial for any company. Research shows that involving lead users in the product development process increases sales of the resulting products and are perceived as more novel and beneficial by consumers (Lilien et al. 2002; Poetz & Schreier, 2012). Additionally, companies involving consumers in the development process are perceived as more customer oriented (Fuchs & Schreier, 2011), which is positively related to superior performance (Day, 1994). Ignoring the input from consumers can become a big loss for companies since the customer community can contribute with valuable insights during the NPD process. It is also a cost efficient method of gathering information regarding consumer needs. Studies have assessed the performance of lead user generated products for highly complex and high tech industries (Olson & Bakke, 2001; Herstatt & von Hippel, 2003; Urban & von Hippel 1988). Findings show a positive relationship between the input from lead users and the outcome and performance of the NPD process. These findings prove that co-creation can be beneficial for high complexity products, and not only relevant for low complexity products.

Consumers' perception of a company is thus an important variable for companies to pay attention to. Engaging in consumer co-creation can lead to perceptions that will strengthen consumer preference and eventually have an impact on economic variables. Brown & Dacin (1997) explain how corporate associations are used as cues by consumers when gathering information about a company. Consumers evaluate companies based on these corporate associations. It is therefore of interest to investigate how co-created products are being evaluated and how they affect consumer perceptions and corporate associations. It is a relevant topic for companies producing low complexity products as well as for companies producing high complexity products.

So far, studies within the field of co-creation have focused on the co-creating consumers (Mahr et al., 2014), the relation between co-creation and non-participating consumers' attitude and perception towards the company (Fuchs & Schreier, 2011; Schreier et al., 2012), the brand (Fuchs et al. 2013) and the products (Schreier et al., 2012; Franke et al., 2006). However, little research has focused on the communication of the co-created products. Thompson and Malaviya (2013) studied the effectiveness of disclosing advertising co-creation, while Fuchs et al. (2013) studied how branding the co-creating consumers as artists, celebrities or experts affects the non-participating consumers' perception of the brand and the products.

However, there is no research on the effects of different kinds of advertising in a co-creation context, specifically the use of creative advertising. The effect of creative advertising is a well-researched area, but it has never been used in the field of co-creation.

From a marketing perspective, it is relevant to study the effects of different advertising approaches, when launching co-created products. Understanding how differences in advertising affect the non-participating consumers' perceptions can help producers of both low- and high complexity products to successfully create advertising strategies for co-created products.

Given the limited research on the communication of co-created products and that no research has examined the effects of creative advertising in a co-creation context, the aim of the present study is to make a contribution by looking at the creative advertising effects on both low- and high complexity products. Based on the notion that co-created high-complexity products tend to be received with skepticism by the customers, it is of interest to investigate if companies can overcome this issue by using creative advertising.

1.3 Purpose and Research Question

The aim of this study is to contribute to the marketing research field of co-creation in several ways. First of all, research within this area is not novel, but some gaps have been identified. Research has found that producers of both high and low complexity products can benefit from co-creation, in terms of more efficient and effective product development processes, as well as superior end results. However, studies on how co-creation efforts are perceived by non-participating consumers indicate that the subjective evaluations of products and brands using consumer involvement are not always positive. The purpose of this study is to further investigate how co-creation of both low and high complexity products is being perceived by non-participating consumers and thus provide a deeper understanding of the co-creation concept.

Limited research has been devoted to understand the role of complexity in a co-creation context. The aim is to investigate whether the evaluations, by non-participating consumers, on co-created products differ between different degrees of complexity. Previous research has found that co-creation leads to better evaluations. Researchers have also identified a boundary condition, where the positive effects of co-creation diminish when the complexity of the product is high. Thus, the goal is to deepen the understanding of product complexity and empirically investigate the role it plays in consumer co-creation.

Research within the field of creativity has shown that using creativity when communicating the message has positive effects on consumers' evaluation of both the product and the brand behind it (e.g. Dahlén et al., 2008; Modig & Rosengren, 2014). Since previous research indicates that there is no effect of co-creation for complex products, the goal is to investigate whether communicating the product in a more creative way can circumvent this barrier, making the benefits of co-creation more available for companies selling complex products.

In short, the purpose of the present study is to provide an answer to the following question:

Is complexity a boundary condition in consumer co-creation, and can it be circumvented by communicating the product in a more creative way?

1.4 Delimitations

The study was conducted in Sweden with respondents ranging from 18 to 65 years old. Focusing only on the Swedish market facilitated the creation of the ads and the collection of data.

The choice of product categories for the experiment was narrowed down to four different products (juice, shoes, television and car). Juice and shoes represent low complexity products and television and car represent high complexity products. Two product categories within each complexity level were used, in order to be able to generalize the results and make conclusions regarding high- and low complexity products. Furthermore, the products were communicated with print advertisements due to the simplicity to create such ads, compared to video or other means of communication. The advertisements were not presented in a specific context, since different media context can affect the perception of an ad (De Pelsmacker et al., 2002).

The aim of the study was not to investigate the effects of the brand in a co-creation context. Since brands are proven to have an impact on consumer perceptions, the brands were kept anonymous in order to avoid brand effects (Dodds et al., 1991). Another variable that has been proven to have effects on consumer perceptions is the price. Consumers tend to draw conclusions and create perceptions around products based on the price (ibid.). Since this was not the focus of the study, the price of the product was not communicated in the ad.

An alternative was to include ideation and selection in the study. Thus investigating the effects of co-creation depending on whether the company empowers the customers to come up with ideas or to select ideas. In this study these two concepts were merged, since separating these two would bring difficulties in the presentation and analysis of the results. Respondents were given the information that customers had both created and selected the ideas.

1.5 Disposition

This paper consists of five main parts: Introduction, theory, methodology, results, and discussion. The introduction will cover the topic of the study and define its purpose. The reader will also be presented with prior research which has served as basis for the study. The literature review will lead to the creation and presentation of the hypotheses that will be tested in the study.

The methodology section will provide the reader with information regarding the collection of data, variables used and the statistical tools which have been used for the different tests. The methodology section will also cover the reliability and validity of the study.

The result section will present the results of the collected data and will be structured after the hypotheses. When the hypotheses have been either rejected or accepted in the result section, the results will be discussed in the final section. This section also includes managerial implications and suggestions for future research.

2. Theory

In order to understand the concept of consumer co-creation and advertising creativity, a literature review will be presented in the next section. The literature review begins with co-creation and presents hypotheses based on prior research. The literature review continues by explaining what has been done in the field of advertising creativity. As for co-creation, hypotheses are constructed based on prior research.

2.1 Co-creation

The use of co-creation is becoming more and more common among companies across different industries. The advancement of new technologies has given consumers the ability to communicate with peers and companies all over the world. New technologies and the interconnectedness of communities have fueled consumers' desire to engage and make an impact. It has also helped companies to better interact with their customers all over the world.

O'hern and Rindfleisch (2010), define consumer co-creation as *"a collaborative new-product development activity in which consumers actively contribute and/or select the content of a new product offering"*.

Companies are striving to create products that fit consumer needs. Consequently, a lot of resources are dedicated to identifying those needs. Strong market orientation together with producers' capabilities to get consumer insights are considered to be important success factors for new product development (Füller and Matzler, 2007). Companies that manage to identify consumer needs and align them with their core capabilities are those that will be successful in innovation (Ibid). Finding a fit between the product and consumer needs will generate a higher willingness to pay for that product (Franke and Piller, 2004). Co-creation is a way to find these needs at a lower cost, since consumers possess the ability to understand their own needs. Having them design the products based on their own desires will lead to more attractive products that will have a higher probability to succeed on the market.

Practical demonstrations has shown that involving consumers in the development of new products effectively and systematically can generate ideas for commercially attractive products (Urban & von Hippel, 1998; Herstatt & von Hippel, 1992; Olson & Bakke, 2001; Lilien et al., 2002). However, there is a distinction to be made between regular consumers and so-called lead users. Lead users are those that are at the leading edge of important trends in a marketplace and are experiencing needs that will later be experienced by many users in that marketplace (Franke and von Hippel, 2006). The lead users are seen as more attractive since they have a higher ability to come up with more innovative solutions (Ibid).

The benefits of co-creation have been discussed within the academic field. Scholars have identified a relationship between co-creation and increased levels of innovation, efficiency, quality and reduced costs (e.g. Perks et al., 2012; Lilien et al. 2002; Franke and von Hippel, 2006; Payne et al. 2008; Prahalad and Ramaswamy, 2000, Hoyer et al., 2010). Data from the consumer goods brand Muji also revealed that products resulting from user generated ideas actually performed better on the market in terms of aggregate sales revenues and profit margin (Nishikawa et al. 2013).

Even though research has found co-creation to have a positive impact on a company's product development, a traditional NPD process should not be fully disregarded. Von Hippel (2009) argues

that well-established R&D departments can have the necessary resources to outperform a co-created product in some aspects, since these departments usually take into account other factors in the product development process, such as costs.

To date, few studies regarding co-creation, and how it is being perceived by non-participating consumers, take into consideration the complexity of the product. These studies have mainly focused on low complexity products that are easy for consumers to understand. Little research has focused on understanding for what kind of products and industries co-creation could add value to the NPD process. Schreier et al. (2012) found that the complexity of the design task works as an important moderator that creates boundary effects for the innovation effect of user design. Liljedal (2016) investigates whether the brand has any implications on the effects of co-creation. Liljedal also adds the complexity dimension, finding that for complex products, the perceived lack of ability has negative effects whereas the opposite occurs for non-complex products.

2.1.1 Co-creation and Product Perceptions

The main purpose of using co-creation is to create consumer engagement and products that meet consumer needs. Companies that manage to create products which consumers want and desire are more likely to succeed. These products are also more likely to be positively received by consumers and thus create positive product perceptions. Innovation scholars have argued that user-driven firms can gain competitive advantage by producing better products that have a closer fit to the customer needs (Lilien et al. 2002; Poetz and Schreier 2012)

Research has found that customized products create greater benefits for consumers than standardized products, since customized products can be specifically tailored to their preferences (Franke et al. 2009). Products which fit consumer preferences are more positively evaluated in terms of willingness to pay, purchase intention and product attitude (ibid.).

Hoyer et al. (2010) state that products which have been created using input from consumers often possess high expected benefits and novelty which increases attractiveness and gives room for product differentiation. Dahl et al. (2014) find increased preference among non-participating consumers for products developed together with consumers. The reason why consumer co-created products are favorably evaluated can partly be explained by the fact that customer orientation has a positive relation to perceived product quality (Brady & Cronin, 2001).

However, Fuchs and Schreier (2011) question whether the positive effects of co-creation can be found for more complex products. They argue that in the case of creating low complexity products (t-shirts), non-participating consumers might perceive the co-creating consumers as competent enough to fulfill the task of creating such products, while that assumption is questioned regarding more complex products. Thus, one might question whether the effects of co-creation will be found among high complex products, where it is more difficult to believe that an average consumer has sufficient knowledge to come up with innovative ideas or any kind of relevant input.

Liljedal (2016), measures how non-participating consumers' attitude towards the product is affected by how the product has been developed. The author finds significantly greater product attitude for co-created products when the complexity is low. But when looking at high complexity products, the effects are reversed, with significantly lower product attitude for co-created products, compared to internally developed products.

The authors of this study have not found studies which directly measure the perceived product quality for consumer co-created products among non-participating consumers. With the assumption that

consumers generally do not have the necessary knowledge to develop highly complex technological products, it can be expected that those products would be perceived as having lower quality.

In order to investigate the supposed complexity barrier's effects on product perception for co-created products, the following hypotheses will be tested:

H1a: *Low complexity consumer co-created products will perform better on product related variables than low complexity internally developed products.*

H1b: *High complexity consumer co-created products will not perform better on product related variables than high complexity internally developed products.*

2.1.2 Co-creation and Brand Perceptions

Customer orientation¹ is a relevant construct to study when it comes to consumer co-creation and its impact on brand perception. Customer orientation, is usually described as an organizational culture that stresses the customer as the focal point of strategic planning and execution (Brady & Cronin, 2001). Day (1994) describes that research indicates that the market orientation of a firm is positively related to superior performance of that firm.

In the field of co-creation, research has investigated the brand perceptions and especially the perceived customer orientation of user-driven firms. Thus, implementing consumer co-creation in the new product development process is very likely to have an impact on brand perceptions. However, little attention has been paid to investigate how non-participating consumers perceive firms that use common design by users when developing new products (Fuchs & Schreier, 2011). Fuchs & Schreier (2011) investigated how consumer co-creation affects the perceived customer orientation of the firm. The study tested products with different levels of complexity (t-shirts, furniture and bicycles), and found that consumer empowerment leads to increased levels of perceived customer orientation for all included categories. In the case of customer orientation, it is therefore reasonable to assume that complexity will not have a moderating effect.

Schreier et al. (2012) investigated how consumer co-creation affects the perceived innovation ability of the firm. Their findings showed that consumers have more faith in a firm's ability to create new innovative ideas when relying on common user design. However, the authors did not find what they call "the innovation effect of user design" for highly complex products. Thus, the innovation ability was not perceived as higher for co-created products when the products were complex. Schreier et al. argue that their findings show that some product categories are too complex for consumers to perceive users as being able to provide meaningful input.

The findings by Schreier et al. are also supported by Liljedal (2016). Liljedal found higher perceived innovation ability for consumer co-created products in a low product complexity context, but did not find the same for high complexity products. Liljedal also found that the brand attitude for consumer co-created products were higher than internally developed products. As for innovation ability, Liljedal did not find the same effects for high complexity products, when the brand was unfamiliar. However, for familiar brands she found the same effects as for low complexity products.

¹ The term *market oriented*, *market focused* and *customer focused* tend to be considered as synonymous (Brady and Cronin, 2001)

With consideration to the research presented above, the complexity barrier is expected to diminish the effectiveness of co-creation on brand perceptions for highly complex products. A noticeable exception however, is that previous research suggests that this will not be the case for customer orientation, which has been shown to increase regardless of complexity. As such, the effects of the complexity barrier will be tested with the following hypotheses:

H2a: *Low complexity consumer co-created products will perform better on brand variables than low complexity internally developed products.*

H2b: *With the exception of customer orientation, high complexity consumer co-created products will not perform better on brand variables than high complexity internally developed products.*

2.1.3 Co-creation and Purchase Intention

The ultimate goal for most companies is to be profitable. In order to increase profitability, companies need strategies to sell more or to sell at higher margins. It is therefore important to create behavioral intentions in terms of purchase intention and willingness to pay. Products which fit consumer needs are more likely to succeed on the market and consumers are willing to pay more for such products. Franke and Piller (2004) demonstrate that consumers are willing to pay a price premium for self-designed products.

Liljedal (2016) found that the purchase intention for consumer co-created products was higher than for internally developed products, in the case of non-complex products. However, Liljedal found an inverse effect for complex products. Thus, the purchase intention was higher for internally developed products than for consumer co-created products when product complexity was high.

Fuchs and Schreier (2011) investigated the effects of consumer co-creation on behavioral intentions. Their results showed significantly stronger behavioral intentions, in terms of purchase intention, for consumer co-created products. The authors argue that user-driven firms are perceived as more innovative and customer oriented. In other words, user-driven firms are seen as more willing to understand and adapt to consumer needs. This is also shown to have a positive effect on consumers' purchase intention. Thus, consumers show higher purchase intention for user-driven firms.

In the course of four studies, Schreier et al. (2012) found that companies that involve consumers in the designing process are perceived as having better innovation ability. The authors refer to this as "the innovation effect of user design", and find that the perceived innovation ability leads to positive outcomes in terms of purchase intention and willingness to pay.

Based on the presented research review, the following hypotheses will be tested:

H3a: *Low complexity consumer co-created products will lead to higher purchase intention than low complexity internally developed products.*

H3b: *High complexity consumer co-created products will not lead to higher purchase intention than high complexity internally developed products.*

2.1.4 The Mediating Effect of Participant Expertise

As mentioned before, Fuchs and Schreier (2011) argue that in the case of creating low complexity products, other consumers might see the co-creating consumers as competent and capable of fulfilling the task of creating such products, compared to more complex products. Thus, questioning whether the

positive effects of co-creation will be found among highly complex products, where it is hard to believe that an average consumer has the sufficient knowledge to come up with innovative ideas or any kind of relevant input. As stated by Schreier et al. (2012), the effects of common design by users is not universal, it rather depends on the extent to which observing consumers perceive users as being capable of meaningful design. The authors also find differences in the perceived expertise between user design and company design when looking at both low- and high complexity products. Based on the findings, it can be expected that consumer involvement in product development will affect the perceived expertise. Perceived expertise, in turn, is expected to have an impact on the target variables.

If the success of co-creation efforts is dependent upon the perceived expertise of the people designing the product, the level of complexity per se will not be the determinant. Rather, complexity could function as an indicator of the degree to which consumers could be expected to add any additional expertise. It is therefore of interest to investigate whether the perceived expertise of the co-creating consumers has a mediating effect between co-creation and the consumer evaluations. With that in mind, the following hypotheses have been created:

H4a: *The effect of co-creation on product perception is mediated by perceived participant expertise.*

H4b: *The effect of co-creation on brand perception is mediated by perceived participant expertise.*

H4c: *The effect of co-creation on consumer purchase intention is mediated by perceived participant expertise.*

Note that the hypothesized mediating effect is expected to be positive for low complexity products, while highly complex products are expected to see a negative mediating effect, as co-creation is hypothesized to negatively influence expertise for complex products. Consequently, the analysis will be conducted separately for the different levels of complexity.

2.2 Creative Advertising

While there is no definitive definition of advertising creativity, El-Murad & West (2004) quote legendary advertising executive Leo Burnett, describing it as “*the art of establishing new and meaningful relationships between previously unrelated things in a manner that is relevant, believable, and in good taste, but which somehow presents the product in a fresh new light*”. Smith et al. (2007) studied the determining factors for consumers evaluating advertising creativity, finding that the main determinant behind creativity is divergence (originality), interacting with relevance (the extent to which at least some ad/brand elements are meaningful, useful, or valuable to the consumer).

The main arguments for using creativity in advertising have traditionally focused on its direct effects on attention to the advertisement, brand recall and recognition, as well as comprehension and persuasiveness of the message. However, Kover, James & Sonner (1997) found that creative advertising efforts often fail to improve these aspects, supposedly resulting in the creative efforts being a waste of time and money. In light of this, more recent studies have explored the indirect effects of this “wasteful advertising”. “Waste”, defined by Ambler & Hollier (2004) as “*the portion of advertising expenditure that may be perceived by the target market, but which adds nothing to the functionality of the advertisement – that is, understanding the message or its persuasiveness.*”

As a result of the asymmetric information in markets cluttered by large numbers of competing brands and products, companies and consumers alike rely on a number of marketing signals to create a better understanding of the offerings (Kirmani & Rao, 2000). Building on the concept of signaling theory, studies have been conducted, showing that perceived advertising expense has a positive effect on both product perceptions (Kirmani & Wright, 1989; Kirmani, 1997) and brand perceptions (Kirmani, 1990; Kirmani, 1997; Ambler & Hollier, 2004). There are two main rationales for this effect. The first being that a company taking the risk of investing a significant amount of resources into marketing a product implies confidence in the product, which is interpreted as a sign of good quality (Kirmani & Wright, 1989; Kirmani, 1997). The other, dubbed the “biological theory of handicapping”, is more directly tied to the concept of wasteful advertising, and states that the ability to dedicate resources beyond what is necessary for communicating the message implies previous success, and by extension brand superiority (Ambler & Hollier, 2004).

Dahlén et al. (2008) extend the above reasoning on advertising expense to apply to advertising creativity, suggesting that the effort – including time and resources – going into the production of a creative advertisement has a similar signaling effect as the perceived expense in communicating the message. While the research in question studied the effects on known brands, it is argued that the effects should be similar or greater for unfamiliar brands. Dahlén et al. (2008) find that advertising creativity has a positive relation to brand quality, brand interest and purchase intention, fully mediated by perceived advertising effort and brand ability. The research does not focus on product quality in itself, although for an unfamiliar brand with only one known product, brand quality could reasonably be expected to act interchangeably, especially considering the positive effects on product perception from advertising expense, identified by Kirmani & Wright (1989) and Kirmani (1990). Furthermore, in a study similar to Dahlén et al. (2008), Modig & Rosengren (2014) found positive effects from advertising creativity on perceived product quality, brand attitude and purchase intention in a retail environment – also mediated by perceived advertising effort. Increases in brand attitude and purchase intention as a result of advertising creativity are also supported by Smith et al. (2007).

While there is ample support for the benefits of advertising creativity, there is no published research on its effects in a co-creation context². The combination of the two could yield some interesting results. For example, innovation ability is a variable which has been studied in co-creation research (e.g. Schreier, et al., 2012; Liljedal, 2016), and which could potentially be influenced by an innovative advertisement, yielding more positive results. On the other hand, the signaling effects of creative advertising, communicating confidence in the product to consumers, could suffer from the producer ceding control of the development process to laymen.

The purpose of studying creative advertising in this context is primarily to investigate its effects in conjunction with co-creation, but also to examine its potential use for overcoming the supposed complexity barrier for co-created products. Since previous research has not focused on the effects of creative advertising for co-created products, nor specifically for different levels of complexity, the assumption is that the effects should be general. In other words, advertising creativity is expected to have similar effects regardless of whether the product is complex or not, co-created or internally developed. However, should any moderating effects be identified, they will be described and discussed.

² Studies, such as Thompson & Malaviya (2013), have looked at the phenomenon of co-created advertisements. However, these have focused on co-creation of the advertisement itself, while the present study investigates the effects of creative advertisement of co-created products.

Accordingly, the following hypotheses will be tested:

H5a: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on product variables*

H5b: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on brand variables*

H5c: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on purchase intention*

However, it is not creativity per se that improves the results, but rather what the creativity tells the consumer about the brand. The research showed that the effects of advertising creativity were mediated by advertising effort (Dahlén et al., 2008; Modig & Rosengren, 2014). In other words, creativity has little value on its own in the eyes of consumers, but it signals confidence in the product and brand, as well as the ability to come up with smart and innovative solutions to the consumers' problems. As such, mediation analyses will be conducted to investigate the following hypothesis:

H6a: *The effect of advertising creativity on product perception is fully mediated by perceived advertising effort.*

H6b: *The effect of advertising creativity on brand perception is fully mediated by perceived advertising effort.*

H6c: *The effect of advertising creativity on purchase intention is fully mediated by perceived advertising effort.*

2.3 Conclusions of Theory

Summarizing the theory and hypotheses covered above, the effects of co-creation efforts on product perception, brand perception and purchase intention are expected to be moderated by the perceived product complexity, as well as the creativity of the advertisement for the product. This is summarized in Figure 1. Note that while there is support in prior research for complexity acting as a moderator between co-creation and the target variables, there are no previous indications of any interaction effect between co-creation and advertising creativity, as the relationship has not been tested before.

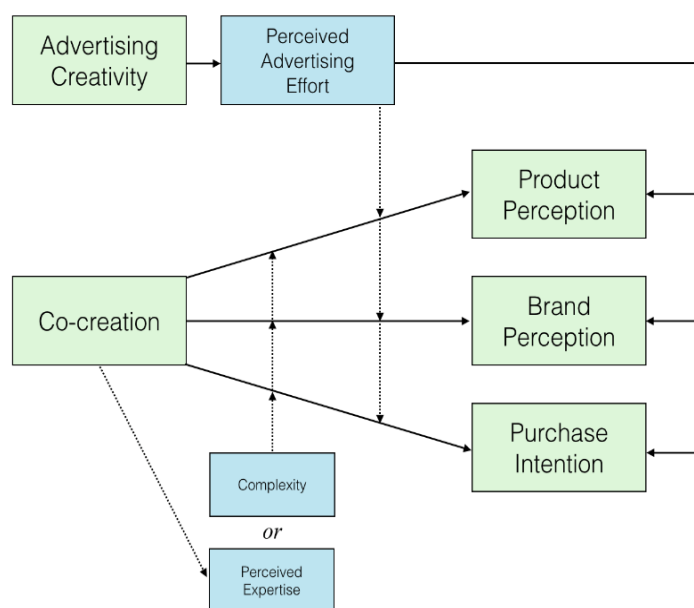


Figure 1: Hypothesized theoretical model

3. Method

This section will present the methodology which was used in the gathering of information and the design of the study. The goal is to provide the reader with an understanding of why the quantitative study was designed the way it was. The work which preceded the study will be presented, as well as a discussion around the decisions which were made regarding product categories, sampling and stimuli design. This section will also cover a discussion about the reliability and the validity of the study.

3.1 Scientific Approach

A deductive approach is applied in the study, formulating and testing hypotheses based on existing research. The hypotheses are subsequently empirically tested using a quantitative experiment, allowing a conclusive research design and the identification of causal relationships between variables. The deductive approach has received criticism due to the fact that researchers using this kind of approach tend to focus on finding the information that they find relevant for the data collection. The deductive approach therefore leads to limited information and effects beyond the expectations are disregarded (Jacobsen, 2002).

For this study, a deductive approach was seen as more appropriate than an inductive, since the aim is to expand upon prior research in understanding the role of complexity in co-creation efforts, as well as using findings from studies of creative advertising in order to circumvent the theorized complexity barrier. Further, while the inductive approach is preferable for exploratory studies, a deductive approach is typically a more robust tool for drawing generalizable conclusions from the study.

A quantitative approach was chosen due to its methodological fit with previous research in the field, as well as the superior comparability and generalizability of quantitative data. The results are based on a survey, where respondents were provided with given alternatives and statements. This kind of approach facilitates the collection and analysis of data. Statistical programs can be used in order to analyze the data and to get a general understanding of the effects of the experiment. However, the quantitative approach has been criticized for being less flexible than the qualitative approach. According to Jacobsen (2002), the qualitative approach can adjust the collection of data to the reality of the research object. Thus, a qualitative approach could have given a more detailed and deeper understanding in how consumers think when they face a certain advertisement. However, since the purpose is to test hypotheses by comparing different groups in order to find generalizable conclusions, a quantitative approach is more appropriate.

3.2 Pre-studies

In order to test the intended manipulations in the study, two pre-tests were conducted. The first pre-test was designed to identify suitable products for the study, based on their perceived levels of complexity. The second pre-test tested the effects of the creativity and co-creation manipulations.

3.2.1 Pre-study 1 - Selecting product category

This study is based on four different product categories: juice, shoes, TV and car. These categories represent both complex and non-complex categories. The aim was to find two product categories that were considered complex and two categories that were non-complex. In order to find products with

different levels of perceived complexity, a pre-study was conducted with 30 respondents, where the perceived complexity of ten different product categories were tested using a 7 point Likert scale. Based on the results of the pre-study, the selected product categories were: soft drink (juice), shoes, television, and car. Soft drink and shoes had a low mean value in complexity ($M_{\text{Soft drink}} = 2.64$, $M_{\text{Shoes}} = 3.03$), compared to television and car that had a high mean value ($M_{\text{Television}} = 5.30$, $M_{\text{Car}} = 6.49$). For a detailed breakdown of the results of all included product categories, see appendix 9.1. Each selected product category is significantly different from the middle of the scale (4, in this case). Two products from each complexity level were chosen, in order to minimize individual product effects, thereby increasing the generalizability of the findings and improving the validity of the study.

3.2.2 Pre-study 2 - Stimuli Design

3.2.2.1 Advertising Creativity Manipulation

A second pre-study was conducted, in order to test the creativity of the advertisements which had been developed for the different product categories. The advertisements had been created and manipulated in Adobe Photoshop and Keynote. For each product category, one creative advertisement and one less creative advertisement was created. During the development of the advertisements, a meeting was held with Erik Modig, specializing in creative advertising at the Center for Consumer Marketing at Stockholm School of Economics, in order to improve the advertisements and avoid any pitfalls. The survey received 49 answers, divided into two groups of 24 and 25 respondents respectively. The separation was necessary in order to avoid the same respondent being exposed to the same product twice, with differing levels of creativity and consumer involvement. The results showed that the stimulus worked as expected. The advertisements with high creativity were seen as significantly more creative than the advertisements with low creativity (see appendix 9.2). While the perceived levels of creativity were not usually in the distant ends of the scale, that was not the intended result. As in Dahlén et al. (2008), the purpose was rather to achieve significant differences between high- and low creativity, than to create outstandingly creative advertisements, as advertisements do not typically reach award winning levels of creativity.

3.2.2.2 Co-creation Manipulation

Another purpose of the second pre-study was to test if the respondents believed and understood that the advertised product had been co-created, as ensuring that respondents understood whether the product had been co-created or internally developed was crucial for the study.

The co-creation stimulus was created by adding a text to the advertisement. For respondents in the co-creation condition, the text stated that the product had been developed in association with the company's consumers. For respondents in the internally developed product condition, the text stated that the product had been developed by the company and its designers or engineers.

In general, the results of the pre-study showed that the stimulus worked as intended. The co-created products scored significantly higher on consumer involvement than internally developed products (see appendix 9.2). However, significant differences could not be found for the shoe advertisement. Since the main study would include a further priming text, no changes were made in the text box in the shoe ad.

3.3 Main study

Based on the results from the pre-tests, the selected advertisements were used as manipulations for the main study, conducted during April of 2016.

3.3.1 Research design

The main study has a 2x2x2 design. The included stimuli are co-creation versus internally developed product, low complexity versus high complexity, and low creativity versus high creativity. As the study includes two low complexity products and two high complexity products, a total of 16 different groups of respondents are included in the study, although these are intended to be merged into eight groups. Respondents are randomly and evenly distributed among the groups.

Co-creation vs. Internally developed product: The most central factor in the purpose of this study. In order to assess the difference between a consumer co-created product and an internally developed product, different experiment groups were created where respondents were randomly assigned to either a co-creation or an internally developed product group.

Low complexity vs. High complexity: Previous research indicates that the positive effects of co-creation are attenuated for high complexity products. In order to investigate the role of complexity, and avoid potential divergent effects of individual product categories, different products were used. Juice and shoes were selected to represent low complexity products and television and car were used to represent high complexity products. Respondents were randomly exposed to either a low complexity product or a high complexity product.

Low creativity vs. High creativity: In order to assess the difference between an advertisement with low creativity and one with high creativity, the respondents were randomly exposed to either a low creativity advertisement or a high creativity advertisement.

With these manipulations in effect, respondents are randomly assigned to one of the following groups:

- 1: Co-creation, High complexity, High creativity
- 2: Co-creation, High complexity, Low creativity
- 3: IDP, High complexity, Low creativity
- 4: IDP, High complexity, High creativity
- 5: Co-creation, Low complexity, High creativity
- 6: Co-creation, Low complexity, Low creativity
- 7: IDP, Low complexity, Low creativity
- 8: IDP, Low complexity, High creativity

The groups are summarized in the model presented in Figure 2 below.

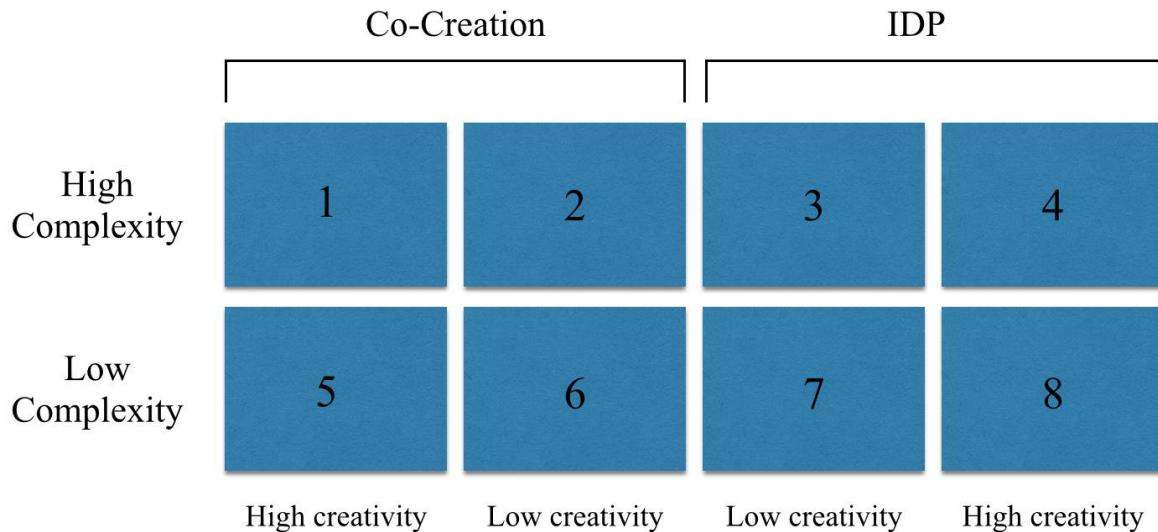


Figure 2: Main study experimental groups

3.3.2 Questionnaire design

The questionnaire was programmed with the help of the software tool Qualtrics. As mentioned previously, there were 16 separate versions of the survey, with two product categories in each cell in the model presented above. The first block of the questionnaire was a priming text, followed by the advertisement in the second block. The third block consisted of questions, in randomized order, regarding the advertisement that the respondents had been exposed to. The last blocks included control questions and background questions.

In the first block, respondents were exposed to a priming text. The text included information about how the product had been developed; either internally or with the help of customers. In the next part of the questionnaire, the respondents were exposed to one of sixteen different advertisements. The advertisements differed in product category, consumer involvement and creativity. Respondents who had been primed by the co-creation priming text were shown a co-created product and respondents who had been primed by the internally developed product priming text were shown an internally developed product.

In the third part of the questionnaire, respondents were asked to answer questions related to the advertisement they had just seen. The questions were identical for all respondents, no matter which type of advertisement they had seen or which type of priming they had been exposed to. All questions were asked by using question batteries where the respondent answered on a 7-point Likert scale. Finally, the questions in the survey were coded as forced responses.

The debate whether questionnaires should provide few choice points or many has not provided a definitive answer. However, Dawes (2008) concludes that empirical studies generally agree that reliability and validity are improved by using 5- to 7-point scales rather than coarser ones, while providing more alternatives does not improve reliability and validity further. In this study, 7-point scales have been chosen in order to get greater differences and to avoid respondents being too neutral in their answers.

3.3.3 Measures

This section covers the variables measured in the main study, as well as the different questions constituting each measure.

Product Attitude

This variable focuses on the respondent's attitude towards the product and has been used in prior research by Franke et al. (2009) and Schlosser & Shavitt (2002), among others. The variable was measured by using three items on a 7-point semantic Likert scale. The question battery was created with inspiration from Franke et al. (2009) and Fuchs & Schreier (2011). The questions covered whether the respondents found the product to be *boring/interesting*, *not appealing/appealing* and *dislike/like*. An index was created out of these three questions, since a reliability test showed a Cronbach's alpha value of 0.947.

Product Quality

In prior research, product quality has not been measured in a co-creation context. However, the variable has been measured in other marketing areas. In order to measure the perceived product quality a question battery was used. A similar question battery has been used in prior research by Brady & Cronin (2001) and Oliver (1997). Three questions on a 7-point semantic Likert scale were used and covered whether the respondents found the quality of the product to be *poor/excellent*, *low quality/high quality* and *one of the worst/one of the best*. A reliability test showed a Cronbach's alpha value of 0.947, which made it possible to create an index out of the three questions.

Brand Attitude

This variable focuses on measuring the respondent's attitude toward the brand. It's a commonly used variable within the areas of co-creation and advertising creativity research, and has been used by among others Fuchs and Schreier (2011), Liljedal (2016) and Modig and Rosengren (2014). Based on Fuchs and Schreier's approach, a four item question battery was created on a 7-point semantic Likert scale. The statements covered the respondents attitude toward the company in terms of *dislike/like*, *negative/positive*, *very bad/very good* and *not interesting/interesting*. An index was created after running a reliability test that showed a Cronbach's alpha value of 0.961.

Brand Interest

Brand interest has previously been used in creativity research (Dahlén et al., 2008), but it has never been measured in a co-creation context. The variable consisted of two questions regarding whether the brand was *interesting/not interesting* and whether the respondent wanted to *buy the product*. The two questions were measured on a 7-point scale (1 = do not agree/7 = agree completely). The questions were coded into an index after running a reliability test that showed a Cronbach's alpha value of 0.794.

Customer Orientation

In order to measure the perceived customer orientation of the company, a six item question battery was used. The question battery included statements that the respondents had to rate on a 7-point Likert scale (1=do not agree at all, 7= fully agree). Statements such as "*This company tries to help customers achieve their goals*", "*Tries to figure out what customers' needs are*" and "*Tries to get customers to discuss their needs with them*" gave a Cronbach's alpha value of 0.950. The same question battery has

been used in prior research by Fuchs and Schreier (2011), Brady and Cronin (2001), and Saxe and Weitz (1982).

Innovation Ability

The company's perceived ability to innovate was measured by using a three item question battery with a 7-point semantic Likert scale. This measure has been used in prior co-creation research by Schreier et al. (2012) and Liljedal (2016). The statements included *not very high/very high*, *not very strong/very strong*, and *not excellent/excellent*. A reliability test showed a Cronbach's alpha value of 0.976.

Purchase Intention

The purchase intention was measured by using a three item question battery with a 7-point semantic Likert scale. A reliability analysis showed a Cronbach's alpha value of 0.954 for the questions. The statements covered to what degree the respondents intended to *test*, *try* or *buy* the product. This means of measuring purchase intention has been used in prior research by Liljedal (2016).

Participant Expertise

Schreier et al. (2012) and Ratneshwar and Chaiken (1991) measured the perceived expertise of the co-creating consumers by asking two questions; *"In your opinion, how high is the design expertise of the people designing for this company?"* and *"Do you think that the people designing for this company have the necessary skills (know-how) and competence to design new products?"*. The respondents were then asked to rate on a 7-point Likert scale to what degree they agreed. The same questions were used in this study in order to measure the participant expertise. A reliability test of these questions gave a Cronbach's alpha value of 0.903.

Advertising Effort

Advertising effort has been used and measured in research related to advertising and creativity. In this study, a single question was used: *"How much effort do you think the manufacturer is putting into advertising the product?"*. The answers were given on a 7-point Likert scale (1=very little effort, 7=A lot of effort). The same question has been used by Kirmani (1990). Dahlén et al. (2008) used a similar question when measuring the effort in a creativity context.

Product Category Knowledge

Studies have shown that there is a relationship between product knowledge and external search. More experienced consumers know what attributes to focus on (Brucks, 1985). In order to measure the product category knowledge of the respondents, two questions on a 7-point scale were used: *"How familiar are you with the product category X?"*, *"How good is your knowledge about product category X compared to people around you?"* These questions are subjective and have been used by Brucks (1985) in order to measure the subjective product knowledge. A reliability test was made and showed a Cronbach's alpha value of 0.876.

Other Variables

In addition to the variables above, the survey also measured *perceived consumer involvement*, *perceived company involvement*, *age* and *gender*.

3.3.4 Combining product groups

Prior to analyzing the results, an initial study of the individual products included in the survey was performed. The purpose was to investigate the possibility of merging the product categories into one low complexity group and one high complexity group, in order to simplify the analysis and increase the generalizability of the study. As the purpose is not to conduct direct comparisons between high- and low complexity products, but rather to study the effects of the specified stimuli on each group, significant differences between the complexity groups was not a criterion for merging. Rather, the patterns and effects on target variables between cells in the model in figure 2 were used as basis for combination.

While there was some variation in the extent of effects of co-creation on the low complexity products, the direction of change was the same and there was enough internal consistency for the product categories to be considered compatible for both complexity levels. Similar patterns were identified when studying the effects of creativity. The values used for this can be found in appendix 9.3. Combined with the results from the complexity pre-test, this is deemed to be sufficient basis for combining the products into one low complexity group and one high complexity group.

3.3.5 Analytical Tools

To analyze the collected data the statistical software IBM SPSS Statistics 23 was used together with Microsoft Excel. Several statistical tests were carried out using SPSS, including reliability tests, tests for normality, independent sample t-tests (during the pre-studies), analysis of variance (ANOVA), MANOVA (multivariate ANOVA), linear regression analysis, as well as mediation analysis using the “PROCESS” add-on for SPSS (downloaded from <http://www.processmacro.org/>).

In order to reduce the risk of Type I error, an alpha level of 0.05 is used, meaning that the results presented in this study have at least 95 % confidence level, unless stated otherwise. The levels of significance will be presented as follows: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$. Non-significant results will also be presented, since these results also are interesting and relevant for the analysis. Since the study includes more than two groups, ANOVA tests will be performed instead of independent sample t-tests, in order to reduce the chances of obtaining type 1 errors.

3.4 Data Quality

3.4.1 Sample

In order to facilitate generalizable conclusions, the survey was distributed all over Sweden to people between the ages of 18 and 65 years old. This can be seen as a representative sample of the Swedish population. The survey was distributed by the market research company Nepa. In total, 999 respondents took part of the survey. The respondents were screened based on completion of the survey, the time spent on the survey, variation in answers, as well as passing a control question. After the screening process, 553 respondents remain. The 16 individual cells contain a range of 30-39 respondents, making it possible to perform the desired analytical tests. After combining the groups, as described in section 3.3.4, the cells of the Figure 2 each contain 65-74 respondents. 44 percent of respondents identified themselves as male and 56 percent as female. Respondents were evenly distributed between the ages of 18 and 65 years old.

3.4.2 Reliability

Reliability concerns whether the results are repeatable or if they are generated by specific characteristics of the study itself (Bryman & Bell, 2011). Thus, the method of collecting the data is

crucial when it comes to the reliability of the study, as the results can be influenced by the interviewer or the research design. The way the questions are formulated can therefore affect the results (Jacobsen, 2002). Consequently, when collecting the data, the aim was to keep distance between the authors and the respondents and thus avoid interviewer effects. Therefore, a market research company was hired for the data collection. Furthermore, in order to avoid skewness in the results, the survey was distributed evenly between genders (44% male, 56% female) and age groups. In quantitative research, the reliability of the study concerns stability, internal reliability and inter-observer consistency (Bryman & Bell, 2011).

It is difficult to predict whether or not the results will be stable over time, as the test-retest method is beyond the scope of this study. There are a number of external factors which might influence the results in the future. How co-creation is being practiced in different companies is constantly changing. The co-creation practices of today might not look the same in the future, and results could thus differ if a similar study were to be conducted in the future. However, the measures used in the survey are borrowed from previous research, ensuring stability of measures and enabling comparisons with previous studies.

In order to ensure internal reliability, Cronbach's alpha was calculated for all index variables. Cronbach's alpha test is one of the most common reliability tests among researchers (Bryman & Bell, 2011). According to Bryman & Bell (2011), the figure 0.8 is typically employed as a rule of thumb to denote an acceptable level of internal reliability, although there is no standard procedure. As such, this study employs the 0.8 limit, but the Cronbach's alpha value of 0.794 for brand interest is tolerated. See section 3.3.3 for the Cronbach's alpha values of all featured indexes.

Inter-observer consistency is addressed by minimizing the need for interpretation of individual responses, thereby reducing the effects of subjectivity in the data processing. As such, open-ended questions were avoided for all dependent variables.

3.4.3 Validity

Validity concerns the integrity of the conclusions generated by the research (Bryman & Bell, 2011). The concept of validity is typically separated into four subcategories: measurement validity, internal validity, external validity and ecological validity (ibid.).

Measurement validity refers to "*whether or not a measure of a concept actually measures that concept*" (Bryman & Bell, 2011). The questions have to be formulated in a way that they cover all possible aspects of what is being researched. In order to ensure that correct measurements were applied, the questions used in the survey were borrowed from previous studies which measured the same variables. Since complex variables can only be explained by using multiple questions (Jacobsen, 2011), question batteries were used, where multiple questions measure the different dimensions. Furthermore, in order to create the greatest possible difference between the possible answers, 7-point Likert scales were used throughout the questionnaire. According to Söderlund (2005), this is a good way to increase validity.

Internal validity concerns the causality of the findings, whether effects in the dependent variables can be attributed to changes in the independent variables (Bryman & Bell, 2011). By minimizing the risk of effects being caused by variables which are not accounted for, the validity will increase (ibid.). With this in mind, respondents were contacted in the same way, and were provided with the same information before being randomly assigned to one of the treatment groups. The independent variables were controlled in the pre-tests, and no other manipulations were included in the survey. The risk of

external influences is thereby kept to a minimum. Question order bias was eliminated by randomizing the order of questions in the survey, and disabling the possibility for respondents to go back and alter their responses. Finally, if the results are in line with prior research, the internal validity can be considered to be high (Jacobsen, 2011).

External validity implies to which extent the results are generalizable and whether they can be applied to a larger population (Bryman & Bell, 2011). The survey included four different product categories, which has a positive effect on the external validity, as it reduces the effect if one product category deviates from what is typical. Furthermore, the study included a sizeable nationally representative sample of people across Sweden, between the ages of 18 and 65. Thus, the results should be seen as applicable on the whole population.

Ecological validity concerns the applicability of the findings to “people’s everyday, natural social settings” (Bryman & Bell, 2011). The less natural the context is for respondents, the lower the ecological validity of the study. As the survey allowed respondents to use the device of their choice at a place of their own choosing, and evaluate a product and brand which they have just seen an advertisement for, the ecological validity is considered to be acceptable. While filling out a form during the process of evaluating products is arguably not typical behavior, the general circumstances are in accordance with how many people act.

4. Results - Main Study

In this section, the results of the collected data will be presented. Based on the findings, the hypotheses will be either accepted or rejected. In order to make it easier for the reader to follow the reasoning, the results will be presented in the same order as the hypotheses have been set. A summary of all findings will be presented at the end of the section.

In accordance with the purpose of this study - to confirm or reject the existence of a product complexity barrier on the performance of consumer co-creation efforts, as well as to explore whether advertising creativity can be used to circumvent it - the initial analysis will consist of a number of comparisons between the respective cells in Figure 2. Once any differences have been confirmed or rejected, a further analysis will be conducted to identify potential interaction or mediating effects.

4.1 General Findings

As a first step in the analysis, a multivariate analysis of variance (MANOVA) was conducted, in order to determine whether the stimuli of co-creation, product complexity and advertising creativity caused any significant differences, as well as to identify any interaction effects between the independent variables. There were significant effects for co-creation ($F(8, 538) = 24.48, p < 0.01$ (Wilks’ $\lambda = 0.73$)) and complexity ($F(8, 538) = 6.15, p < 0.01$ (Wilks’ $\lambda = 0.92$)). However, there were no significant effects for creativity ($F(8, 538) = 1.13, p = \text{n.s.}$ (Wilks’ $\lambda = 0.98$)). The findings for co-creation and creativity were consistent across all included dependent variables, while product complexity did not show significant differences for customer orientation ($p = 0.153$) or purchase intention ($p = 0.066$). Furthermore, there were no significant interaction effects between the independent variables, although co-creation * complexity would be accepted with a threshold of $\alpha = 0.10$ ($F(8, 538) = 1.88, p = 0.061$ (Wilks’ $\lambda = 0.97$)). For a detailed breakdown, see appendix 9.4. Note that the comparisons for complexity in this instance involve different products for the two levels of complexity, making a direct comparison of the effect misleading, since it could just as well be differences in attitudes toward the

product categories, rather than complexity, which causes the differences. Accordingly, no hypotheses regarding direct differences between the complexity groups will be tested.

Additionally, while no hypothesis was formulated on the issue, due to lack of previous research, advertising effort was speculated to have a moderating effect for co-creation and the target variables. As such, the variable was included in the MANOVA, and was shown to have a significant impact on the target variables ($F(42, 2339) = 4.32, p < 0.01$ (Wilks' $\lambda = 0.70$)), as well as significant interaction effects with co-creation ($F(35, 2097) = 1.58, p < 0.05$ (Wilks' $\lambda = 0.90$)). Further analyses showed that this interaction effect was primarily present for the brand related variables ($F(20, 1782) = 2.19, p < 0.01$ (Wilks' $\lambda = 0.92$)), although to some extent also for product related variables ($F(10, 1078) = 1.80, p < 0.10$ (Wilks' $\lambda = 0.97$)), but not at all for purchase intention.

Since there appears to be no difference in the results between the respondents shown more creative advertisements and those who were shown less creative advertisements, the variable will not be taken into consideration when investigating hypotheses which do not directly involve creativity. Table 1 illustrates the means and standard deviations for the covered variables, for the resulting 2x2 model with co-creation and complexity manipulations.

| | | Manipulation group | | | |
|-------------------------|----|----------------------|--------------|----------------------|--------------|
| | | Low complexity | | High complexity | |
| | | Co-creation N=140 | IDP N=147 | Co-creation N=132 | IDP N=134 |
| Target variables | | | | | |
| Product attitude | M | 4.64 | 3.98 | 5.24 | 4.60 |
| | SD | 1.48 | 1.64 | 1.28 | 1.53 |
| Product quality | M | 4.69 | 4.24 | 5.13 | 4.66 |
| | SD | 0.99 | 1.10 | 1.14 | 1.21 |
| Brand attitude | M | 4.68 | 4.11 | 5.17 | 4.50 |
| | SD | 1.14 | 1.30 | 1.09 | 1.37 |
| Brand interest | M | 4.30 | 3.59 | 4.66 | 3.80 |
| | SD | 1.42 | 1.50 | 1.26 | 1.49 |
| Customer orientation | M | 4.92 | 3.77 | 5.12 | 3.83 |
| | SD | 1.06 | 1.14 | 1.03 | 1.09 |
| Innovation ability | M | 5.01 | 3.98 | 5.36 | 4.73 |
| | SD | 1.06 | 1.38 | 1.23 | 1.43 |
| Purchase intention | M | 4.40 | 3.70 | 4.78 | 3.87 |
| | SD | 1.77 | 1.86 | 1.53 | 1.85 |
| Other variables | | | | | |
| Consumer involvement | M | 5.29 | 2.76 | 5.11 | 2.64 |
| | SD | 1.06 | 1.18 | 1.05 | 1.22 |
| Company involvement | M | 5.24 | 4.85 | 5.55 | 4.99 |
| | SD | 1.13 | 1.49 | 1.15 | 1.68 |
| Effort | M | 5.14 | 4.39 | 5.44 | 4.88 |
| | SD | 1.09 | 1.67 | 1.24 | 1.63 |
| Participant expertise | M | 4.88 | 4.30 | 5.30 | 4.82 |
| | SD | 0.95 | 1.28 | 1.21 | 1.30 |

Table 1: Mean values and standard deviations in the manipulation groups (co-creation & product complexity)

4.2 The Effect of Co-creation and Complexity on Product Perceptions

H1a: Low complex consumer co-created products will perform better on product variables than low complex internally developed products.

Hypothesis H1a states that low complexity co-created products will perform better on product variables than internally developed products. Table 1 shows the mean values between co-created products and internally developed products. As seen in the table, co-created products perform better than internally developed products on both product variables. The ANOVA test (see appendix 9.5) shows that the product attitude is significantly greater for co-created products compared to internally developed products ($M_{\text{Co-creation}} = 4.64$ versus $M_{\text{IDP}} = 3.98$, $p < 0.01$). Co-created products are also seen as being of higher quality compared to internally developed products. Co-created products receive a mean value of 4.69, while internally developed products have a mean value of 4.24. The difference between the mean values is significant ($p < 0.01$). Thus, the study **found empirical support for hypothesis H1a**.

H1b: High complex consumer co-created products will not perform better on product variables than high complex internally developed products.

Hypothesis H1b states that high complexity co-created products will not perform better on product variables than internally developed products. As indicated by Table 1, the results go against findings in prior research. The ANOVA shows that co-created products perform better than internally developed products on both products variables. The product attitude is significantly higher for the consumer co-created product compared to the internally developed product ($M_{\text{Co-creation}} = 5.24$ versus $M_{\text{IDP}} = 4.60$, $p < 0.01$). The consumer co-created product is also seen as being of higher quality compared to the internally developed product ($M_{\text{Co-creation}} = 5.13$ versus $M_{\text{IDP}} = 4.66$, $p < 0.01$). The difference between the mean values is significant. Since the expected result was that the consumer co-created would not perform better than the internally developed product, **hypothesis H1b cannot be accepted**.

In line with prior research, low complexity consumer co-created products are better evaluated on product related variables than internally developed products. However, the findings presented here also go against prior research and show that complexity is not a boundary condition. Product perception increases when the product is co-created with consumers regardless of the complexity of the product.

4.3 The Effect of Co-creation and Complexity on Brand Perceptions

H2a: Low complex consumer co-created products will perform better on brand variables than low complex internally developed products.

Hypothesis H2a focused on the relationship between consumer co-created products and the perception of the brand. The brand related variables included questions to measure the brand attitude, brand interest, customer orientation and innovation ability. As indicated by Table 1, the consumer co-created product perform significantly better on all variables. In line with prior research, the results show that companies that co-create with customers receives better brand attitude ($M_{\text{Co-creation}} = 4.68$ versus $M_{\text{IDP}} = 4.11$, $p < 0.01$) and are seen as more customer oriented ($M_{\text{Co-creation}} = 4.92$ versus $M_{\text{IDP}} = 3.77$, $p < 0.001$) and with higher capability to innovate ($M_{\text{Co-creation}} = 5.01$ versus $M_{\text{IDP}} = 3.98$, $p < 0.001$). Brand interest is the only variable that has not been measured in a co-creation context before. The results

show that co-created products create significantly higher brand interest than internally developed products ($M_{\text{Co-creation}} = 4.30$ versus $M_{\text{IDP}} = 3.59$, $p < 0.001$). Thus, **empirical evidence was found to support hypothesis H2a.**

***H2b:** High complex consumer co-created products will not perform better on brand variables than high complex internally developed products.*

Hypothesis H2b was formulated in order to see if higher complexity of the product would mitigate the positive effects of consumer co-creation. As for the low complexity products, significantly higher mean values were found for consumer co-created products across all variables. Brand attitude ($M_{\text{Co-creation}} = 5.17$ versus $M_{\text{IDP}} = 4.50$, $p < 0.001$), customer orientation ($M_{\text{Co-creation}} = 5.12$ versus $M_{\text{IDP}} = 3.83$, $p < 0.001$), innovation ability ($M_{\text{Co-creation}} = 5.36$ versus $M_{\text{IDP}} = 5.73$, $p < 0.001$), brand interest ($M_{\text{Co-creation}} = 4.66$ versus $M_{\text{IDP}} = 3.80$, $p < 0.001$) Again, these findings go against prior research, which states that complexity is a moderator that creates a boundary condition for the innovation effect of user design.

While the increase in customer orientation is in line with previous research, there is no support for the existence of the complexity barrier for brand perceptions. As such, **hypothesis H2b is rejected.**

4.4 The Effect of Co-creation and Complexity on Purchase Intentions

***H3a:** Low complex consumer co-created products will lead to higher purchase intention than low complex internally developed products.*

The purchase intention was measured by asking the respondents about their intention to test or buy the products. In line with prior research, the results shows a significantly stronger purchase intention for consumer co-created products, compared to internally developed products ($M_{\text{Co-creation}} = 4.40$ versus $M_{\text{IDP}} = 3.70$, $p < 0.05$).

With this in mind, **hypothesis H3a can be accepted.**

***H3b:** High complex consumer co-created products will not lead to higher purchase intention than high complex internally developed products.*

According to prior research, a high complexity co-created product will not perform better than an internally developed product. Going against prior research, the results shows significantly higher purchase intention for a consumer co-created product, compared to an internally developed product ($M_{\text{Co-creation}} = 4.78$ versus $M_{\text{IDP}} = 3.87$, $p < 0.001$).

Thus, based on the empirical evidence, **hypothesis H3b cannot be accepted.**

4.5 The Mediating Effect of Participant Expertise

Hypotheses H4a-H4c concern the possibility of the supposed complexity barrier being derived from differences in perceived expertise among the people designing the product in question. The reasoning is that the differences between high complexity and low complexity products do not stem from an inherent skepticism towards complex products being developed together with, or by, consumers, but rather from a belief that consumers do not possess the necessary know-how to provide a better product. Consequently, several mediation analyses were conducted, using a bootstrapping method with bias-corrected confidence estimates (Hayes 2013, model 4). The direct and indirect effects were

captured with a 95% confidence interval using 5000 bootstrap samples. The results are illustrated by Figures 3 through 5 and are interpreted using the decision tree developed by Zhao et al. (2010).

In order to reduce the number of tests and models to present, two new index variables were created, constituting the component variables for product perception (Cronbach's $\alpha=0.940$) and brand perception (Cronbach's $\alpha=0.957$), while the index variable for purchase intention remains from earlier (Cronbach's $\alpha=0.954$). In order to control for confounding effects, respondents' age, gender and knowledge of the product category were included as covariates. Since theory indicates that co-creation should have a positive effect on expertise in low complexity products, but a negative effect on expertise in high complexity products, the two will be studied separately. However, the hypotheses state that the mediating effect should occur, regardless of complexity, as the purpose here is to investigate the presence of mediation.

4.5.1 Expertise as a Mediator between Co-creation and Product Perception

H4a: The effect of co-creation on product perception is mediated by perceived participant expertise.

For **low complexity** products, the results show that the independent variable, co-creation, has a positive effect on the mediator, participant expertise ($B=0.52$, $p<0.01$). This is known as the *a path*, while the *b path* shows a significant positive relationship between the mediator and the dependent variable, product perception ($B=0.67$, $p<0.01$). This shows an indirect effect of co-creation on product perception, via expertise. There is no significant direct effect between co-creation and product perception (known as the *c' path*), which cannot be explained by expertise acting as a mediator. These findings indicate that expertise fully mediates the effect of co-creation on product perception.

Considering that the *a x b path* is significant, while the *c' path* is not, the decision tree developed by Zhao et al. (2010) suggests an **indirect-only mediation**. This implies that perceived expertise fully mediates the effect of co-creation on product perception, and that it is unlikely that any omitted variables would further explain the relationship.

The pattern repeats itself for **high complexity** products. Contrary to indications in prior research, but consistent with previous findings in this study, co-creation has a positive effect on perceived participant expertise for highly complex products as well ($B=0.42$, $p>0.01$), although slightly less so than for low complexity products. The *b path* is similar to that of low complexity products ($B=0.64$, $p<0.01$), while the *c' path* shows no direct effect between co-creation and product perception which is not explained by the mediator.

With a significant indirect effect, but no significant direct effect, Zhao et al. (2010) suggest an **indirect-only mediation**. This indicates that the effect of co-creation on product perception is fully mediated by perceived participant expertise for more complex products as well.

In summary, the mediation analysis showed a significant mediating effect of participant expertise between co-creation and product perception for both high- and low complexity products. As such, **hypothesis H4a is accepted**.

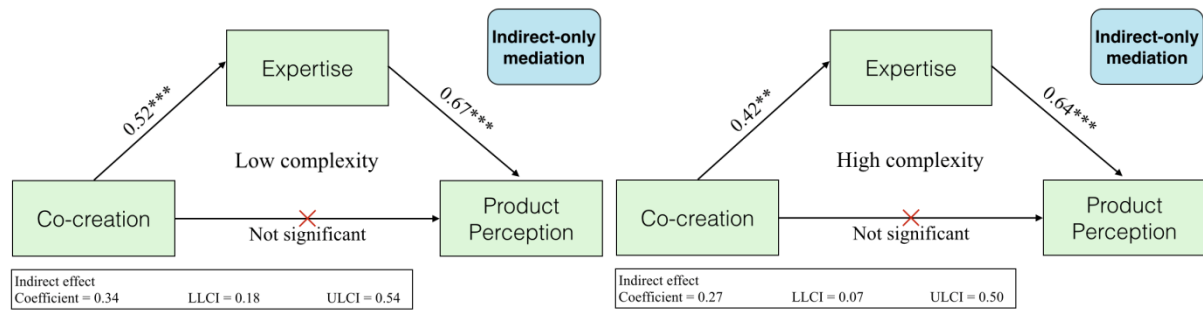


Figure 3: The mediating effect of expertise on product perception for low- and high complexity products, respectively

4.5.2 Expertise as a Mediator between Co-creation and Brand Perception

H4b: The effect of co-creation on brand perception is mediated by perceived participant expertise.

Regarding the mediating effect of participant expertise between co-creation and brand perception for **less complex** products, the a path remains significant ($B=0.52$, $p<0.01$), as the relationship between co-creation and expertise is unchanged by the dependent variable. The b path shows a significant positive effect of expertise on brand perception ($B=0.65$, $p<0.01$), resulting in a significant indirect effect of co-creation on brand perceptions, via participant expertise. Unlike the situation for product perception, the c' path demonstrates a direct effect of co-creation on brand perception ($B=0.50$, $p<0.01$).

With the a- b- and c' paths all being significant and of the same sign, Zhao et al. (2010) suggest a **complementary mediation**. This means that while there is a mediation effect, expertise does not fully explain the relation between co-creation and product perception. There are likely other variables acting as mediators, which need to be included in the model in order to capture the total effect.

For **highly complex** products, the a path remains positive and significant, since the change of dependent variable does not alter the relationship between the independent variable and the mediator ($B=0.42$, $p>0.01$). The effect of expertise on brand perception is significant ($B=0.63$, $p<0.01$), as is the direct effect of co-creation on brand perception ($B=0.58$, $p<0.01$).

As above, this indicates a **complementary mediation** (Zhao et al., 2010), with one or more excluded variables likely adding significant explanatory value to the model.

As participant expertise has a significant mediating effect between co-creation and brand perceptions regardless of complexity, **hypothesis H4b is accepted**.

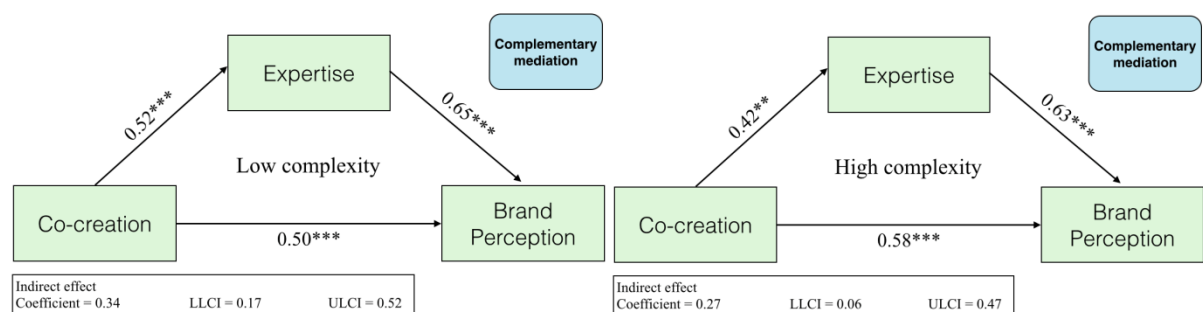


Figure 4: The mediating effect of expertise on brand perception for low- and high complexity products, respectively

4.5.3 Expertise as a Mediator between Co-creation and Purchase Intention

H4c: *The effect of co-creation on consumer purchase intention is mediated by perceived participant expertise.*

Products with **low complexity** experience no change in the a path ($B=0.52$, $p<0.01$), as stated above. The b path shows a strong positive relationship between participant expertise and purchase intention ($B=0.84$, $p<0.01$). There is no significant direct effect between co-creation and purchase intention, which is not explained by the mediation.

As was the case for product perception for less complex products, there is only a significant indirect effect, indicating an **indirect-only mediation** (Zhao et al., 2010). This implies that the effect of co-creation on purchase intention for low complexity products is fully mediated by perceived participant expertise, with no further variables needed in the model.

For **highly complex** products, the a path is constant ($B=0.42$, $p<0.01$), while expertise is shown to have a significant positive effect on the target variable ($B=0.71$, $p<0.01$). Complementing this indirect effect, there is a significant positive effect of co-creation on purchase intention ($B=0.38$, $p<0.05$).

Since all paths are significant and positive, this is another example of a **complementary mediation** (Zhao et al., 2010). Further variables are likely necessary to include in the model, in order to fully explain the effect on purchase intention.

Regardless of complexity level, there is evidence for a mediating effect from participant expertise on the relationship between co-creation and purchase intention. Consequently, **hypothesis H4c is accepted**.

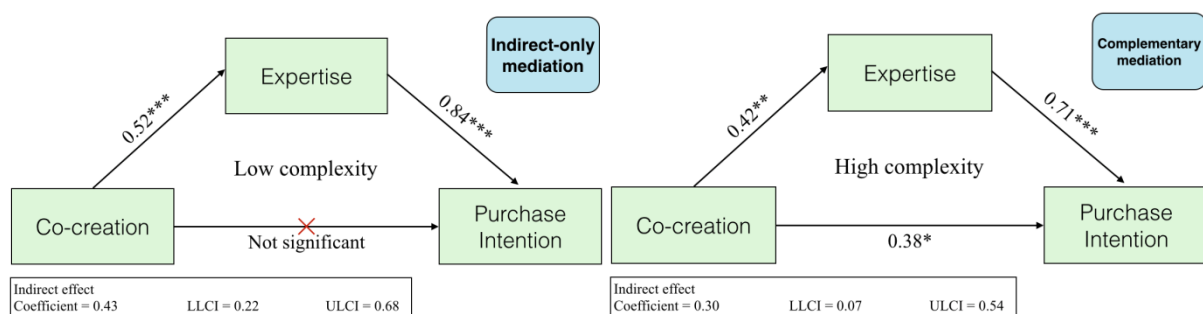


Figure 5: The mediating effect of expertise on purchase intention for low- and high complexity products, respectively

4.6 The Effect of Advertising Creativity

H5a: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on product perceptions*

H5b: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on brand perceptions*

H5c: *Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on purchase intention*

In addition to the hypotheses focusing on the effects of co-creation, corresponding hypotheses were developed for investigating the impact of advertising creativity on the same variables. As research focusing on advertising creativity suggests that higher creativity is beneficial in general, and theory does not imply any differences in effects caused by product complexity or consumer involvement in product development, these hypotheses will be studied on an aggregated level. However, as indicated by the MANOVA performed in section 4.1, there is no discernible effect from creativity on the dependent variables. An ANOVA was conducted in order to study the effects of advertising creativity on individual variables, but no significant effects were identified, making further analysis superfluous. For a detailed breakdown of the effects on individual variables, see ANOVA in appendix 9.6.

As there is no support for a general gain from creative advertising, **neither of hypotheses H5a, H5b or H5c can be accepted.**

4.7 The Mediating Effect of Advertising Effort

Research indicates that the positive effects from creative advertisements are in fact derived from the signaling effect from the perceived effort put into the advertisement (Dahlén et al., 2008; Modig & Rosengren, 2014). While hypotheses H5a-H5c showed no significant effect on the dependent variables from advertising creativity, there could still be an indirect effect through perceived advertising effort. A regression analysis using advertising creativity as the independent variable and perceived advertising effort as the dependent variable shows a significant positive effect ($B=0.26$, $p<0.05$), indicating that effort could act as a mediating variable, provided it has a significant impact on the target variables.

Consequently, mediation analyses were conducted, using a bootstrapping method with bias-corrected confidence estimates (Hayes 2013, model 4). The direct and indirect effects were captured with a 95% confidence interval using 5000 bootstrap samples. Age and gender were included as covariates. The results are illustrated by Figures 6 through 8 and are interpreted using the decision tree developed by Zhao et al. (2010). Since the a path (creativity \Rightarrow effort) is constant, with the effect described above, it will not be repeated in the sections below. As in the previous mediation analysis, product perceptions and brand perceptions were measured with index variables, in order to reduce the number of tests and models to present ($\alpha=0.940$ and $\alpha=0.954$, respectively).

4.7.1 Effort as a Mediator between Creativity and Product Perception

***H6a:** The effect of advertising creativity on product perception is fully mediated by perceived advertising effort*

The mediation test shows that perceived advertising effort has a significant positive effect on product perception ($B=0.40$, $p<0.01$), while the direct path from creativity to product perception has no significant effect, beyond what is explained by the mediator. This is in line with expectations and indicates an **indirect-only mediation** (Zhao et al., 2010), indicating that the effect of advertising creativity on product perception is fully mediated by perceived advertising effort. Consequently, **hypothesis H6a is accepted.**

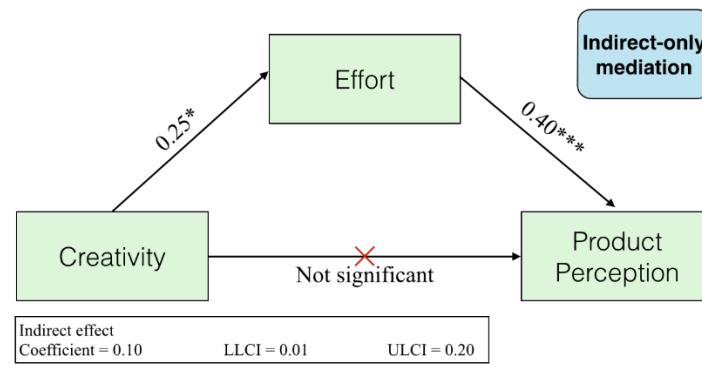


Figure 6: The mediating effect of advertising effort on product perception

4.7.2 Effort as a Mediator between Creativity and Brand Perception

H6b: The effect of advertising creativity on brand perception is fully mediated by perceived advertising effort

Perceived advertising effort is shown to have a significant positive effect on brand perception ($B=0.39$, $p<0.01$), while there is no significant direct effect between advertising creativity and brand perception which is not explained by the mediator. As was the case for product perception, this follows expectations and suggests an **indirect-only mediation** (Zhao et al., 2010). As such, **hypothesis H6b is accepted**.

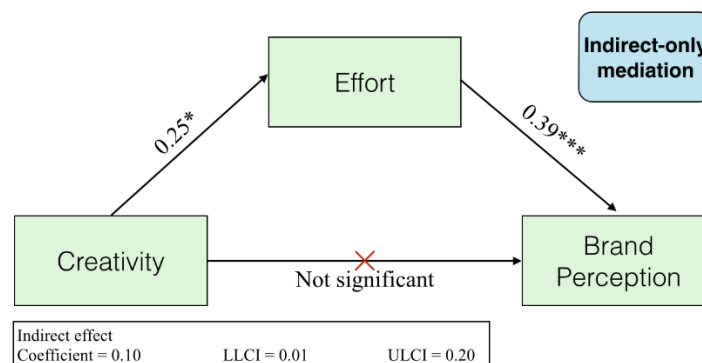


Figure 7: The mediating effect of advertising effort on brand perception

4.7.3 Effort as a Mediator between Creativity and Purchase Intention

H6c: The effect of advertising creativity on purchase intention is fully mediated by perceived advertising effort

Like above, the b path is significantly positive ($B=0.49$, $p<0.01$), while the c' path is insignificant, indicating an indirect-only mediation, where perceived advertising effort fully mediates the effect of advertising creativity on purchase intention (Zhao et al., 2010). Therefore, **hypothesis H6c is accepted**.

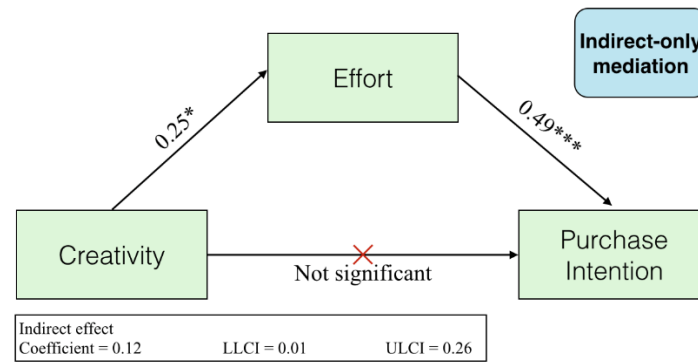


Figure 8: The mediating effect of advertising effort on purchase intention

4.8 Summary of Findings

| | | | |
|----|----|---|----------|
| H1 | a) | Low complexity consumer co-created products will perform better on product related variables than low complexity internally developed products. | Accepted |
| | b) | High complexity consumer co-created products will not perform better on product related variables than high complexity internally developed products. | Rejected |
| H2 | a) | Low complexity consumer co-created products will perform better on brand variables than low complexity internally developed products. | Accepted |
| | b) | With the exception of customer orientation, high complexity consumer co-created products will not perform better on brand variables than high complexity internally developed products. | Rejected |
| H3 | a) | Low complexity consumer co-created products will lead to higher purchase intention than low complexity internally developed products. | Accepted |
| | b) | High complexity consumer co-created products will not lead to higher purchase intention than high complexity internally developed products. | Rejected |
| H4 | a) | The effect of co-creation on product perception is mediated by perceived participant expertise. | Accepted |
| | b) | The effect of co-creation on brand perception is mediated by perceived participant expertise. | Accepted |
| | c) | The effect of co-creation on consumer purchase intention is mediated by perceived participant expertise. | Accepted |
| H5 | a) | Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on product variables | Rejected |
| | b) | Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on brand variables | Rejected |
| | c) | Regardless of complexity and consumer involvement, advertising creativity will have a positive effect on purchase intention | Rejected |
| H6 | a) | The effect of advertising creativity on product perception is fully mediated by perceived advertising effort. | Accepted |
| | b) | The effect of advertising creativity on brand perception is fully mediated by perceived advertising effort. | Accepted |
| | c) | The effect of advertising creativity on purchase intention is fully mediated by perceived advertising effort. | Accepted |

Table 2: Summary of findings

5. Discussion

The following section will provide a deeper analysis and discussion of the results presented in the previous section. The effects of co-creation on the different levels of complexity will be discussed before moving on to discussing the results of advertising creativity. Managerial implications will be presented, as well as suggestions for future research.

5.1 Perceived Expertise is a More Relevant Measure than Complexity

Previous research indicates that consumer co-created products are better received and better evaluated by consumers, compared to internally developed products (Schreier et al., 2012; Liljedal, 2016). One of the logics behind this is that consumers have a better knowledge and understanding of the actual consumer needs than professional designers do (Lilien et al. 2002; Poetz and Schreier 2012). Products developed in association with consumers are seen as having better chances to fit consumer needs and thus succeed on the market. However, some researchers have found a potential boundary condition, where the effects of co-creation diminish when the complexity of the product is high (Schreier et al., 2012; Liljedal, 2016).

In line with previous research, the findings for the low complexity products in this study indicate that consumer co-created products are better evaluated than internally developed products. Both variables on product perception showed significantly better evaluations for consumer co-created products. Consumer co-created products were perceived as having higher quality than internally developed products, which is an interesting finding, since non-participants' perception of product quality has not been investigated before in the field of co-creation. An explanation to this finding can be found in research by Brady and Cronin (2001). They found that customer orientation has a positive relation to perceived quality. Increased perceived customer orientation for co-created products was one of the findings in this study, which can explain why they were perceived as having higher quality. Thus, integrating the consumers in the NPD process increases perceived customer orientation, which in turn leads to higher perceived product quality.

The evaluations of brand related variables are also significantly higher for consumer co-created products of low complexity, compared to internally developed products. These findings are in line with prior research which has measured the same variables when looking at how co-creation affects brand perceptions. However, this study also measured brand interest as a dependent variable. As far as the authors are aware, this has not been done in a co-creation context before. The results in this study indicate that consumer co-created products create higher interest in the brand than internally developed products. Thus, it seems that consumer co-creation is interesting in the eyes of the non-participating consumers. The reason might be that co-creation leads to increased levels of perceived fit between the consumer and the product, which makes the product and the brand more relevant and thus increase the interest for that brand and the products it has to offer. Another reason might be that co-creation is not yet very common, adding a novelty value for the co-creating company. However, co-creation per se is not new but the way it is being carried out by companies from different industries is constantly changing. This evolution from the traditional way of developing products to the new way, where more and more companies are relying on the input from customers, is changing the dynamics of many industries. To conclude, companies can create advantageous brand perceptions by engaging in consumer co-creation.

The results also support prior research regarding the purchase intention among non-participating consumers. In line with prior research, the purchase intention is higher for consumer co-created products, compared to internally developed products. A reasonable explanation for this might be that products which are developed in association with consumers are more likely to fit consumer needs. When there is a fit between the product and consumer needs, it is reasonable to argue that consumers have greater intentions of buying that specific product.

The study does not find empirical evidence for the boundary condition of product complexity, which has been indicated by prior research. When investigating the effects of consumer co-created products for high complexity products, the same effects as for low complexity products were found on all variables. Thus, co-creation leads to better product perceptions and brand perceptions, as well as higher purchase intention regardless of complexity. While customer orientation was expected to benefit from co-creation regardless of the level of complexity, the findings generally go against prior research and it puts into question whether a complexity barrier really exists. An explanatory factor could be the level of perceived participant expertise.

The study finds that perceived expertise acts as a mediator for both low- and high complexity products, and thus plays a central role in consumer co-creation. A positive relationship was identified, where consumer involvement leads to increased levels of perceived expertise, which in turn leads to better product perception, brand perception and higher purchase intention. This indicates that the success of co-creation is not primarily a matter of perceived product complexity, as implied in prior research, but is rather a matter of the perceived expertise among the developers of the product. An interesting observation concerns the different types of mediation for product perception and brand perception. While the effect of co-creation on product perception was fully mediated by perceived participant expertise, there was a direct effect of co-creation on brand perception, which was not explained by the mediating variable. This implies that product perception is primarily driven by the perceived credibility and capability of the people behind the product. Meanwhile, brand perception could be more value driven, where consumers see a value in the mere fact that the company invites consumers to partake in the development process. However, it is worth keeping in mind that the direct effect of co-creation on brand perception may be explained by another variable, which was not accounted for in the study. In order to fully understand the nature of this direct effect, further studies are required.

While product perception and brand perception differed in the role of perceived participant expertise as a mediator, they were internally consistent across both levels of complexity. However, this was not the case for purchase intention, where expertise fully mediated the effect for low complexity products, while there was a significant direct effect for the more complex products. While this may be caused by deviations among the included products, the differences are noticeable enough that product complexity may be a factor. While expertise remains a significant mediator for highly complex products, the decreased influence of the mediator indicates that there is something else involved. This relationship may be better understood by further research into the matter.

Schreier et al. (2012) measured the expertise of professionals and consumers separately. In this study, perceived expertise of the developers of the product was measured regardless of if they were consumers or professionals. The results consistently show better results for consumer co-created products, which indicates that respondents do not see the development as exclusively driven by professionals or laymen, but rather a combination of the two. Consequently, consumers might expect a synergy effect, where input from both professionals and consumers increases the level of expertise and by extension the perceptions of the product and the brand. This is supported by the fact that consumer

co-created products also received high scores on company involvement. In other words, the respondents did not think that consumers had entirely replaced professionals, but rather added to them. Professional designers are still perceived to be a part of the product development, but they have also included the input from consumers in order to develop better products, which fit consumer needs and have better chances to succeed on the market. The conclusion which can be drawn from the results is that consumer co-creation is seen as something positive, and can benefit producers of both low- and high complexity products. However, this assumes that consumers perceive that the company is still involved in the process; quality checking and making sure that the process is carried out in the right way. This is supported by Liljedal's (2016) findings, stating that effects of co-creation for highly complex products can be observed when the brand is familiar. Liljedal argues that non-participating consumers assume that a familiar brand will ensure that all its products, including co-created products, will live up to the same standard as can usually be expected from the brand.

5.2 The Signaling Effect of Advertising Effort has Some Positive Impact

In contrast to the findings in Dahlén et al. (2008) and Modig & Rosengren (2014), the results in this study showed no direct effect of advertising creativity on any of the target variables, in spite of significant differences in the level of creativity in the advertisements. However, it is important to note that, while these effects were present in the mentioned studies, they were found to be mediated by perceived advertising effort. This indirect effect was identified in this study as well, indicating that creativity does have some impact on the target variables, although perhaps less so than in the aforementioned experiments.

No interaction effect between advertising creativity and co-creation was identified. However, perceived advertising effort was shown to have a moderating effect on brand perception. This implies that, beyond the direct effect from perceived advertising effort on the target variables, it also influenced the relationship between co-creation and brand perception. In other words, the study lends some credence to the speculation that advertising creativity (via perceived effort) and co-creation could have some synergetic effects when combined. The exact nature of this relationship is beyond the scope of this study, however.

While the advertisements in the experiment were not typically in the far ends of the creativity spectrum, neither were the advertisements used by Dahlén et al. (2008). Neither of the studies was designed to investigate the differences between highly creative advertisements and very uncreative advertisements. As Dahlén et al. put it: "creativity is not a yes/no".

There are a number of possible explanations for why the results of advertising creativity were not as apparent in this study as in Dahlén et al. (2008) or Modig & Rosengren (2014). These explanations can broadly be separated into two categories: differences in the implementation of creativity and differences in priming.

In the experiments presented in this study, advertising creativity was altered in the pictorial element of the advertisements, while Dahlén et al. (2008) altered the text element. Studies have shown that the attention capture effects of print advertisements vary, depending on the relative sizes of the text, brand and pictorial elements of the advertisement (eg. Pieters & Wedel, 2004). This could potentially influence the effect of creativity on the target variables, although the authors are not aware of any studies investigating whether the effects of advertising creativity depend on which element of the advertisement is more creative. However, there is not much in the findings in Pieters & Wedel (2004)

that suggests that the pictorial element should be less advantageous than the textual element in this instance.

Another difference of note is that Dahlén et al. (2008) focused on familiar brands, while the experiment in this study did not include brands in the advertisement. However, Dahlén et al. (2008) argue that the existing consumer perceptions of the familiar brands make them harder to influence and that unfamiliar brands stand to gain more from marketing signals. In other words, the effects of advertising creativity were expected to be magnified for unfamiliar brands, rather than reduced.

A more credible explanation for the deviation from Dahlén et al. (2008) is that the differences are caused by priming. Their study found that the effects of advertising creativity were significantly greater if the respondents were asked to rate the creativity of the advertisement before answering the other questions, than if they were asked to rate the creativity afterwards. However, the article did not specify how this impacted their other findings. While the respondents who were not primed to consider advertising creativity were less affected by it, it is not apparent whether the lack of priming eliminated the effects of creativity or if it merely decreased them. The experiment presented in this thesis did not prime respondents to consider advertising creativity, which is a probable explanation of the more modest results. If respondents are initially asked to reflect on the creativity in the advertisements, it is likely that this will put the respondents into a generally positive or negative mindset about the ad in general, which would influence the answers to following questions. However, this is not a typical process for consumers who are exposed to advertisements.

While the present study did not prime respondents to think about advertising creativity, it did prime them to be aware of the product development process. That is, respondents were explicitly told whether consumers had been involved or if it was entirely an in-house process, before being exposed to the advertisement. It is quite possible that this priming caused respondents to pay more attention to the textual element of the advertisement, containing the co-creation manipulation, than to the pictorial element, containing the creativity manipulation. The way in which the consumer processes the advertisement is central when measuring advertisements and how they perform. The time spent by the consumer on processing and decoding the advertisement plays a crucial role, and it can be questioned whether the respondents focused on or paid much attention to the picture in the advertisement. According to Grover & Vriens (2006), utilizing eye-tracking measures is advisable when testing print advertisements. The scope of this study did not allow for such measures to be employed, but it could potentially shed some light on whether more attention was paid to the text than to the visual aspects of the advertisements.

A final potential explanation is that the product development process is simply a stronger predictor of consumers' evaluations than advertising creativity is. In other words, consumer perceptions about products and brands, as well as their purchase intention is influenced more by how the product is made than by how creatively it is advertised. While this is mere conjecture, it would explain why there was such a discrepancy in the effects of co-creation efforts versus advertising creativity.

However, while the direct effects were not significant, the mediation tests show that there are still benefits to be had from creative advertising, beyond drawing attention to and increasing recollection of the advertisement, albeit somewhat less so than indicated by previous studies. Creativity is not more or less suitable for use with co-created products, but rather appears to provide a general boost to consumers' evaluations of products and brands, as well as their purchase intention.

5.3 Conclusion

The main study aimed to investigate the accuracy of the hypothesized theoretical model in figure 9 below. The study found no support for product complexity moderating the effect of co-creation, but rather that perceived participant expertise acts as a mediator. The final analysis is summarized in the revised theoretical model, presented in figure 10. Regardless of product complexity, consumer involvement was found to have a significant positive impact on product perception, brand perception and purchase intention, although the effect on product perception was fully mediated by perceived expertise. Meanwhile, advertising creativity increases perceived advertising effort, which in turn positively impacts the target variables and moderates the effect of co-creation on brand perception.

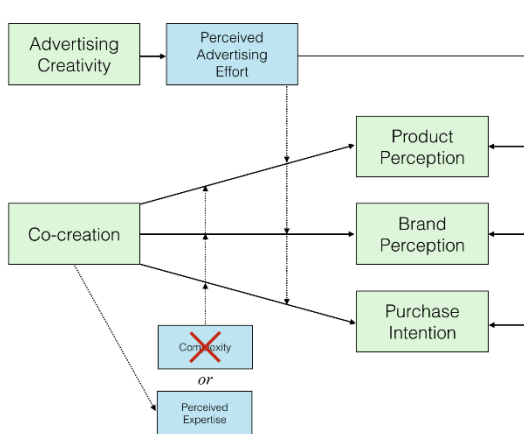


Figure 2: Original hypothesized theoretical model

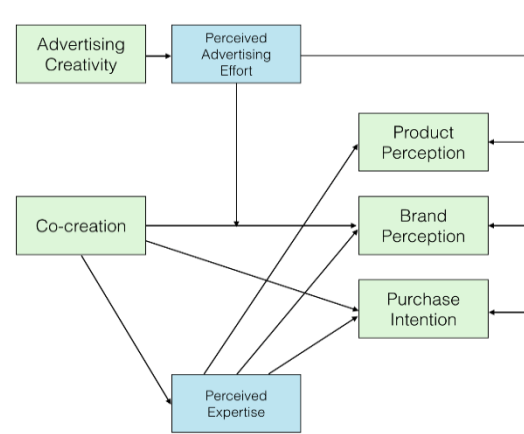


Figure 3: Revised theoretical model

Perceived participant expertise and perceived advertising effort both being heavily influential factors highlights one aspect in particular: perception. It is not co-creation or advertising creativity in itself which is the cause of success, but rather how consumers perceive these efforts, and the inferences they make from them. This relates to the concept of signaling theory. Creative advertising indicates effort in marketing the product, which consumers interpret as positive signals regarding the product and brand. Similarly, co-creation indicates a new approach to product development, from which consumers make inferences about the product and brand. It is important for the co-creating company to signal that the participating consumers add expertise and new perspectives to the process, rather than replace the existing capabilities in the company, as the truth is in the eye of the beholder.

6. Managerial Implications

Inviting consumers to participate in the product development process is an option available to companies regardless of the degree of complexity of the products. Indeed, studies have shown that technically advanced products stand to gain more from co-creation than other companies, in some aspects (Olson & Bakke, 2001; Herstatt & von Hippel, 2003; Urban & von Hippel 1988). The findings presented in this study do not support the existence of a complexity barrier per se. Rather, the adverse effects from co-creation for complex products, which is identified in prior studies, is attributed to a perceived lack of expertise among the participating consumers.

The challenge for companies engaging in consumer co-creation is to ensure that the non-participating consumers perceive the participants of the NPD process as having the necessary competence. Building on the theory of signaling effects, companies have to signal that they know what they are doing. Regardless of who participates in the NPD process, it has to be evident that the company will only and always create high quality products. An important component in this line of reasoning is to clearly communicate that consumer involvement and company involvement are not mutually exclusive. Involving consumers to participate in the development process does not equate to giving up control with minimal supervision. The key to successful co-creation efforts is to emphasize the synergy effects: it is not the company *or* consumers making the product, but rather the company *and* consumers working together to achieve better results.

Another alternative is to brand or communicate the expertise of the co-creating consumers from whom the company is getting their input. Establishing and communicating a knowledgeable community of contributors could be a strategic decision for companies aiming to brand themselves as user-driven and customer-oriented, increasing credibility among non-participating consumers. This broadens the implications found by Fuchs et al. (2013), stating that co-creation efforts were better received when describing the participating consumers as experts, artists or celebrities. Thus, branding the community would be a first step that could facilitate the release of new products which have been developed in association with the consumers. Being supported by a community with great reputation could be a source of competitive advantage. However, it is crucial that companies put effort into shaping these communities in order to make sure that new and innovative ideas can be generated.

Creative advertising was shown to have a positive indirect effect on product- and brand perception, as well as purchase intention, even though this effect was not as substantial as previous research indicates it should be. As such, using creative advertising is usually worth considering, not just for capturing attention to the advertisement, but also to improve perceptions of the product and brand, as well as purchase intention. The advertisement does not have to feature award-winning creativity to have effect. Even minor improvements could make a difference, since it is the perceived effort put into the advertisement which matters. Using creativity may not prove to be the difference between complete success and utter failure, but it provides a minor boost, which may prove important in competitive markets, where even marginal advantages can prove to be decisive.

7. Future Research

This study has investigated the effects of co-creation for different levels of complexity and whether using creative advertising can circumvent the supposed complexity barrier. Prior research investigating the complexity barrier is limited. Even though the empirical findings of this study have provided a deeper understanding of these issues, more research is necessary to understand it fully.

The present study has focused on unfamiliar brands. The effects may be different for brands which are previously known to the consumer. How do brand trust and brand credibility impact the effects of co-creation? If consumers trust the brand or perceive it as credible, the potential negative impact on participant expertise may be mitigated. Would a familiar brand benefit more or less from creatively communicating consumer co-created products compared to unfamiliar brands? If the suggestion that the development process takes precedence over how the product is communicated, in the case of unfamiliar brands, is true, how would this be affected by the increased trust and credibility in familiar brands? Would consumer reflect less on how the product was developed, and consequently be more affected by creative advertising?

It would also be of interest to investigate the role of company involvement. How would non-participating consumers perceive products that have been developed *by* consumers, compared to products that have been developed *together with* consumers? Is some degree of company involvement necessary for the success of co-creation or could the development of new products be fully outsourced to the community?

This study has also raised the question regarding the use of priming in an experiment. Priming can prove problematic when investing multiple dimensions simultaneously. This study could be replicated in the future with the exception of excluding the priming text. Would the effects of co-creation and creativity differ if respondents were not primed?

Further, during the mediation analyses, the results showed a direct effect between co-creation and brand perception, which was not explained by perceived participant expertise as a mediator. The relationship between co-creation and product perception was fully mediated by participant expertise, indicating that something else is affecting the former relationship. This could be omitted variables or inherent benefits from co-creation itself. Regardless, it would benefit from further investigation.

Similarly, co-creation had a direct effect on purchase intention for highly complex products, but was fully mediated for less complex ones. The difference is noticeable enough for it to credibly depend on something beyond variations among individual products, and could give some merit to the idea of the existence of a complexity barrier, in spite of this study generally finding little evidence suggesting it.

Perceived advertising effort acting as a moderator in the relationship between co-creation and brand perception is another finding, on which future research could shed more light.

Finally, investing time and resources in creative advertising is reasonably more plausible for large and wealthy companies than for smaller companies and budgets. Does this impact the signaling effect? Do companies with deeper pockets need to spend more money and energy on the advertisement in order to achieve the same effect as a smaller company with smaller means? Put differently: Is perceived advertising effort relative?

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9. Appendices

9.1 Results from Pre-test 1 (Product Complexity)

n=30

| Product category | Cronbach's α | Mean | SD |
|-------------------|---------------------|-------------|-------------|
| Car | 0.769 | 6.49 | 0.60 |
| Sound system | 0.812 | 5.66 | 0.96 |
| Camera | 0.765 | 5.50 | 0.98 |
| TV | 0.794 | 5.30 | 1.13 |
| Headphones | 0.885 | 4.79 | 1.23 |
| Running shoes | 0.861 | 3.90 | 1.33 |
| Juicer | 0.934 | 3.71 | 1.50 |
| Shoes | 0.875 | 3.03 | 1.25 |
| Jeans | 0.828 | 2.79 | 1.28 |
| Soft drink | 0.890 | 2.64 | 1.30 |

9.2 Results from Pre-test 2 (Advertising Creativity and Co-creation)

| | | | | | | | | |
|---------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| n=49 | Juice | | Shoes | | TV | | Car | |
| | "To which extent do you perceive the advertisement above to be creative?" | | | | | | | |
| | More Creative | Less Creative | More Creative | Less Creative | More Creative | Less Creative | More Creative | Less Creative |
| | 4.50 | 2.44 | 4.08 | 2.13 | 5.80 | 2.42 | 5.17 | 3.72 |
| p-value | 0.000 | | 0.000 | | 0.000 | | 0.002 | |
| | "To which extent have consumers been involved in the development of the product above?" | | | | | | | |
| | Co-creation | IDP | Co-creation | IDP | Co-creation | IDP | Co-creation | IDP |
| | 3.79 | 2.60 | 3.50 | 2.76 | 3.40 | 1.92 | 3.88 | 2.29 |
| p-value | 0.009 | | 0.131 | | 0.001 | | 0.006 | |
| | "To which extent has the product above been developed by the company advertising?" | | | | | | | |
| | Co-creation | IDP | Co-creation | IDP | Co-creation | IDP | Co-creation | IDP |
| | 5.50 | 5.76 | 4.96 | 5.16 | 5.12 | 5.54 | 4.96 | 5.63 |
| p-value | 0.228 | | 0.486 | | 0.290 | | 0.183 | |

p-values calculated by using Mann-Whitney U-test, since the individual groups contained 24 and 25 respondents, respectively.

9.3 Comparison of Effects of Co-creation on a Product Level

| Variable | Co-creation | Mean | | | | Quotient | | | | p-value | | | |
|-----------------------|-------------|-------|-------|------|------|----------|-------|------|------|---------|-------|-------|-------|
| | | Juice | Shoes | TV | Car | Juice | Shoes | TV | Car | Juice | Shoes | TV | Car |
| Product attitude | No | 4.41 | 3.52 | 4.54 | 4.65 | | | | | | | | |
| | Yes | 4.81 | 4.46 | 5.27 | 5.22 | 1.09 | 1.27 | 1.16 | 1.12 | 0.097 | 0.001 | 0.002 | 0.030 |
| Product quality | No | 4.45 | 4.02 | 4.72 | 4.61 | | | | | | | | |
| | Yes | 4.75 | 4.62 | 5.15 | 5.11 | 1.07 | 1.15 | 1.09 | 1.11 | 0.095 | 0.001 | 0.026 | 0.020 |
| Brand attitude | No | 4.42 | 3.80 | 4.43 | 4.56 | | | | | | | | |
| | Yes | 4.73 | 4.63 | 5.08 | 5.26 | 1.07 | 1.22 | 1.15 | 1.15 | 0.123 | 0.000 | 0.001 | 0.003 |
| Customer orientation | No | 3.88 | 3.65 | 3.69 | 3.95 | | | | | | | | |
| | Yes | 4.80 | 5.03 | 5.07 | 5.16 | 1.24 | 1.38 | 1.37 | 1.30 | 0.000 | 0.000 | 0.000 | 0.000 |
| Innovation ability | No | 4.29 | 3.66 | 4.62 | 4.82 | | | | | | | | |
| | Yes | 5.05 | 4.98 | 5.34 | 5.38 | 1.18 | 1.36 | 1.16 | 1.11 | 0.000 | 0.000 | 0.002 | 0.019 |
| Participant expertise | No | 4.53 | 4.06 | 4.85 | 4.78 | | | | | | | | |
| | Yes | 4.86 | 4.89 | 5.44 | 5.17 | 1.07 | 1.20 | 1.12 | 1.08 | 0.072 | 0.000 | 0.005 | 0.092 |
| Brand interest | No | 4.07 | 3.08 | 3.79 | 3.81 | | | | | | | | |
| | Yes | 4.59 | 4.01 | 4.66 | 4.65 | 1.13 | 1.30 | 1.23 | 1.22 | 0.030 | 0.000 | 0.000 | 0.001 |
| Purchase intention | No | 4.39 | 2.98 | 3.90 | 3.84 | | | | | | | | |
| | Yes | 4.90 | 3.90 | 4.97 | 4.61 | 1.11 | 1.31 | 1.28 | 1.20 | 0.082 | 0.002 | 0.000 | 0.015 |
| Advertising effort | No | 4.75 | 4.01 | 5.16 | 4.64 | | | | | | | | |
| | Yes | 5.09 | 5.19 | 5.49 | 5.39 | 1.07 | 1.29 | 1.06 | 1.16 | 0.142 | 0.000 | 0.188 | 0.003 |
| Mean | | 4.61 | 4.17 | 4.80 | 4.76 | 1.11 | 1.27 | 1.18 | 1.16 | | | | |

9.4 Multivariate Analysis of Variance

| Effect | Wilks' Lambda | F | Hypothesis df | Error df | Sig. |
|----------------------------------|---------------|--------|---------------|----------|-------|
| Intercept | 0.08 | 786.56 | 7 | 498 | 0.000 |
| Co-creation | 0.87 | 10.47 | 7 | 498 | 0.000 |
| Complexity | 0.96 | 2.85 | 7 | 498 | 0.006 |
| Creativity | 0.98 | 1.73 | 7 | 498 | 0.101 |
| Advertising effort | 0.7 | 4.32 | 42 | 2339 | 0.000 |
| Co-creation * Complexity | 0.98 | 1.15 | 7 | 498 | 0.329 |
| Co-creation * Creativity | 0.99 | 0.76 | 7 | 498 | 0.618 |
| Co-creation * Advertising effort | 0.9 | 1.58 | 35 | 2097 | 0.017 |
| Complexity * Creativity | 0.99 | 0.43 | 7 | 498 | 0.883 |
| Complexity * Advertising effort | 0.91 | 1.18 | 42 | 2339 | 0.197 |
| Creativity * Advertising effort | 0.88 | 1.6 | 42 | 2339 | 0.009 |

9.5 ANOVA – Co-creation and Complexity

| | Low Complexity | | | High Complexity | | |
|-----------------------|----------------|-----------------|----------|-----------------|-----------------|----------|
| | Groups | Mean difference | p-value | Groups | Mean difference | p-value |
| Product attitude | a-b | 0.66 | 0.003** | c-d | 0.64 | 0.007** |
| Product quality | a-b | 0.45 | 0.010** | c-d | 0.47 | 0.008** |
| Brand attitude | a-b | 0.56 | 0.002** | c-d | 0.67 | 0.000*** |
| Brand interest | a-b | 0.71 | 0.000*** | c-d | 0.86 | 0.000*** |
| Customer orientation | a-b | 1.15 | 0.000*** | c-d | 1.28 | 0.000*** |
| Innovation ability | a-b | 1.03 | 0.000*** | c-d | 0.63 | 0.001*** |
| Purchase intention | a-b | 0.69 | 0.011* | c-d | 0.91 | 0.001*** |
| Effort | a-b | 0.75 | 0.000*** | c-d | 0.56 | 0.018* |
| Participant expertise | a-b | 0.58 | 0.001*** | c-d | 0.48 | 0.013* |

Groups :

a: Low complexity, Co-creation

b: Low complexity, IDP

c: High complexity, co-creation

d: High complexity, IDP

9.6 ANOVA – Creativity

| | | Sum of Squares | df | Mean Square | F | Sig. |
|----------------------|----------------|----------------|-----|-------------|-------|-------|
| Product attitude | Between Groups | 0.79 | 1 | 0.79 | 0.325 | 0.569 |
| | Within Groups | 1335.71 | 551 | 2.42 | | |
| | Total | 1336.50 | 552 | | | |
| | | | | | | |
| Product quality | Between Groups | 0.90 | 1 | 0.90 | 0.677 | 0.411 |
| | Within Groups | 733.88 | 551 | 1.33 | | |
| | Total | 734.78 | 552 | | | |
| | | | | | | |
| Brand attitude | Between Groups | 0.89 | 1 | 0.89 | 0.538 | 0.464 |
| | Within Groups | 911.76 | 551 | 1.65 | | |
| | Total | 912.65 | 552 | | | |
| | | | | | | |
| Customer orientation | Between Groups | 0.44 | 1 | 0.44 | 0.287 | 0.592 |
| | Within Groups | 849.96 | 551 | 1.54 | | |
| | Total | 850.40 | 552 | | | |
| | | | | | | |
| Innovation ability | Between Groups | 1.69 | 1 | 1.69 | 0.887 | 0.347 |
| | Within Groups | 1051.08 | 551 | 1.91 | | |
| | Total | 1052.78 | 552 | | | |
| | | | | | | |
| Brand interest | Between Groups | 0.01 | 1 | 0.01 | 0.002 | 0.961 |
| | Within Groups | 1207.28 | 551 | 2.19 | | |
| | Total | 1207.28 | 552 | | | |
| | | | | | | |
| Purchase intention | Between Groups | 0.30 | 1 | 0.30 | 0.091 | 0.763 |
| | Within Groups | 1803.69 | 551 | 3.27 | | |
| | Total | 1803.99 | 552 | | | |
| | | | | | | |

9.7 Questionnaire Design

Respondents to the survey were presented with the following questionnaire. Note that the questionnaire is not translated from Swedish, in order to avoid any distortions of formulations.

9.7.1. Intro Text

“Hej!

Vi genomför en forskningsstudie och vill gärna veta vad du tycker.

På nästa sida kommer du att läsa en kort text om en ny produkt, följt av en annons för produkten i fråga. Det är viktigt att du läser texten och tittar på annonsen noggrant. Försök att föreställa dig en situation där du har behov av en produkt som den i annonsen.

Efter att du har sett annonsen så ställer vi några frågor. Det är viktigt att du besvarar alla frågor, även om vissa av dem kan verka likartade. Enkäten tar cirka fem minuter att besvara.

Dina svar kommer enbart att användas för forskning, och kommer inte att säljas vidare eller användas för vinstdrivande ändamål.

Klicka på knappen nedan för att sätta igång! ”

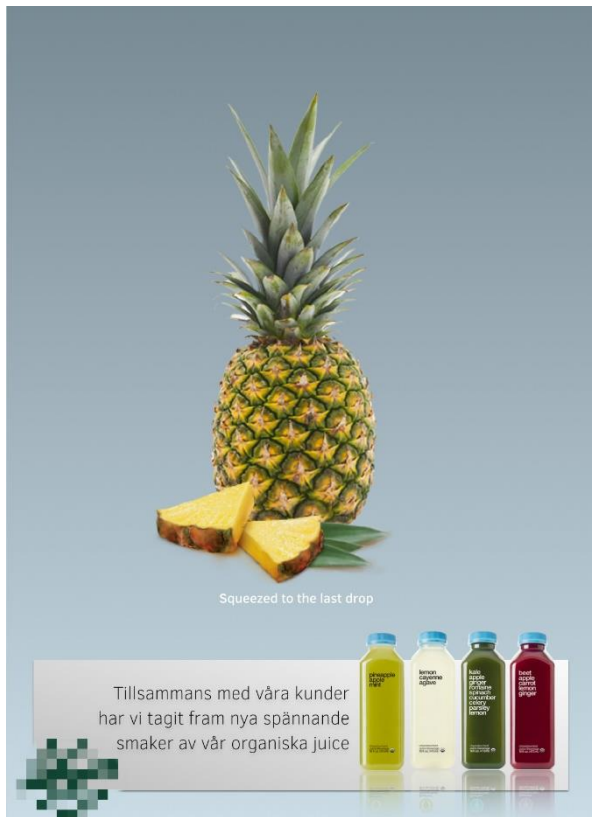
9.7.2 Examples of Priming Text

IDP: “Företag X (som vill vara anonymt i denna undersökning) är en tillverkare av högteknologiska TV-apparater. Nyligen lanserade man en ny TV som företagets ingenjörer tagit fram. Utvecklingen av den nya TV:n har skett ”in-house”, dvs. ingen tredje part har varit inblandad. Reklamkampanjen för den slutgiltiga produkten finner du på nästa sida. Observera att bilden kan ta någon sekund att ladda in.”

Co-creation: ”Företag X (som vill vara anonymt i denna undersökning) är en tillverkare av högteknologiska TV-apparater. Nyligen lanserade man en ny TV som man skapat i samarbete med företagets kunder. Kunderna hade möjligheten att bidra med idéer kring funktioner och design, där de bästa idéerna senare röstades fram av kunderna. De förslag som kunderna tyckte bäst om användes i slutprodukten. Reklamkampanjen för den slutgiltiga produkten finner du på nästa sida. Observera att bilden kan ta någon sekund att ladda in.”

9.7.3 Advertisement

The following advertisements cover all manipulations included in the survey. For each product, one more creative and one less creative advertisement is displayed, along with textual elements describing either co-creation or internal development.



**Bra TV ska kännas
på riktigt**



Tillsammans med våra användare har vi utvecklat en ny banbrytande TV som tar underhållningen till en helt ny nivå.

**Bra TV ska kännas
på riktigt**

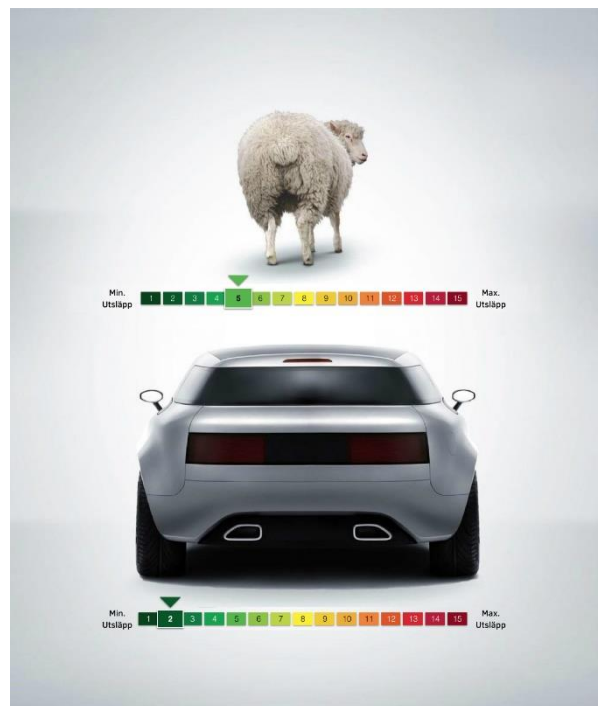


Våra ingenjörer har utvecklat en ny banbrytande TV som tar underhållningen till en helt ny nivå.



Min. Utsläpp 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Max. Utsläpp

Skapad från grunden av våra användare, med fokus på **miljö, design och körglädje**



Min. Utsläpp 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Max. Utsläpp

Skapad från grunden av vårt professionella ingenjörsteam, med fokus på **miljö, design och körglädje**

9.7.4 Questions

Baserat på den annons du just har sett, vad är din inställning till produkten i annonsen?

| | | | | | | | | |
|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------|
| Ogillar | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Gillar |
| Ej tilltalande | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Tilltalande |
| Tråkig | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Intressant |

Vad anser du om produktens kvalitet?

| | | | | | | | | |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|
| Dålig | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Utmärkt |
| Låg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Hög |
| Bland de sämsta | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Bland de bästa |

Baserat på den annons du just har sett, vad tycker du om Företag X?

| | | | | | | | | |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------|
| Ogillar | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Gillar |
| Negativt | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Positivt |
| Väldigt dåligt | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Väldigt bra |
| Inte intressant | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Väldigt intressant |

Överlag, vad är din inställning till Företag X?

| | Instämmer inte alls | | | | | | Instämmer fullständigt |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Försöker hjälpa sina kunder att uppnå sina mål | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ser till kundens bästa | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Försöker ta reda på sina kunders behov | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Försöker ta reda på vilken typ av produkt som skulle vara till störst nytta för kunden | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Försöker få kunder att diskutera sina behov med företaget | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kunder kan räkna med att företaget aktivt strävar efter att möta kundens behov | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Baserat på annonsen du såg, vad tror du om Företag X:s innovationsförmåga?

| | | | | | | | | |
|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
| Inte särskilt hög | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Väldigt hög |
| Inte särskilt stark | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Väldigt stark |
| Inte särskilt bra | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Utmärkt |

Hur hög expertis anser du att personerna som utvecklar produkter för Företag X har?

| | | | | | | | | |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------|
| Låg expertis | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Hög expertis |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------|

Tror du att personerna som utvecklar produkter för Företag X besitter den nödvändiga kunskapen och kompetensen?

| | | | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
| De besitter inte alls de nödvändiga kunskaperna | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | De besitter fullständigt de nödvändiga kunskaperna |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|

Baserat på annonsen, hur intresserad skulle du vara av Företag X:s nya produkt?

| | Instämmer inte alls | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Instämmer fullständigt |
|----------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------|
| Jag skulle vilja testa den | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jag skulle vilja pröva den | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jag skulle vilja köpa den | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Hur mycket skulle du vara villig att betala för produkten i annonsen?

kr

Hur mycket tror du att Företag X anstränger sig för att annonsera produkten?

| | | | | | | | | |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|
| Väldigt lite ansträngning | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Väldigt mycket ansträngning |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|

I vilken utsträckning uppfattade du att konsumenter varit inblandade i utvecklingen av produkten i annonsen?

Inte alls inblandade | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Väldigt inblandade

I vilken utsträckning uppfattade du att företaget som säljer produkten har varit inblandat i utvecklingen?

Inte alls inblandat | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Väldigt inblandat

Hur goda är dina kunskaper om den typ av produkter du såg i annonsen jämfört med personer i din omgivning?

Inte alls goda ☐ ☐ ☐ ☐ ☐ ☐ ☐ Väldigt goda

Hur insatt är du i den typ av produkter du såg i annonsen?

Inte alls insatt ☐ ☐ ☐ ☐ ☐ ☐ ☐ Väldigt insatt

Jag är...

- ☐ Man
☐ Kvinna
☐ Annat

Jag är född år

9.7.5 Closing Text

“Tack! Du har just deltagit i en studie som undersöker så kallad consumer co-creation, där företag arbetar tillsammans med sina konsumenter för att skapa nya idéer och produkter. Dina svar kommer att spela en viktig roll i vår forskning, och vi uppskattar verkligen din hjälp. Om du har några synpunkter eller frågor om enkäten, hör gärna av dig till 22053@student.hhs.se eller 50103@student.hhs.se.

Tryck på knappen nedan för att avsluta enkäten.”