



Exploring the impact of consumer participation in Co-creation on Brand Satisfaction

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ABSTRACT

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Co-creation is an innovative, social, and creative approach for brands to interact directly with their consumers through different methods to create suitable products based on consumers' needs. This marketing approach can drive sustainable satisfaction and loyalty.

Not every consumer has the same needs. Therefore, when developing a co-creation strategy as a brand, it is crucial to consider that the desired outcome also depends on the characteristics of the participators. This research aims to underline the importance of co-creation as a method itself. It will also give insights into the moderation of co-creation on brand satisfaction by characteristics and socio-demographic aspects. Understanding the impact of specific consumer characteristics and demographics on co-creation and brand satisfaction can improve the development of co-creation methods to increase satisfaction for different target groups.

Therefore, a quantitative online survey with an A/B split test was conducted to test the effect of co-creation on brand satisfaction, including the named moderating variables. Both groups were exposed to different stimuli, either co-creation or no co-creation, developed through a focus group. The results show that co-creation has a significantly strong effect on brand satisfaction. Openness to experiences is a characteristic trait that significantly strengthens this effect. In contrast, extroversion, age, and gender do not significantly affect this relationship.

Keywords: Co-Creation, Brand Satisfaction, Personality Traits, Socio-Demographic Factors, Consumer Packaged Goods, Extroversion, Openness to Experience, Gender, Age.

SUMÁRIO

Explorar o impacto da participação do consumidor na Co-criação sobre a Satisfação com a Marca

Sarah Preß

A co-criação é uma abordagem inovadora, social e criativa que permite às marcas interagir diretamente com os seus consumidores através de diferentes métodos para criar produtos adequados com base nas necessidades dos consumidores. Esta abordagem de marketing pode gerar satisfação e lealdade sustentáveis.

Nem todos os consumidores têm as mesmas necessidades. Por conseguinte, ao desenvolver uma estratégia de co-criação como marca, é crucial considerar que o resultado desejado também depende das características dos participantes. Esta investigação tem como objetivo sublinhar a importância da co-criação como método em si. Também fornecerá informações sobre a moderação da co-criação na satisfação da marca em função das características e dos aspectos sociodemográficos. Compreender o impacto das características específicas e demográficas dos consumidores na co-criação e na satisfação com a marca pode melhorar o desenvolvimento de métodos de co-criação para aumentar a satisfação de diferentes grupos-alvo.

Por conseguinte, foi realizado um inquérito quantitativo em linha com um teste de divisão A/B para testar o efeito da co-criação na satisfação com a marca, incluindo as variáveis moderadoras nomeadas. Ambos os grupos foram expostos a diferentes estímulos, com ou sem co-criação, desenvolvidos através de um grupo de discussão. Os resultados mostram que a co-criação tem um efeito significativamente forte na satisfação com a marca. A abertura às experiências é um traço característico que reforça significativamente este efeito. Em contrapartida, a extroversão, a idade e o género não afectam significativamente esta relação.

Palavras-chave: Co-Criação, Satisfação com a Marca, Traços de Personalidade, Factores Sócio-Demográficos, Bens de Consumo Embalados, Extroversão, Abertura à Experiência, Género, Idade.

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GLOSSARY

CC = Co-creation

CLT = Central Limit Theorem

CPG = Consumer packaged goods

DV = Dependent variable

EX = Extroversion

FMCG = Fast moving consumer goods

IV = Independent variable

NPD = New product development

OE = Openness to experience

CHAPTER 1: INTRODUCTION

1.1 Background and Problem Statement

On average, 30,000 new product launches arrive in the CPG market annually. It is, therefore, hard for brands to stand out and be noticed with their products as consumers are free to choose. Within this number, 30% of new product innovations fail in the US market within the first two years. But what makes a brand's product stay within the 70%? The combination of an innovative idea and an extraordinary product experience. A chance for brands to drive impacting innovation. Nielsen calls the strategy companies should pursue "Fewer, bigger, better" (Nielsen IQ, 2019).

Consumers are not only referring to a brand anymore because they recognize the logo or the branding. Instead, they seek a personalized experience along the customer journey to select one brand before another (Freedman, 2019). They want to be "heard, seen, and appreciated" (Clarke & Kinghorn, 2018). Many top-performing brands have learned to deliver an experience-driven and emotionally engaging relationship with their consumers. Therefore, brand experience become more necessary, especially in the consumer packaged goods market (Freedman, 2019). Brands need to differentiate themselves from others with their products by diving into the creativity of their consumers. This new approach has guided in practice to conceive consumers, along with their experiences, not as passive but as active players to create value in designing and developing products and services (Kumar & Kandoi, 2018).

Co-creation, or collaborative creation, aspires to meet this new "active" approach to connect as a brand with the consumer. It is an innovative, social, and creative process and brand strategy that many companies use successfully for their product innovation process, making the consumer an "advisor," not just an end consumer (Piller, Ihl, & Vossen, 2011). With co-creation, consumers can actively co-create a product or service. Depending on the chosen method, they can express their wishes for a product innovation or a new product to a different extent. With the given impact of the consumer, the brand can develop products that aim to completely fulfill consumers' needs based on their desires, wishes, needs, and expectations and give them, in the best case, maximum brand satisfaction, increased loyalty, less risk, and market failure (Kumar & Kandoi, 2018; Prahalad & Ramaswamy, 2004). The relationship between consumer and brand can increase as they have a dialogue and entrust themselves to create innovative products (Mandolfo, Chen, & Noci, 2020; Martinez et al., 2016).

It is essential to say that it is a joint creation, not a personalization and customization of products. It involves dialogue engagement and social interaction (Prahalad & Ramaswamy, 2004). Co-creation is not universally considered a satisfactory tool by every consumer, as preferences in being active in NPD, for example, differ. Not every consumer has the exact needs, for example, wishing to express themselves through co-creation and desire a social connection with a brand. Therefore, when developing a co-creation strategy for a brand, it is crucial to consider that the desired success depends as well on the characteristics and demographics of the participating consumers (Freedman, 2019; Roth, 2011; Rehman, Naveed & Cheema, 2012; Clarke & Kinghorn, 2018).

1.2 Problem Statement

Given the importance of this innovative topic in the future, the main objective of this research is to find out the following research question: *“Is co-creation enhancing brand satisfaction for consumers, and are there moderating factors like characteristic traits and demographic characteristics that increase this effect?”*

As said, not every consumer is similar and has the exact wishes and needs, like the desire to interact with a brand to a certain extent. Research has not yet focused much on how different characteristics or demographics impact the effect of co-creation and if they strengthen the effect. The evaluation of personal variables that strengthen the effect of co-creation on brand satisfaction could help to develop target group-specific co-creation strategies for different consumers. This thesis will, therefore, focus on this specific topic. To explore these subjects, the following sub-research questions are framed:

RQ1: How does consumer participation in co-creation affect brand satisfaction?

RQ2: What is the role of personality traits and demographics on co-creation participation and brand satisfaction?

RQ3: Which is stronger, personality traits and demographic characteristics?

1.3 Relevance

Co-creation is a possible method to lower the number of new products in the CPG industry that do not survive in this crowded market (Nielsen IQ, 2019). Consumers want to be seen, heard, and cherished (Clarke & Kinghorn, 2018). The ancient construct of the traditional market is bygone. Brands can no longer "act autonomously, design products, develop production

processes, craft marketing messages, and control sales channels with little or no consumer interference" (Prahalad & Ramaswamy, 2004). Through the co-creation approach, firms dive into their consumers' thoughts, desires, and needs, cooperating with them in a social interaction (Kumar & Kandoi, 2018; Piller et al., 2011). Firms need to understand the needs and preferences of the consumer through exchange and collaboration. With more appreciation for the consumer, consumers are likelier to recommend, make repurchases, and try other products from the brand primarily, driving satisfaction and loyalty (Clarke & Kinghorn, 2018).

Relatively little knowledge exists about the impact of moderator variables on the effect of co-creation on brand satisfaction (Shrivastava, 2016). With this research, the aim is to underline and highlight the importance of co-creation as a brand strategy and to find out more about the moderation of co-creation on brand satisfaction caused by characteristics or socio-demographic aspects. Knowing the effect of specific consumer characteristics and demographics on brand satisfaction can improve the development of co-creation methods to increase satisfaction and loyalty for different target groups (Clarke & Kinghorn, 2018). Those deeper insights will help brands fully understand the importance of co-creation.

1.4 Research Methods

An extensive literature review is made to appropriately answer the proposed research questions to gain in-depth knowledge about the topic, the different variables, and previously researched effects. With this, a conceptual model is developed, hypotheses are defined, followed by the performance of a qualitative focus group to develop the stimuli for the main study. The primary research method is explanatory. Therefore, a quantitative online survey questionnaire will be conducted with an A/B split test to test the effect of co-creation on brand satisfaction, including moderating factors as prescribed. The data was collected over one week and self-administered through the survey platform "Qualtrics." Non-probability sampling is used due to time and financial restraints, which cannot be generalized based on popularity. After collecting the quantitative data, statistical tests can be performed using the statistical software SPSS. The relationship between co-creation and brand satisfaction is measured through a parametric linear regression test, followed by testing the moderating hypotheses through the multiple linear regression PROCESS model by Hayes (2018). The final chapter explains and interprets the results based on the previously made research questions and hypotheses.

1.5 Dissertation Outline

The second chapter presents the theoretical basis and the relevance of the topic for the following research in the form of a literature review, leading to the research questions and the hypotheses for the following research. It explains the co-creation construct, followed by brand satisfaction and moderating variables like extroversion, openness to experience, age, and gender. All variables are also considered in the context of co-creation. This chapter is followed by the methodology part, in which the research design and procedure are explained in more detail. The fourth chapter details about the quantitative research results, followed by the discussion, in which the results are interpreted and linked to the research questions. The conclusions, limitations and managerial recommendations of the work are presented at the end.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This literature review explains the theoretical framework of the main topics related to the research topic and study purpose in detail. All information is gathered to gain more information about the desired research topic to build the hypotheses. The first part will focus on “Co-creation,” followed by the independent variable “Brand Satisfaction.” Theoretical background information and existing literature about the connection between IV and DV will be provided, followed by the first hypothesis. Next, the two moderators will be explained: one is based on socio-demographic characteristics, and the second is on personality traits. The socio-demographic moderators, “Gender” and “Age,” will also be explained further in this chapter, as well as the second moderator (personality traits), “Extroversion” and “Openness to experience.” The resulting draft of the hypothesis will be given for each variable.

2.1 Co-creation

Co-creation, or collaborative creation, is often used in new product development (NPD). It is an innovative, active, and social brand strategy that many companies use successfully for product innovation (Prahalad & Ramaswamy, 2004; Piller et al., 2011). It is a user-active method, where consumers or other stakeholders like vendors, suppliers, or employees participate proactively with the company and voluntarily give their knowledge into a product or service's innovation or new product creation process (Roberts, Hughes & Kertbo, 2014). This means the stakeholder get actively involved in product development and can express their wishes and criticism, depending on the level of involvement. Prahalad and Ramaswamy (2004) stated that building value through new connective tools and interacting with various stakeholders and among the stakeholders is a crucial element of prospective competition. Through different methods, brands can decide if they want to develop a product or service that satisfies the consumer's needs entirely or to include the consumer's wishes, ideas, and feedback to develop components (Mandolfo et al., 2020). It is essential to highlight that co-creation is a cooperative creation and is never just a focus on the single consumer and what this specific consumer wants, like for personalization. It is more about a dialogue and making synergies to create experiences that enhance the relationship. Therefore, like in customization or personalization of products, the co-created product is not directly available for the consumer, it is a process of NPD for the future. (Prahalad & Ramaswamy, 2004; Windsari & Visita, 2019; Clarke & Kinghorn, 2018). This research will focus on consumer co-creation.

2.1.1 Benefits of Co-creation

Companies can benefit from co-creation, using personal ideas from consumers, leading to more originality and innovation and, after all, better, customer-focused, and fitting products, with decreased risk and cost efficiency (Mandolfo et al., 2020; Martinez, Ruiz-Palomino, Linuesa-Langreo & Blazquez-Resino, 2016). Co-creation can improve the social exchange between the company and the consumer and among the consumers, leading to a community feeling, empowering the consumers, and increasing the perceived significance by the consumer through the exchange. This results in an increased experience, trust, satisfaction, and loyalty. (Prahalad, Ramaswamy, 2004; Franke & Shah, 2003; Kumar & Kandoi, 2018).

Through co-creation, consumers feel more engaged by the brand, as they can assemble their ideas into a process and are listened, noticed, and respected, creating the most fitting product for their needs and wishes (Clarke & Kinghorn, 2018; Mandolfo et al., 2020; Piller et al., 2011; Oklevik et al., 2022). These benefits highly depend on the chosen form of co-creation, the brand attraction of the consumer, and the personality (Roth, 2011; Piller et al., 2011; Wen et al., 2022).

The consumer's active motivation to participate is a critical challenge of this method (Martinez et al., 2016). "Consumers also must be active or proactive, as well as intrinsically or extrinsically motivated to share their knowledge, ideas, and preferences with companies" (Füller, 2006). First, the motivation to participate is influenced by the brand interest, as well as by extrinsic factors, like financial compensation. It is even more influenced by intrinsic factors like the acquisition of skills and experience, partake in social gatherings, as well as hedonic reasons like joy, the desire for better products, and the self-expression of individual values and demands (Martinez et al., 2016; Wen et al., 2022).

2.1.2 Co-creation Methods

When designing consumer co-creation, companies can choose the degree to which they want to involve the customer and to which they want to release control. Therefore, there are different methods and tools through which consumers can co-create, like offering ideas for development, enhancing existing products and services, and evaluating new designs. It is recommended to involve the consumer in the early stages of NPD. Now and in the future, digitalization allows it to develop creative forms of co-creation with enhanced consumer interaction (Mandolfo et al., 2020). As shown in Figure 1 (O'Hern & Rindfleisch, 2010), the most common co-creation

methods are differentiated by the selection activity and the contribution activity, and they vary in the degree to which a firm releases its control and allows the consumer to participate. Therefore, according to the method, the consumer's input can be handled by the firm or the consumer (Kumar & Kandoi, 2018).

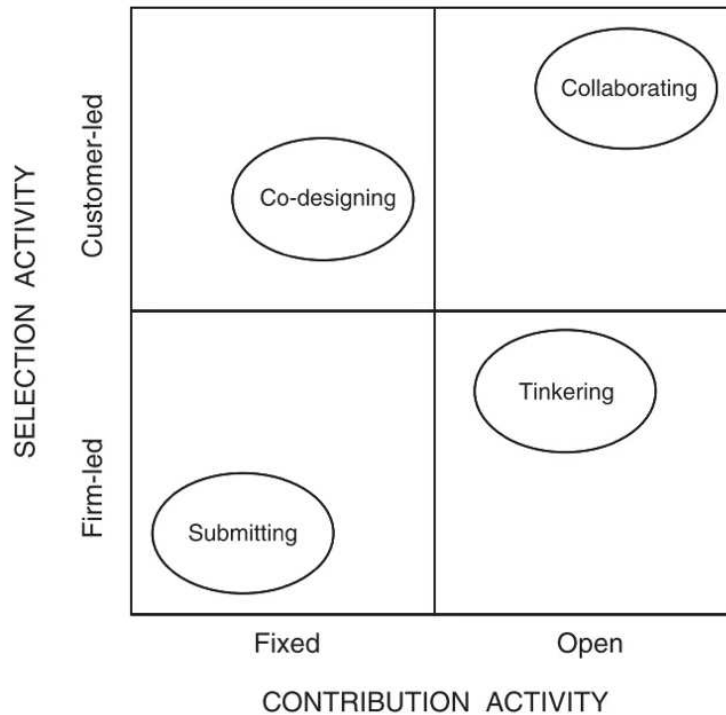


Figure 1: Co-creation methods

Consumers can contribute their ideas through “Collaboration” with a high level of involvement, mainly used for open-source software initiatives and digital graphic design, as it requires elevated skills. This method is often carried out by focus groups and allows consumers to contribute their ideas for new products or services, contrary to submitting. Consumers participating in collaboration mostly have intrinsic motivation and elevated skills (Lakhani & Wolf, 2005; O’Hern & Rindfleisch, 2010). With „Tinkering,” consumers can adjust an already commercially available brand product. It is mainly used in the computer game industry (90%), where user-generated contributions are encouraged. For example, The EA Sims computer game provides the consumer with uncomplicated design mechanisms to let them create different components (clothing, houses, characters) and adapt them afterward with high-level design instruments. It is known for improving customer satisfaction, and with improved user-friendly tools, consumers who are not specialized in design can acquire basic skills (Leadbeter & Miller, 2004; O’Hern & Rindfleisch, 2010).

With „Co-Designing“, a group of consumers can design new product additions or new products for the brand by uploading their creative ideas on a website. Not only creating consumers can partake, as well as others that like to vote, comment, and rate the creations of others. It is a brand-led co-creation method, as the brand has the most authority over the decision and design process. It is selected if and which product is produced afterward by the brand. The advantage of this method is that it reduces brand development costs. Brands can quickly adapt the desired designs without low implementation costs. This co-creation method can be used in different categories, mainly in CPG. As well everyone can use it: skilled and not-skilled participants, highly motivated consumers who are designing, and consumers who like to vote and communicate. Co-designing increases customer satisfaction and loyalty by giving the consumer base a say and a community feeling. Therefore it lowers the risk of product failure and is suitable for this research (Chafkin, 2008; O’Hern & Rindfleisch, 2010; Ogawa & Pillar, 2006). “Submitting“ has the lowest level of decision autonomy. The consumer can share their ideas for new products or product development with the firm, but in contrast to co-designing, the brand has complete control over the selection process. The consumer can not see any other ideas; communication and social contact are also not components of this method. Nevertheless, it can be a helpful and effective method for brands to collect market research insights quickly. Submitters usually have less connectivity with the brand than for the other methods. There is a deficiency of intrinsic motivation, and monetary rewards are mainly used to increase the number of submitters (O’Hern & Rindfleisch, 2010; Füller, Bartl, Ernst & Mühlbacher, 2004).

2.2 Brand Satisfaction

Brand or consumer satisfaction measures whether a brand exceeds consumer expectations concerning a product or service (Back & Parks, 2003). The degree of satisfaction with a brand is highly contingent upon consumers' prior experience with the product or service, leading to increased loyalty (Sahin, Zehir, Kitapci, 2011). Therefore, Hwang et al. (2021) stated: "Brand satisfaction is the outcome when individuals' affective and cognitive evaluation of the perceived brand performance exceeds the expected brand performance." Especially in the consumer packaged goods industry, particularly in the food industry, the positive brand experience improves satisfaction with the product or service. It is one of the primary goals of retailers. (Hwang et al., 2021).

Co-creation has been associated through examinations with more profitable long-run brand satisfaction and loyalty (Payne, Storbacka & Frow, 2008). Olkevik et al. (2022) stated that co-creation influences brand satisfaction directly and indirectly through prior experience. Other researchers found that co-creation allows the consumer to bring in their ideas, which shapes their brand experience and affects their satisfaction with the brand (Roggeveen et al., 2012; Russo Spina et al., 2012). Kumar & Kandoi (2018) stated: "Co-creation in marketing is a successful strategy which allows consumers of a brand to get actively involved and develop an interacting relationship with the brand to co-construct a product or service which gives them maximum brand satisfaction".

These findings underline the importance of examining the relationship between participation in co-creation and brand satisfaction and results in the following hypothesis:

***H1:** Participation in co-creation increases brand satisfaction.*

2.3 Characteristic drivers: Personality traits

Characteristic traits forecast human behavior. With personality traits, persons can be differentiated, especially when selecting specific products and services. Those personality traits are more valuable than demographic variables in forecasting buying behavior (Gohary & Hanzae, 2014). According to the five-factor theory, the character consists of five personality traits: extraversion, neuroticism, openness to experience, agreeableness, and conscientiousness. To research the main personality traits, independent of culture, age, and gender, the Big 5 are the appropriate characteristic traits for most research. Two of the five traits, "Extraversion" and "Openness to experience" were chosen for the following research, as most evidence was found based on the literature on the relationship between brand satisfaction and co-creation. They have dichotomous scales to generalize to every participant and consumer (Paetz, 2021).

According to Smith (2020), the drivers of customer satisfaction are the customer personality traits as a critical driver of buying behavior. Profiling social consumers with characteristic traits brings time-stable effects for brands in consumer research, and connecting the personality of consumers and their preferences for products is a base for long-term strategic consumer commitment (Paetz, 2021).

With co-creation, consumers want to meet their demands, aim for information, be satisfied, and especially desire social interaction with a brand and other consumers. (Roth, 2011; Piller et al., 2011). It is crucial to consider that co-creation success depends on the characteristics of the participating consumers (Freedman, 2019; Roth, 2011; Rehman, Naveed & Cheema, 2012; Clarke & Kinghorn, 2018). That is the motivation for researching the impact of personality on co-creation.

2.3.1 Extroversion

Extroverted individuals have a greater disposition to experience positive affectivity, activity, and need for stimulation. They desire social interactions and sociability (Barańczuk, 2019). Individuals with high extroversion are more willing to share information online. They interact purposefully and communicate their view (Cullen & Morse, 2011). Also, they prefer interpersonal interactions (Zhao & Seibert, 2006). Extroversion is positively linked to job satisfaction and guest satisfaction with services like hotels or restaurants (Smith, 2020). Researchers also found that extroversion as a personality trait moderates the relationship between co-creation activities and values (John & Srivastava, 1999). Therefore, the following hypothesis is proposed:

***H2:** Extroversion as a characteristic trait will moderate the relationship between co-creation participation and brand satisfaction.*

2.3.2 Openness to experience

An individual with high openness to experience has broad interests and is curious, imaginative, and unconventional. They are open to emotions and feelings, are adventurous, and appreciate art more (Barańczuk, 2019). They are urged to enlarge their experiences (Costa & McCrae, 1992) and are creative and innovative. Consumers with low openness to experience are very traditional, inflexible in interest, and unanalytical (Zhao & Seibert, 2006).

Openness to experience is a fundamental trait, and it is built out of genetic predispositions and early learning experiences (Bosnjak, Galesic & Tuten, 2007). Openness to experience is positively associated with life satisfaction and affects affective loyalty, resulting from consumer satisfaction. Smith (2020) also found that it positively affects customer satisfaction, which leads to the hypothesis that it moderates the effect of participation in co-creation on

brand satisfaction, additionally even more than extroversion. Hence, the found effects propose the following hypotheses:

H3: Openness to experience as a characteristic trait will moderate the relationship between co-creation participation and brand satisfaction.

H4: Openness to experience as a characteristic trait has a stronger moderating factor than extroversion as a characteristic trait.

2.4 Socio-demographic drivers

Demographic characteristics are crucial in analyzing consumer intentions, including demographic attributes like gender, age, education level, marital status, employment status, and income level. Preferences and brand intentions are subject to the influence of demographics, so two of the most important demographic variables, namely gender and age, are examined in more detail (Lugioyo, 2022). The aim is to understand reasonably how these demographic factors influence the effect of consumer participation in co-creation on brand satisfaction.

2.4.1 Gender

The socio-demographic variable “Gender” is essential when researching and exploring consumption behavior. Researchers found differences in buying behavior and decision-making regarding consumers of different genders. Therefore, this demographic trait was chosen to research the role as a moderating factor (Lugioyo, 2022). Male and female consumers are motivated differently when participating in co-creation. Females are more likely to co-create when it is a hedonic experience; males are likely to partake when it is socially important. Also, males are more likely to use technology-based co-creation. What aligns with both genders is that they co-create when the brand and the outcome align with their values (Kennedy, Guzman, and Ind, 2021).

Campbell (1997) discovered that men buy and consume need-driven products and pay attention to the needed product. The opposite is women who see shopping as a pleasurable occasion with social and hedonic experiences. The brand experience is the reason for their satisfaction, while men take their satisfaction from the proven quality of the product. Therefore, the following hypothesis is established:

H5: Gender moderates the relationship between co-creation participation and brand satisfaction.

2.4.2 Age

The socio-demographic variable "Age" is also significantly related to shopping behavior and the perception of brands. Consumers in different age groups differ in need of brand experiences, which will be explained further. Therefore, this demographic trait was also chosen to research the moderation of co-creation on brand satisfaction (Lugioyo, 2022).

A study for FMCG brands declared that product innovation for FMCG brands is confronted with challenges. Millennials and Gen Z prioritize brand experiences over material tenancies and prefer products and brands that align with values and fit their needs. Younger generations like the Millennials and Generation Z have a different brand perception than previous generations. Integrating virtual and offline experiences for all generations will be a challenge in the future (Kelly, Kopka, Küpper & Moulton, 2018; Francis & Hoefel, 2018).

Especially Gen Z searches for truth. They value individuality and avoid labels. A mobile experience with joy, design, and brand character matters to this generation more than the general population (Clarke & Kinghorn, 2018). Gen Z consumers express the values that are important to them when buying a product. They strive for inclusiveness, individualism, more exchange, and unique consumption (Kelly et al., 2018; Francis & Hoefel, 2018). Assembling this generation as the leading target group for co-creation is likely. McKinsey recommends for brands: "Businesses must rethink how they deliver value to the consumer, rebalance scale and mass production against personalization, and more than ever practice what they preach when they address marketing issues and work ethics." (Kelly et al., 2018; Francis & Hoefel, 2018).

These findings strengthen the hypothesis that "Gen Z" consumers participating in co-creation have higher brand satisfaction, as co-creation is a way to fulfill those needs as a brand. With this background information about the different desires and consumer preferences of each generation and gender, the following hypotheses develop:

H6: Gen Z consumers have a stronger effect than other generations on the relationship between Co-Creation participation and brand satisfaction.

H7: Age is the strongest socio-demographic moderating effect.

2.5 Conceptual Framework

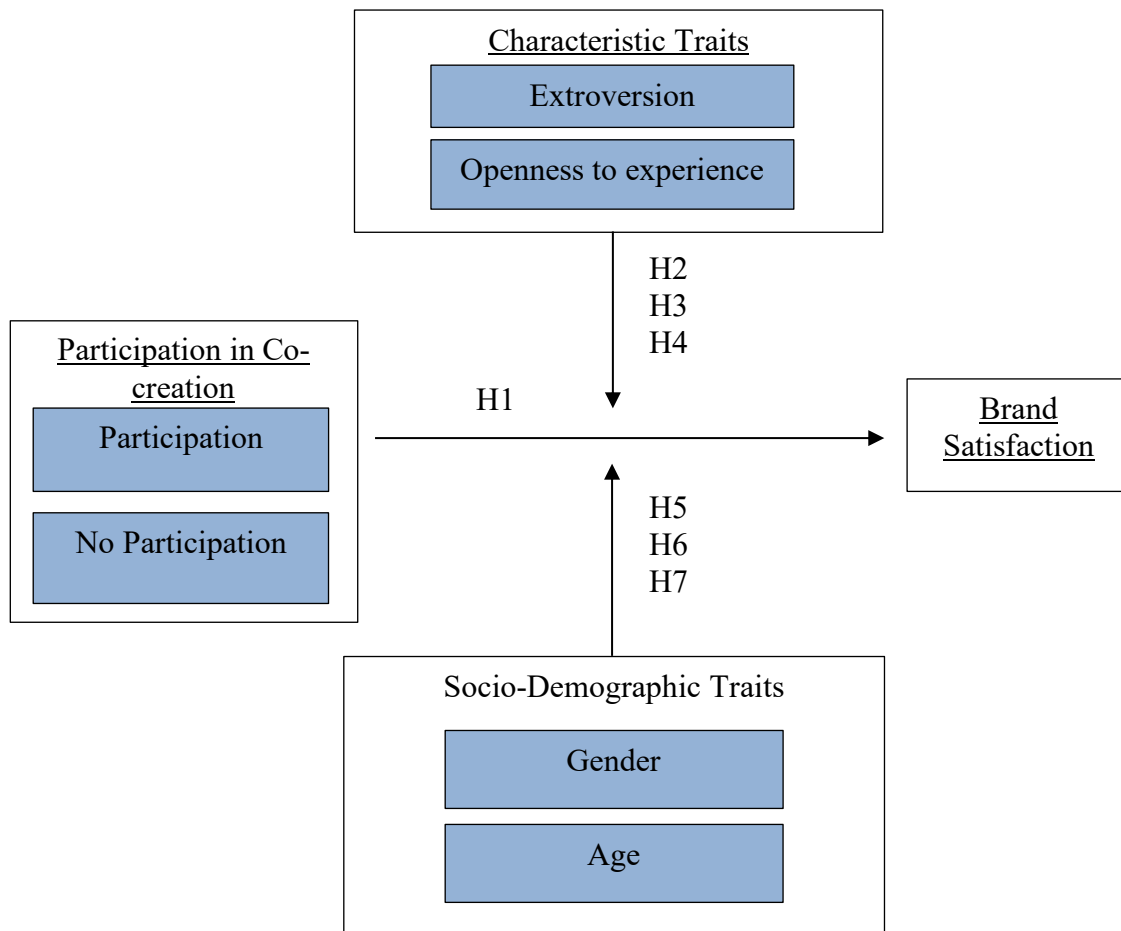


Figure 2: Conceptual Framework

CHAPTER 3: METHODOLOGY

The following chapter explains how the research questions and hypotheses are addressed. It is essential to ensure that scientific requirements and standards are met for hypothesis testing. Methodological steps must be followed to evaluate the results subsequently. Therefore, the next chapter will provide a detailed description of the steps of the primary approach, followed by data collection analysis.

3.1 Research Approach

The goal of this research is to gain knowledge about the impact of customer co-creation on brand satisfaction and to have a closer look into the moderating factors of this relationship, like socio-demographic and characteristic traits. To gain knowledge about the desired research topic and build research questions and hypotheses, exploratory research is performed in the form of a literature review. With this knowledge, a conceptual framework can be built to guide the following research. Explanatory research was conducted as a qualitative focus group to design the two stimuli and collect primary data through an online quantitative survey with an A/B split test to bring this conceptual framework to an operational level. The analysis of the collected data follows in the end.

3.2 Primary Data

With knowledge from the literature review in the second chapter, the researcher can conduct research questions and hypotheses through the conceptual model, which explains the explanatory research approach overall. A research question is a defined statement of specific components of the problem the researcher wants to study. Additionally, a hypothesis is an unproven statement that is in the researcher's interest to explore during the thesis through a quantitative or qualitative approach. The conceptual model graphically represents the variables and the assumed relationships (Kothari, 2004). For the explanatory approach of the following thesis, primary data is collected. Generally, the primary approach means the researcher collects data through surveys, experiments, or interviews and then analyzes and interprets the data based on the research questions. The advantages of this kind of research are that one can conduct tailored data, keep control over the data collected, and ensure that it meets the quality criteria for research. Nevertheless, this type of approach is time-consuming and could involve high costs. Types of researcher bias could also be possible in this scenario (Malhotra, 2015).

3.2.1 Pre-study: Focus Group

After the literature review, a qualitative form of research, a focus group, was performed. Through this research method, two stimuli were created for performing an A/B split test in the main online survey to show the effect of co-creation on brand satisfaction for the two groups. Therefore, one stimulus had to be designed that evoked a feeling for a specific brand without performing a co-creation, and one stimulus had to be designed where participants performed a co-creation for this chosen brand. Four steps must be followed to create these stimuli: 1) Category Identification, 2) Stimuli Ideation, 3) Stimuli Creation, and 4) Stimuli Confirmation. Examples of brands doing co-creation were inspected to identify the category successfully. Brands performing co-creation are McDonald's, Barilla, Ritter Sport Chocolate, and Starbucks. Therefore, a popular brand in the food industry, preferably known by everyone, was chosen. After research with secondary data, Kellogg's was identified as the most popular cereal brand and, therefore, was used as a brand for the stimuli (Breakfast cereal market in Europe, 2022; NPD Group, 2011; Snack & Wholesale Bakery, 2022; Breakfast Cereal – German Market, 2019). Also, the type of co-creation for the main survey questionnaire had to be chosen. According to O'Hern & Rindfleisch (2010), co-designing is a co-creation method fitting to the CPG industry; therefore, this method was chosen. The different visual and written stimuli for "No co-creation" and "Co-creation" with Kellogg's were ideated and evaluated through the focus group, which consisted of six participants discussing different paths of co-creation and the perception of being able to answer satisfaction questions. The researcher showed the focus group this method through the example of "McDonald's MyBurger" (Method of co-designing), evaluating every aspect of this co-creation (creation of a product, number of choices, voting, and interacting with other participants, reward of winning and participation) (Bongartz, V., n.D.). The goal of this focus group was to gain knowledge about the importance of different activities in co-creation for designing Kellogg's co-creation afterward for the main survey. The stimuli were created with the website Canva and were confirmed through a pre-test in the primary survey, which was sent to 15 participants to evaluate the confession and clarity of the stimuli. The results of this focus group are the base of the main survey questionnaire. Deeper insights into the focus group can be found in Appendix 12.

No participation in CC

The written and visual stimuli for no participation in co-creation should elicit a feeling for Kellogg's by using 3 to 4 sentences and one visual to remember the product and the brand and be able to answer satisfaction questions. It was discovered that the participants remembered

their experiences by thinking of the last time they had Kellogg's for breakfast and the decision in front of the supermarket shelf, as well as by naming some of the most popular flavors. The visual stimuli of the supermarket shelf with Kellogg's cereal was chosen, as it was the most familiar to them.

Participation in CC

To get a feel for co-creation, an explanation of the co-designing method of McDonald's "MyBurger" was shown, evaluating all the paths of this co-creation. It was found out that the base, toppings (especially toppings that are exclusive for the co-creation), customization of the name and packaging, and the voting of the best creations afterward and a reward are essential paths to follow by doing a co-creation for Kellogg's.

3.2.2 Main study: Online survey questionnaire

After creating the stimuli, a standardized online survey, the main research method for this thesis, was conducted on the platform "Qualtrics." Qualtrics is a software for online surveys that makes questionnaire creation on the web straightforward, reliable, and fast. These surveys take place web-based in the browser. The participant only needs a link to the questionnaire, which was generated during questionnaire creation, to process it. Surveying with Qualtrics makes it easier to enter and transfer the data to the IBM SPSS statistical software used to analyze the collected data. A web-based survey also has the advantage of reaching many participants and thus facilitating data collection. It is, therefore, less time-consuming for researchers and respondents and saves costs, for example, by eliminating the need for personal interviews and independent physical distance. Due to the automated execution of the respondents, there is no experimental effect, i.e., no influence by the interviewer, since the online survey is conducted with the help of a standardized questionnaire, which is processed solely by the respondents. The advantages are that the questionnaire can be individually designed, skip patterns can be specified, and graphic applications can be inserted. A high degree of personalization and interaction is also possible. As well as the anonymity of the respondents, thus avoiding socially undesirable response behavior and increasing the probability of authenticity and honesty in the answers. A negative effect of online surveys is the exclusion of respondents who do not have access to the Internet or have less affinity. This also means that control and communication with the subjects are less possible than in laboratory studies, which has advantages and disadvantages (Burns, Veeck, Bush, 2017).

3.3 Data Collection

The main goal of this research is to determine how participation in co-creation impacts brand satisfaction for a brand in a specific industry, namely the CPG industry, and if the chosen socio-demographic and characteristic traits impact this relationship. Therefore, as prescribed in the previous chapter, two stimuli were evaluated and designed for the main survey through a focus group.

The data was collected between 13th November 2023 and 23rd November 2023 through an online survey questionnaire in Qualtrics and distributed through social media, friends, and family. To increase the intention to participate, 2x25€ Amazon gift cards were awarded.

The target population was consumers who had already consumed Kellogg's. To regulate this, a control question was activated initially to remove the participants who could not appropriately answer the satisfaction questions without participating in co-creation. There were no other criteria for exclusion.

The questionnaire was available in English. Due to the financial and time constraints of the following thesis, only predefined subsets of the total population could be observed. A non-probabilistic sampling technique was chosen as it could not be guaranteed that every person had the opportunity to participate in this survey. This means that the participants were not randomly selected from the total population. The non-probabilistic "snowball sampling" method, as well as the "convenience sampling" method, were chosen, as the survey was actively distributed by friends, family, and social media contacts (Sharma, 2017).

3.4 Research Design

The survey in Appendix 1 is divided into five different segments. First, the introduction block with a control question filters the participants who had never had an experience with Kellogg's, followed by a general question about Kellogg's cereal consumption. After this part, the participants were randomly divided (50/50) into two groups in the second block. One group viewed the written and visual stimulus for "No participation in co-creation," followed by the questions on brand satisfaction. The stimulus for "Participation in co-creation" and the brand satisfaction questions were shown for the other group. After these two blocks, the questions for extraversion and openness to experience were shown in the third block, followed by a

manipulation question and two questions on the likeability of co-creation (Block 4) as a possible approach to gaining knowledge about the likability of co-creation. Finally, the demographic questions in block five were shown.

3.5 Measurement

In the beginning, and as mentioned before, the previous question excluded participants who had never had an experience with Kellogg’s cereal. After this, the participants were randomly assigned to one stimulus, and satisfaction was measured afterward. Those nine items were on a 5-point Likert scale, ranging from strongly disagree to strongly agree, adapted from Sahin et al. (2011). Due to the length of the scale, an attention check question was included: “Please click on neither agree or disagree.” Ten items each were shown to all participants to gain insight into the level of extroversion and openness to experience. Those items had a 5-point Likert scale and the same attention check question for brand satisfaction. Those two constructs were based on the Big Five personality traits questionnaire (Satow, 2021). The demographic variables gender and age (as well as other variables like occupation, education, nationality, and income) were shown in the last block of this survey. The questions regarding age are based on the Research Guides: Demographics (2023). The five options reflected the generations that are examined for the hypothesis: The Silent Generation – born 1925-1945; the Baby Boomer Generation – born 1946-1964; Generation X – born 1965-1979; Millennials – born 1980-1994; Generation Z – born 1995-2012.

The operational model gives an overview of the items and scales used for the previously designed conceptual model, as well as references and the internal consistency Cronbach Alpha, which will be recalculated in the data analysis for reliable results.

Framework	Measure	Items	Scale	Reference	Cronbach Alpha
IV	Participation in Co-Creation	Stimuli	<i>NA</i>	<i>NA</i>	<i>NA</i>
Moderator	Extroversion	10	5-point Likert scale	Satow, 2021	0.86
Moderator	Openness to experience	10	5-point Likert scale	Satow, 2021	0.76

Moderator	Age	1	5 Options	Research Guides: Demographics, 2023	NA
Moderator	Gender	1	3 Options	NA	NA
DV	Brand Satisfaction	9	5-point Likert scale	Sahin, Zehir, Kitapel, 2011	0.94

Table 1: Operational model

3.6 Data Analysis

For performing quantitative statistical analysis, IBM's statistical software SPSS is used to evaluate the hypothesis and gain insights through data on the relationships of the variables.

First, the data is cleaned by calculating the failed screening questions, repeated IPs, and incomplete observations, followed by coding and recoding of different variables. Descriptive statistics are generated to better understand the sample and the data (demographics, mean, minimum, maximum), followed by the remeasuring of internal consistency (Cronbach Alpha) and a manipulation check performed through the Welch-test for parametric data. Finally, the survey analysis ends with the hypothesis checks using specific methods like the simple linear regression and the PROCESS Macro model by Hayes (Hayes, 2018). PROCESS is a multiple regression model used to evaluate the moderation of variables on the relationship, in this case, the moderating impact of the previously shown variables on the relationship of co-creation and brand satisfaction. According to Hayes (2018): "The effect of X on some variable Y is moderated by W if its size, sign, or strength depends on or can be predicted by W.", meaning that each model evaluates how the strength and direction of a relationship between two variables vary, depending on a third or fourth variable – the moderator/s. "The most common approach, widely used by researchers in many disciplines, is to include the product of X and W in the model of Y along with X and W." (Hayes, 2018). Therefore, most interaction terms will be considered in the analysis, as they are the most meaningful value. Models 1 and 2 are used for this research, explaining the impact of one and two moderators. Model 1 is used for a simple moderation with one moderating variable W (Figure 3). Model 2 is used to research

further the impact of the interaction between the two moderating variables, W & Z, on the relationship (Figure 4).

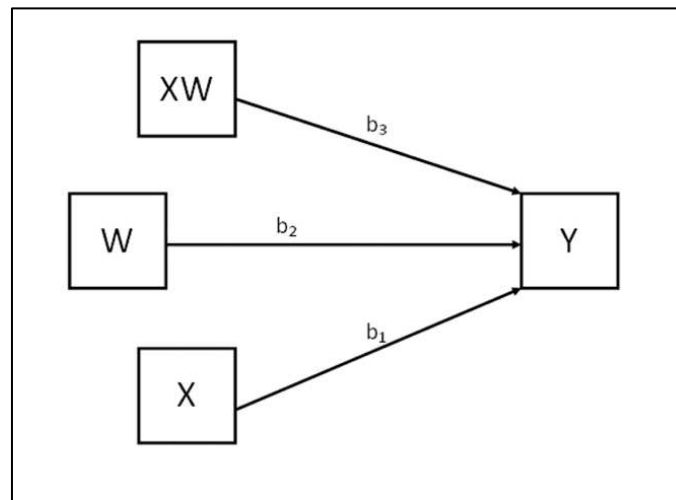


Figure 3: Statistical diagram Model 1

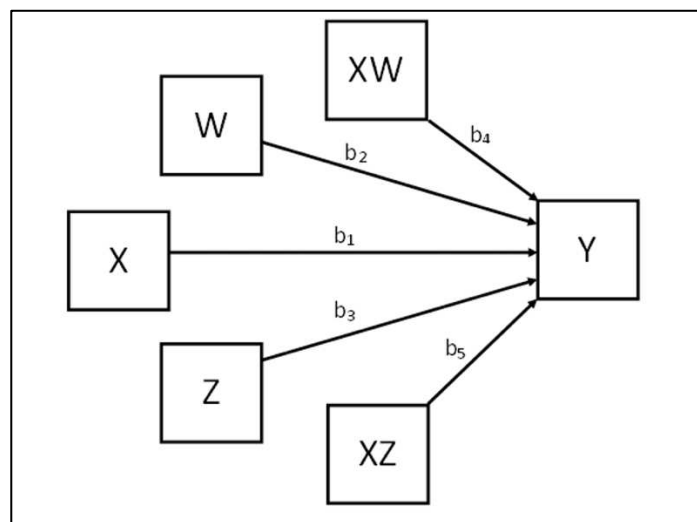


Figure 4: Statistical diagram Model 2

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Results

The following chapter presents the results of the quantitative data analysis of the main study: the online survey. The data preparation and the number of participants are shown first, followed by the descriptive statistics, the reliability test, and the test of the hypotheses, ending with examining the full model. Chapter 4.2 connects these results with the literature review and discusses the results.

4.1.1 Data Preparation

A total of 392 participants took part in the online survey. Initially, 15 participants were excluded as they stated they had never consumed Kellogg's cereal. Additionally, 26 participants did not complete the questionnaire and were excluded. These reductions led to 341 participants completing the survey; 170 experienced the "No co-creation" stimuli and 171 the "Co-creation" stimuli. Notably, 132 participants failed the manipulation check, 89 had repeated IP addresses, and four were identified as outliers using the Mahalanobis Distance. All p-values lower than $p < 0.001$ were considered outliers and removed. Consequently, 116 survey responses are valid and are assumed to be qualitatively suitable for further exploration, 51 in the group "No Co-creation" and 65 in the group "Co-creation," which means for the following thesis if they performed a CC or not (Table 2).

	Total		
Total Participants	392		
Failed Screening Question (I never consumed Kellogg's before)	15		
Incomplete Observations	36		
	Stimuli 1 (No CC)	Stimuli 2 (CC)	Total
Complete Observation	170	171	341
Failed Manipulation	74	58	132
Repeated IPs	44	45	89
Outliers	1	3	4
Valid Observation	51	65	116

Table 2: Valid observation

Some items had to be recoded to perform an appropriate and exact data analysis in the following part. One item on the scale of extroversion and two items on the scale of openness to experience were recoded, as they are negative pooled questions, for example: “I prefer everything stays as it is”. Additionally, the age was recoded and renamed (generation names) for more suitable data analysis. Also, a dummy variable for the nominal variable, “Co-creation manipulation,” was created to separate the two groups and to be able to perform statistical tests (1 = CC, 0 = No CC). Table 3 shows the overview of item coding for better understanding.

	1	2	3	4	5
Brand Satisfaction	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Openness to experience	Does not apply at all	Rather does not apply	Neither applies or not applies	Rather applies	Applies exactly
Extroversion	Does not apply at all	Rather does not apply	Neither applies or not applies	Rather applies	Applies exactly
Age	Silent Generation	Baby Boomer	Generation X	Millennial	Generation Z
Gender	Male	Female	Non-binary / third gender		

Table 3: Coding of item scale

4.1.2 Descriptive Statistics

Most participants identify themselves as female (59,5%) and are mainly in the age group of Generation Z (1995 – 2012, 53,4%) and Millennials (1980-1994, 43,1%). Most participants are from the United States (51,7%), followed by Germany (37,9%). The majority has a Bachelor’s Degree (62,1%), followed by a Masters’ Degree with 17,2%. 69% of the participants are employed and have a yearly income of 50.000€ - 59.999€ (13,9%).

		No Co-Creation	Co-Creation	Total
Participants	Total	51	65	116
Gender	Male	33,3%	46,2%	40,5%
	Female	66,7%	53,8%	59,5%
	Diverse	0,0%	0,0%	0,0%
Age	1995 – 2012	72,5%	38,5%	53,4%
	1980 – 1994	23,5%	58,8%	43,1%
	1965- 1979	3,9%	1,5%	2,6%
	1946 - 1964	0,0%	1,5%	0,0%
	1945 and before	0,0%	0,0%	0,9%
Nationality	Portugal	5,9%	0,0%	2,6%
	Germany	74,5%	9,2%	37,9%
	United Kingdom	2,0%	9,2%	6,0%
	United States	13,7%	81,5%	51,7%
	Italy	0,0%	0,0%	0,0%
	Spain	0,0%	0,0%	0,0%
	Other	3,9%	0,0%	1,7%
Education	Less than high school degree	0,0%	3,1%	1,7%
	High school graduate	9,8%	9,2%	9,5%
	Apprenticeship degree	3,9%	9,2%	6,9%
	Bachelor's degree	60,8%	63,1%	62,1%
	Master's degree	23,5%	12,3%	17,2%
	Doctoral degree	2,0%	3,1%	2,6%
	Student	27,5%	1,5%	12,9%
	Employed	52,9%	81,5%	69,0%

Occupation	Student with a job	15,7%	10,8%	12,9%
	Unemployed	2,0%	3,1%	2,6%
	Retired	0,0%	0,0%	0,0%
	Other	2,0%	3,1%	2,6%
Income	Less than 10.000€	19,6%	4,6%	11,3%
	10.000€ - 19.999€	17,6%	6,2%	11,3%
	20.000€ - 29.999€	5,9%	4,6%	5,2%
	30.000€ - 39.999€	19,6%	10,8%	14,8%
	40.000€ - 49.999€	5,9%	7,7%	7,0%
	50.000€ - 59.999€	17,6%	10,8%	13,9%
	60.000€ - 69.999€	2,0%	15,4%	9,6%
	70.000€ - 79.999€	2,0%	7,7%	5,2%
	80.000€ - 89.999€	3,9%	13,8%	9,6%
	90.000€ - 99.999€	2,0%	10,8%	7,0%
	100.000€ - 149.999€	2,0%	0,0%	0,9%
	150.000€ or more	0,0%	7,7%	4,3%
	Missing	2,0%	0,0%	0,9%

Table 4: Sample characterization

Measure Reliability

The scales BS, EX, and OE were conducted from literature; therefore, Cronbach Alpha was already determined (Sahin et al., 2011; Satow, 2021). Nevertheless, the internal consistency of those three multi-item scales was measured again to exclude inconsistency and guarantee data visibility. One question for EX and two items in the OE scale were negatively poled, so they had to be recoded to make them comparable. Also, the attention question in each scale was removed before calculating the final Cronbach alpha. For analyzing the seventh hypothesis, an accumulation of the items EX and OE for the "Characteristic Variable" and an accumulation of the items "Gender" and "Age" for the "Socio-Demographic" variable to one scale each was necessary. Therefore, the Cronbach Alpha for those two scales was estimated, concluding that the scale characteristics have a good to excellent internal consistency, between 0.70 and 0.90. Therefore, as shown in Table 5, almost none of the items had to be removed except that the

scale socio-demographics was not further used for the analysis due to insufficient internal consistency ($\alpha = 0.341$).

<i>Reliability Statistics</i>		Cronbach's	Number of	The final
Scale	The initial number of items	Alpha	deleted items	number of Items
Brand Satisfaction	9	0.923	-	9
Extroversion	10	0.805	-	10
Openness to experience	10	0.728	-	10
Characteristics	20	0.736	-	20
Socio-demographics	2	0.341	-	-

Table 5: Reliability statistics for multi-item scales

Key Variables

Fundamental analysis uses descriptive statistics such as the mean, the variance, the minimum and maximum values, and the standard deviation. These key figures provide a quick overview of the analyzed data's distribution, dispersion, and characteristic features. A solid basis for further analyses and interpretations during the thesis is created by focusing on these statistical measures. Overall, the mean of the BS, OE, and EX scales are higher for the group that performed the CC. Also, the variance was calculated, which showed variance heterogeneity for BS (Var CC = 0.247; Var No CC = 0.779) in Appendix 2.

<i>Descriptives</i>	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Brand_Satisfaction	116	1.11	5.00	3.7423	.85761	.736
Openness	116	2.00	5.00	3.7966	.58024	.337
Extroversion	116	2.00	5.00	3.6716	.58214	.339
Age_Recoded	116	1.00	5.00	4.4828	.63906	.408
Gender	116	1	2	1.59	.493	.243
Valid N (listwise)	116					

Table 6: Overall descriptive statistics

A Levene test for equality of variances was performed after reviewing the descriptives in Appendix 2 to check the variance as a prerequisite for the following test. It shows, as expected, a significance of $p < 0.05$ ($p = 0.005$), which means that the variances of the two groups are significantly different, e.g., variance heterogeneity exists (Appendix 3).

4.1.3 Inference Statistics

Check Normal Distribution

To test if the manipulation was successful, a comparison between the two groups has to be performed to evaluate the usefulness of the applied stimuli. The sample's normal distribution needs to be checked to meet the chosen test's requirements. Therefore, the Kolmogorov-Smirnov-Test was used with the model variables to calculate if the sample is normally distributed, evaluating the usage of a following parametric or non-parametric test. For all groups, $p < 0.05$ means we can not assume a normal distribution through this test (Appendix 3). Since $N > 30$, the central limit theorem applies. This states that if the researcher uses a sufficiently large sample ($N > 30$), the mean will usually be close to a normal distribution even if the sample is not normally distributed (Saunders, Lewis & Thornhill, 2009).

Testing Group Homogeneity

A comparison check of the mean values of the two groups was performed, using the parametric Welch-test for unpaired variables to evaluate the success of the manipulation (group homogeneity). This measure was chosen instead of the t-test for unpaired variables due to the limitation of the given variance heterogeneity. The Welch-test is a robust measure for groups with different variances and is calculated the same way as the Levene-Test. The prerequisites for this test are that the groups are independent, that the DV is metric and normally distributed, and that there is no variance homogeneity.

Group 1, which did the CC ($M = 4.1915$, $SD = 0.49671$, $N = 65$), has a higher mean of brand satisfaction than Group 2, which did not perform a CC ($M = 3.1699$, $SD = 0.88286$, $N = 51$) which can be seen in Appendix 4. There was a significant difference in BS between the co-creators and non-co-creators ($t(74.338) = -7.396$, $p < 0.001$). The effect size of Cohen's d is 0.69, which examines a strong effect. It shows that through the CC, on a 5-point Likert scale from strongly disagree to strongly agree, the participants are more likely to somewhat agree with the satisfaction questions than if they did not perform the CC. Therefore, we can say that the manipulation was successful through the difference in the means (Appendix 3).

Multicollinearity

In the next step, it is crucial to test if there is a similarity between the predictor variables (EX, OE, Gender, and Age) in the model before hypothesis testing by detecting multicollinearity. One way to do it is by using a metric known as VIF: variance inflation factor. This measures the correlation and the strength between the independent variables and the regression model. The independent variables showed VIF < 2.500, Eigenvalue > 0.010, except dimension 6. The condition index for all dimensions is < 30.000, which indicates that multicollinearity will not be a problem in the regression model. Dimension 6 has an Eigenvalue < 0.010 and a high condition index (< 30.000). Therefore, the variance proportions are examined, and none showed a proportion > 0.90, meaning multicollinearity is not a problem in this model (Appendix 4).

4.1.4 Hypothesis Test

Hypothesis 1: *Participation in co-creation increases brand satisfaction.*

For researching the relationship between the variables CC and BS, a linear regression for categorical variables (dummy variable as IV) is used. It links one or more input variables to an output variable, using the information in the link between inputs and outputs with a predictor variable, “Participation in co-creation”, and a dependent variable, “Brand Satisfaction” (Saunders et al., 2009). It was considered that we have a dichotomous dummy variable (0 = No CC, 1 = CC).

Prerequisites to use this method are that the dummy variable is coded, and therefore, they do not have to follow the prerequisite of linearity; there is a metric scaled dependent variable, no multicollinearity, and normal distribution of variables. As stated previously, there is no variance homogeneity. Therefore, the prerequisites of this method are partly not met, and a non-parametric procedure should be chosen. As SPSS cannot perform non-parametric relationship research, the linear regression was performed, considering the possible limitations.

$$Y_{Brand\ Satisfaction} = \beta_0 + \beta_{Dummy\ CC} + \varepsilon$$

The ANOVA (Appendix 5) shows a significant value ($p < 0.001$), which indicates that differences in BS due to an increase in the dummy variable CC are statistically significant. This

model can explain 35.3% of the total variance in BS. The regression coefficient for BS is also significant (coeff = 0.345, $t = 7.879$, $p < 0.001$), indicating a strong significant relationship between the dummy variable and BS and an increase of 0.345 in BS for the consumers that performed the CC, supporting the hypothesis 1.

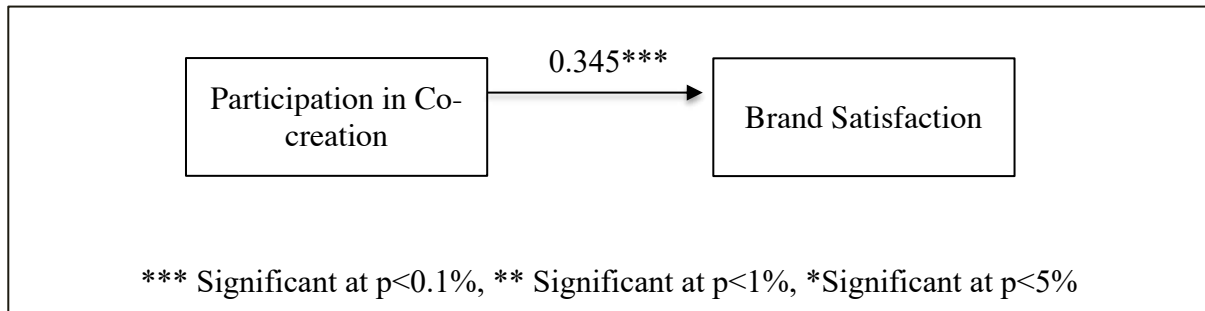


Figure 5: Variable relationship linear regression H1

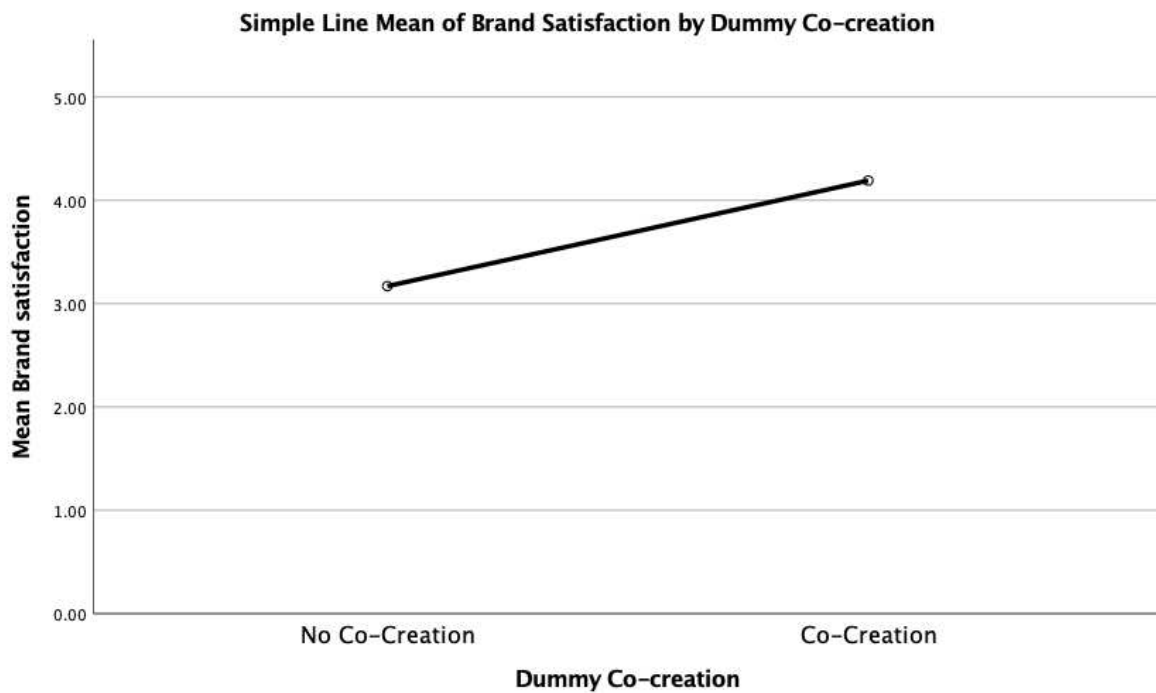


Figure 6: Graphical representation of linear relationship H1

To examine the moderation effect for the moderating variables (following hypotheses), model 1 of the PROCESS model by Hayes (2013) is used for the whole sample with a 95% confidence interval. A description of this model can be found in Chapter 3, and the matrices are located in the appendixes. Also, there was a usage of model 2, explained in Chapter 3, which compares

the two moderators on this effect for finding the more robust moderating variable for hypotheses 4, 7, and for the full model.

Hypothesis 2: *Extroversion as a characteristic trait will moderate the relationship between co-creation participation and brand satisfaction.*

Regression Model 1 of Hayes PROCESS (2018) was used to test this hypothesis. This hypothesis test assessed the role of "Extroversion" (Extrover) on the relationship between "Co-creation" (D_Co_Cre) and "Brand satisfaction" (Brand_Sa) with the simple one-moderator model. The moderating variable was centered on the mean value as it has no natural zero due to a 5-point Likert scale. This facilitates a more straightforward interpretation of the interaction and reduces potential problems due to the scale properties of the variables. The dummy variable stays uncentered in every case, as it is dichotomous, and it would lead to misleading results (Hayes, 2018).

$$Y_{Brand\ Satisfaction} = \beta_0 + \beta_{Dummy\ CC} + \beta_{Extroversion} + \beta_{Interaction} + \varepsilon$$

The coefficient of determination (R^2) shows, for the whole model, that the impact of the variables explains 41,25% of the variation in brand satisfaction. The results show a small and non-significant moderation effect of the interaction of EX and CC on BS (b_3 coeff=0.1360, $t = 0.5701$, $p = 0.5698$). There is insufficient evidence on a 5% significance level to reject the null hypothesis of no effect; therefore, it does not support hypothesis 2 (Appendix 6).

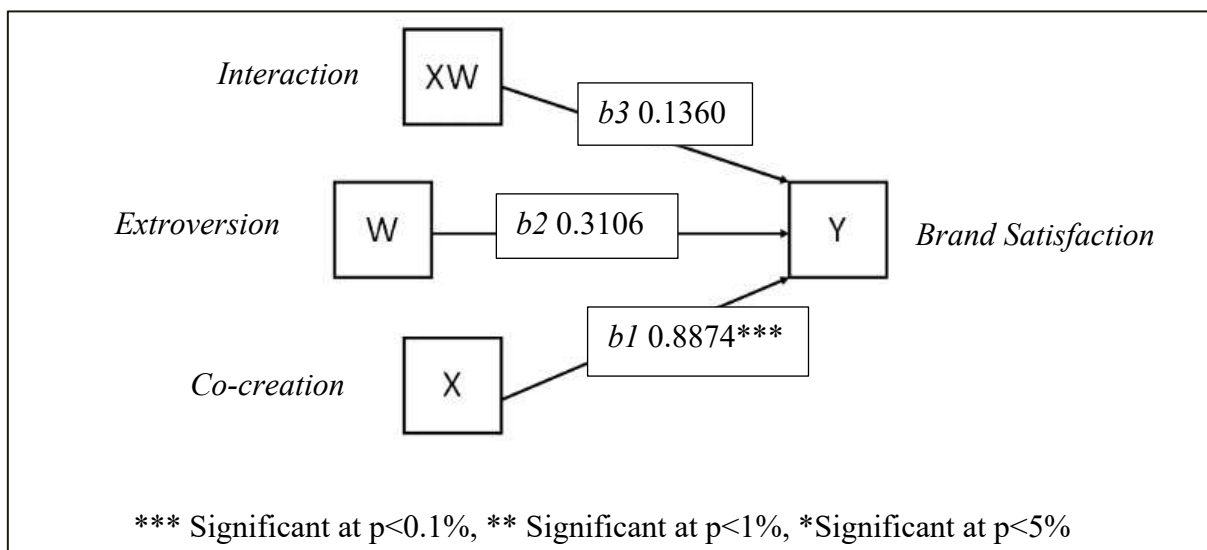


Figure 7: Statistical representation H2

We can see in the graphical representation that the increase in brand satisfaction through extroversion is almost identical for both groups. Therefore, there is no significant and robust evidence of moderation.

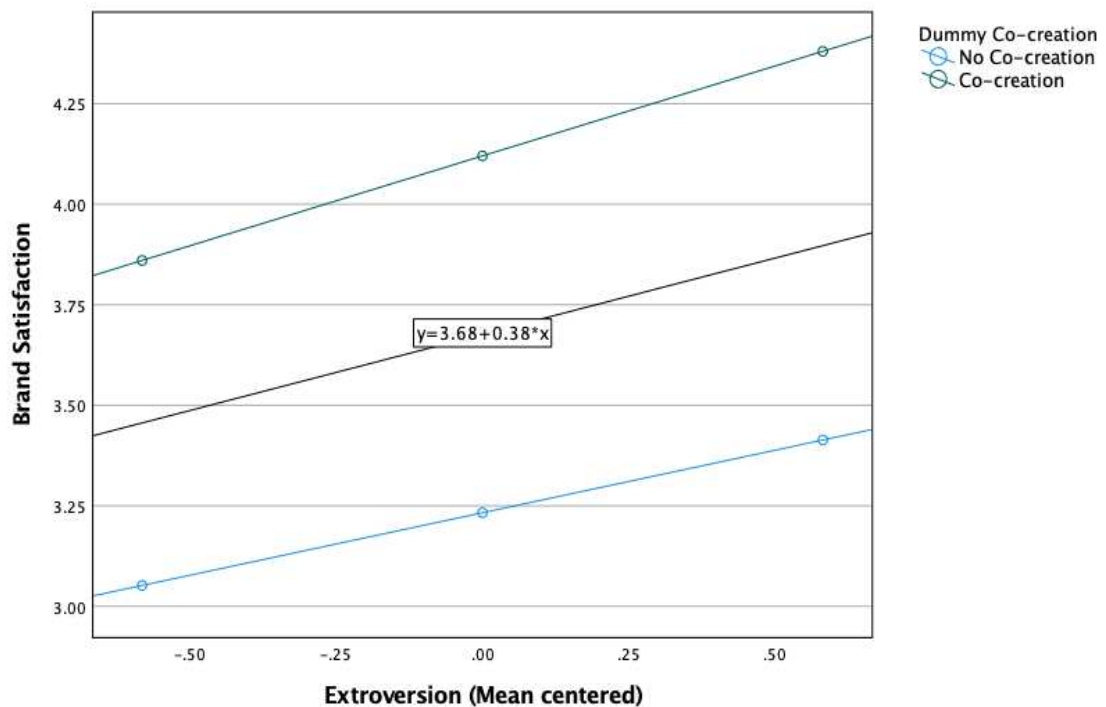


Figure 8: Graphical representation H2

Hypothesis 3: *Openness to experience as a characteristic trait will moderate the relationship between co-creation participation and brand satisfaction.*

Model 1 of Hayes PROCESS (2013) was used to test this hypothesis. This regression analysis test assessed the role of “Openness to experience” (openness) on the relationship between CC and BS. For this case, the variable OE was also mean-centered for better data interpretation.

$$Y_{Brand\ Satisfaction} = \beta_0 + \beta_{Dummy\ CC} + \beta_{Openness} + \beta_{Interaction} + \varepsilon$$

Overall, the model explains 44.98% of the variance in BS. The interaction results showed OE's highly significant moderation effect on this relationship (b_3 coeff =0.9457, $t = 3.7572$, $p = 0.0003$), supporting H3. Therefore, this hypothesis is verified (Appendix 7).

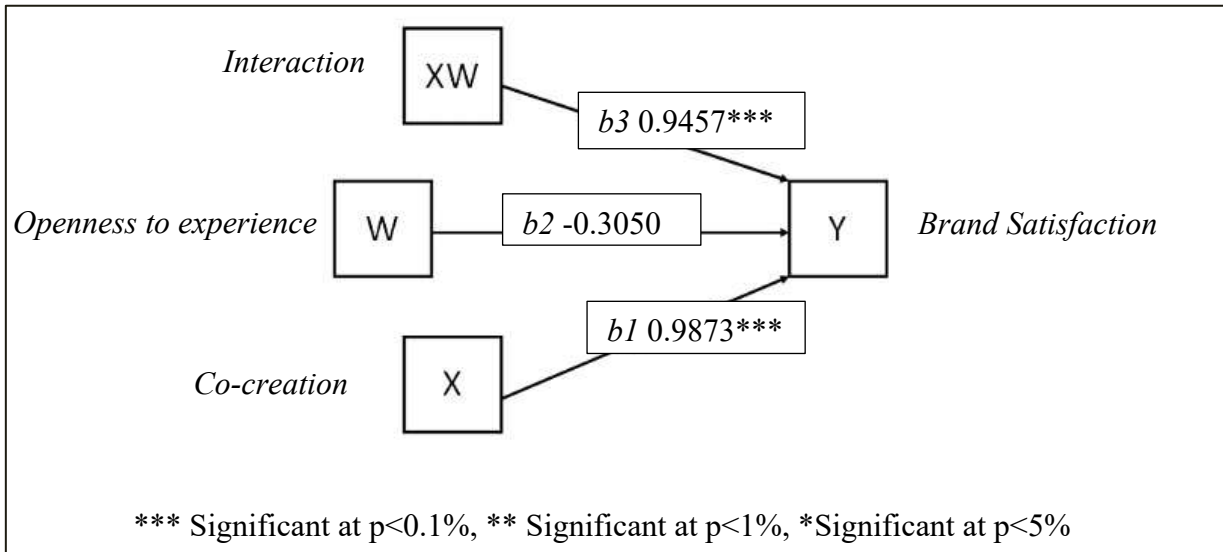


Figure 9: Statistical representation H3

The slope for the group with no co-creation shows a negative relationship between the variables. The more the characteristic trait openness to experience increases, the more the brand satisfaction decreases if no co-creation was performed, also supporting H1.

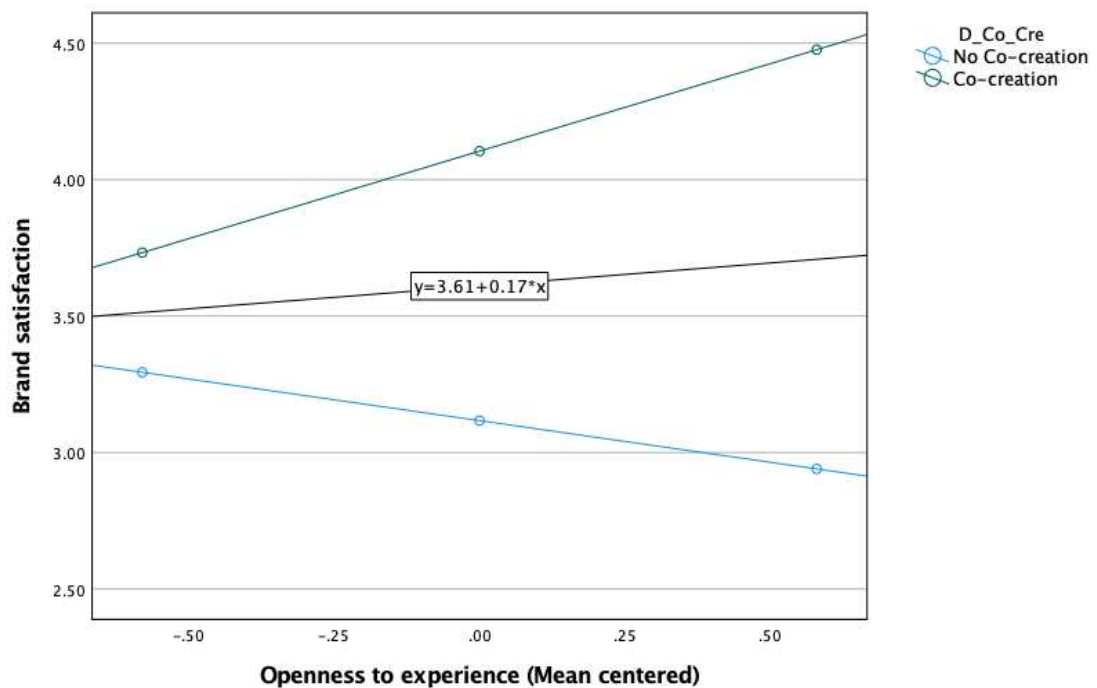


Figure 10: Graphical representation H3

Hypothesis 4: *Openness to experience as a characteristic trait has a stronger moderating factor than extroversion as a characteristic trait.*

As already concluded for hypotheses 2 and 3, the moderating effect of OE is significant; therefore, this effect is verified. Hypothesis 2 is not supported, with a low non-significant moderating effect. The data for OE (b_3 : coeff=0.9457, $t = 3.7572$, $p = 0.0003$) are significant and stronger than the effect for EX (b_3 : coeff=0.1360, $t = 0.5701$, $p = 0.5698$).

Moderation Variable	Coefficient	Df	t-value	p-value
Interaction: “Extroversion x Dummy Co-Creation”	0.14	112	0.57	0.5697
Interaction: “Openness to experience x Dummy Co-Creation”	0.95	112	3.75	0.0003

Table 7: Moderating variables extroversion & openness to experience

For this assumption, PROCESS Model 2 was calculated to compare the two mean-centered moderators in one model and show the strongest effect. The moderating variables were also centered in this case for better data interpretation.

$$Y_{Brand\ Satisfaction} = \beta_0 + \beta_X Dummy\ CC + \beta_W Extroversion + \beta_Z Openness + \beta_{XW} Int + \beta_{XZ} Int + \varepsilon$$

Overall, 51,56% variation in BS is explained through the impact of this model. Interaction 2 shows a significant positive moderation effect of OE on this relationship (b_5 coeff = 1.1719, $t = 3.9717$, $p = 0.0001$), holding the variable EX constant. Interaction 1 (b_4 coeff = -0.5133, $t = -1.6998$, $p = 0.0920$) shows a negative relationship, which is insignificant at a 5% significance level. This shows that OE as a characteristic trait moderates the effect, but EX does not. The hypothesis 4 is verified (Appendix 8).

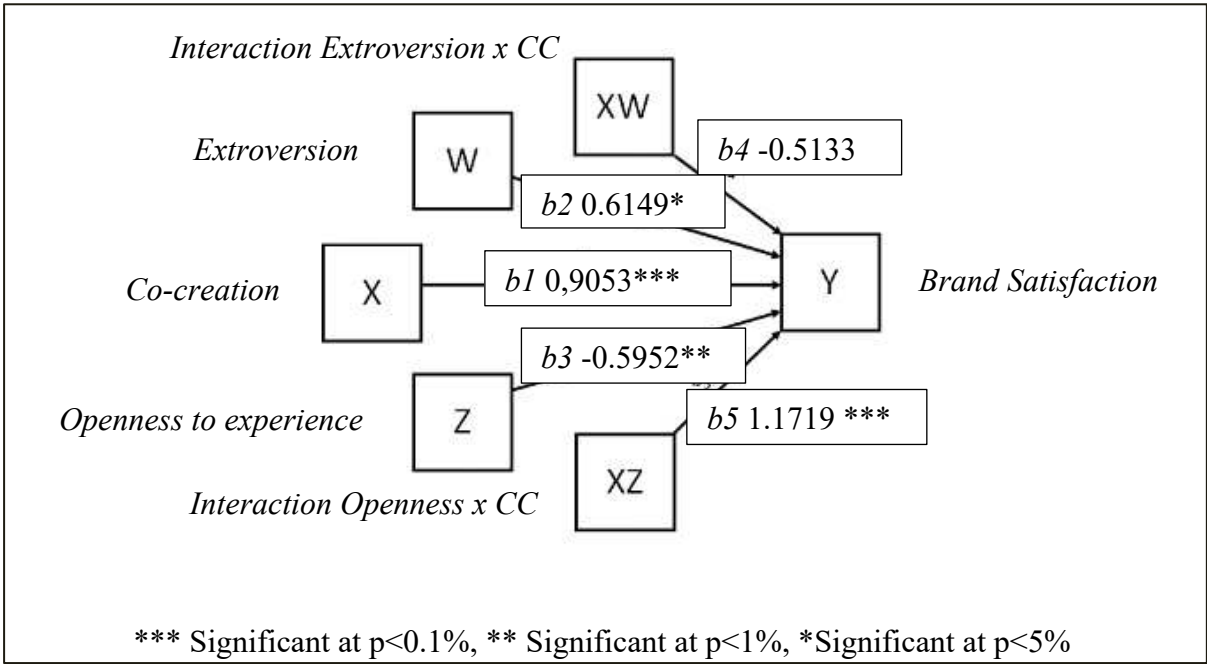


Figure 11: Statistical representation H4

Hypothesis 5: *Gender moderates the relationship between co-creation participation and brand satisfaction.*

Also, PROCESS Model 1 by Hayes (2013) was used to test this hypothesis:

$$Y_{\text{Brand Satisfaction}} = \beta_0 + \beta_{\text{Dummy CC}} + \beta_{\text{Gender}} + \beta_{\text{Interaction}} + \varepsilon$$

Overall, a 35,34% variation in BS is explained by this researched model. This interaction (XW) showed no significant moderation effect of the variable gender on this relationship (*b3* coeff = -0.0874, *t* = -0.2902, *p* = 0.7722). Instead, it shows a negative moderation, which states that the moderating factor of gender decreases the effect of this relationship.

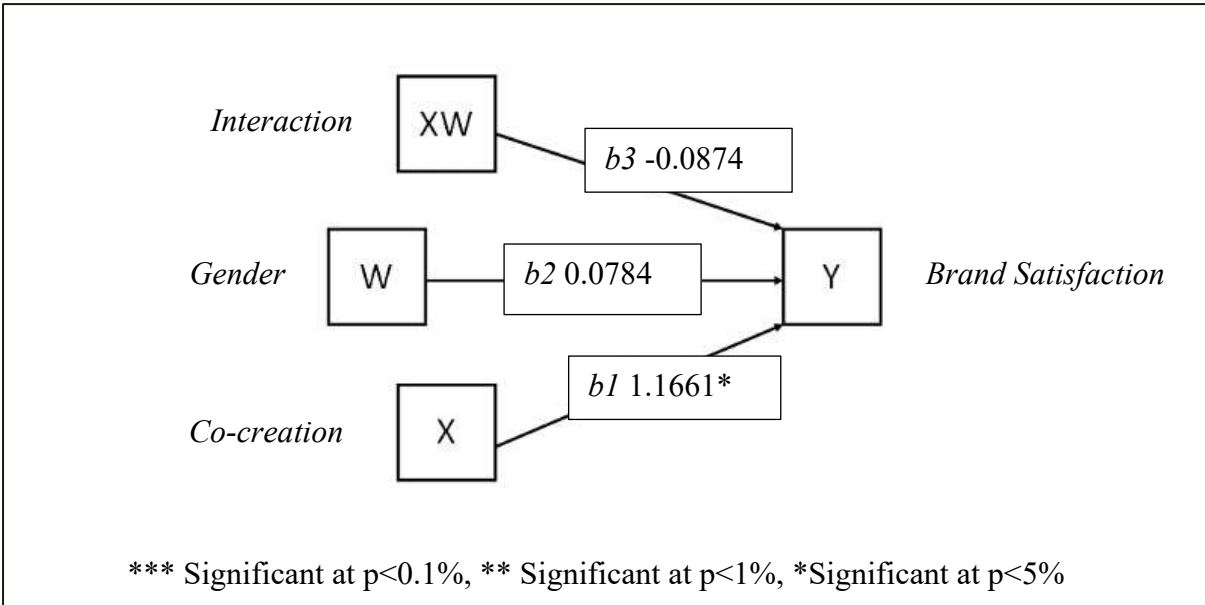


Figure 12: Statistical representation H5

The following graphical representation shows that gender characteristics have the same values of brand satisfaction if they perform a CC. Therefore, hypothesis 5 is not supported. The whole model is shown in Appendix 9.

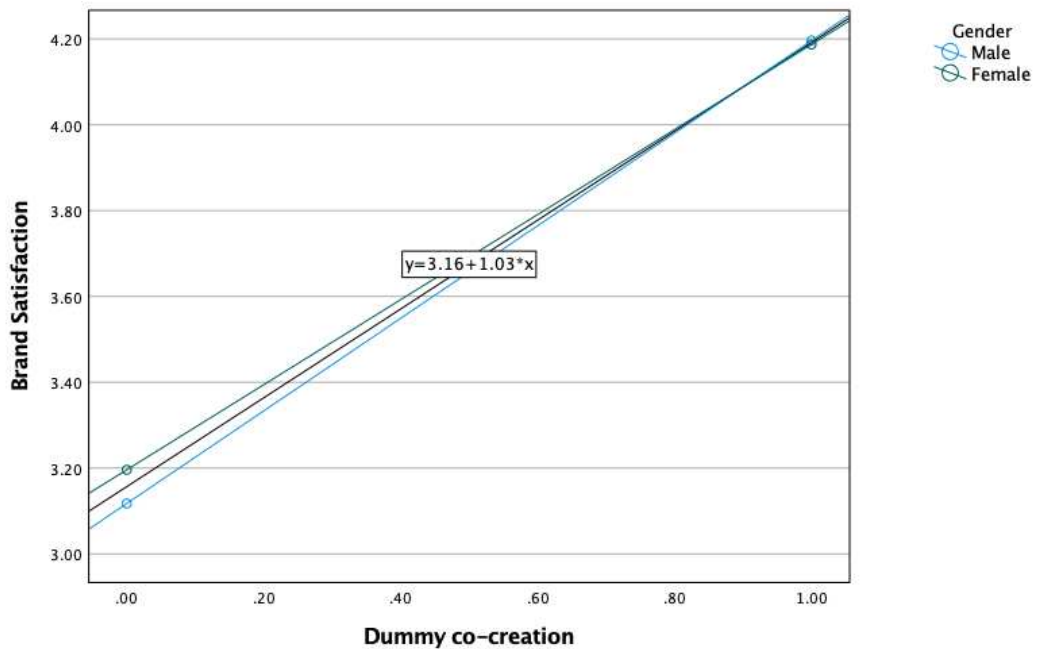


Figure 13: Graphical representation H5

Hypothesis 6: *Gen Z consumers have a stronger effect than other generations on the relationship between co-creation participation and brand satisfaction.*

As one can see in Appendix 10, PROCESS Model 1 by Hayes (2013) was used to test this hypothesis. For this case, the variable age was mean-centered for better data interpretation.

$$Y_{\text{Brand Satisfaction}} = \beta_0 + \beta_{\text{Dummy CC}} + \beta_{\text{Age}} + \beta_{\text{Interaction}} + \varepsilon$$

Overall, a 35,86% variation in BS is explained by this model. This interaction showed no significant moderation effect of the variable age on this relationship (b_3 coeff = 0.1615, $t = 0.6343$, $p = 0.5271$).

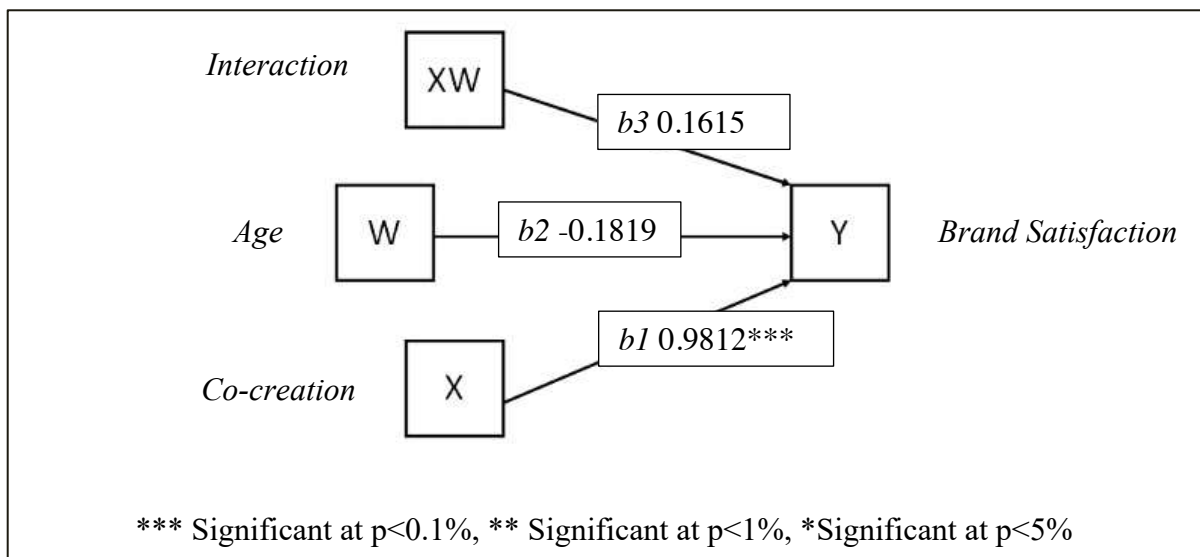


Figure 14: Statistical representation H6

We can also see in the following graphical representation that consumers of Generation Z (Age: 0.50) do not have higher BS after CC than consumers of other generations. Therefore, hypothesis 6 is not verified.

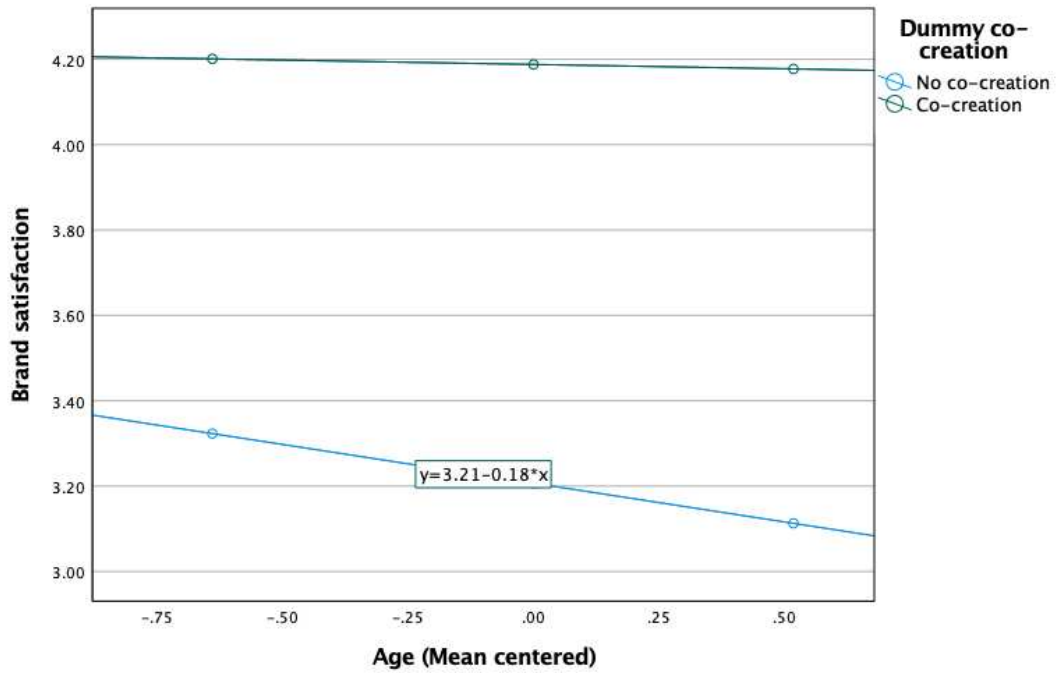


Figure 15: Graphical representation H6

Hypothesis 7: Age is the strongest socio-demographic moderating effect.

Comparing those two variables in the socio-demographic moderation, it was already shown that none of these interactions (Table 8) shows a significant effect. The interaction of gender and co-creation shows a negative moderation effect (the moderating factor of gender decreases the effect of this relationship).

Moderation Variable	Coefficient	Df	t-value	p-value
Interaction: "Gender x Dummy CC"	-0.09	110	-0.29	0.7722
Interaction: "Age x Dummy CC"	0.16	110	0.63	0.5271

Table 8: Comparison of interactions H7

Having a look into model 2 of the process model by Hayes (2013) in Appendix 11, an overall variation of 36,06% in BS is explained by changes in the following variables:

$$Y_{\text{Brand Satisfaction}} = \beta_0 + \beta_X \text{ Dummy CC} + \beta_W \text{ Gender} + \beta_Z \text{ Age} + \beta_{XW} \text{ Int} + \beta_{XZ} \text{ Int} + \varepsilon$$

Interaction 2 showed not a significant moderating effect (b_4 coeff = -0.1310, $t = -0.4248$, $p = 0.6718$), and interaction 1 (b_5 coeff = 0.1847, $t = 0.6770$, $p = 0.4998$) shows as well not a significant relationship. Nevertheless, hypothesis 7 can be verified. Age as a moderating factor shows a positive relationship, which is more significant than gender.

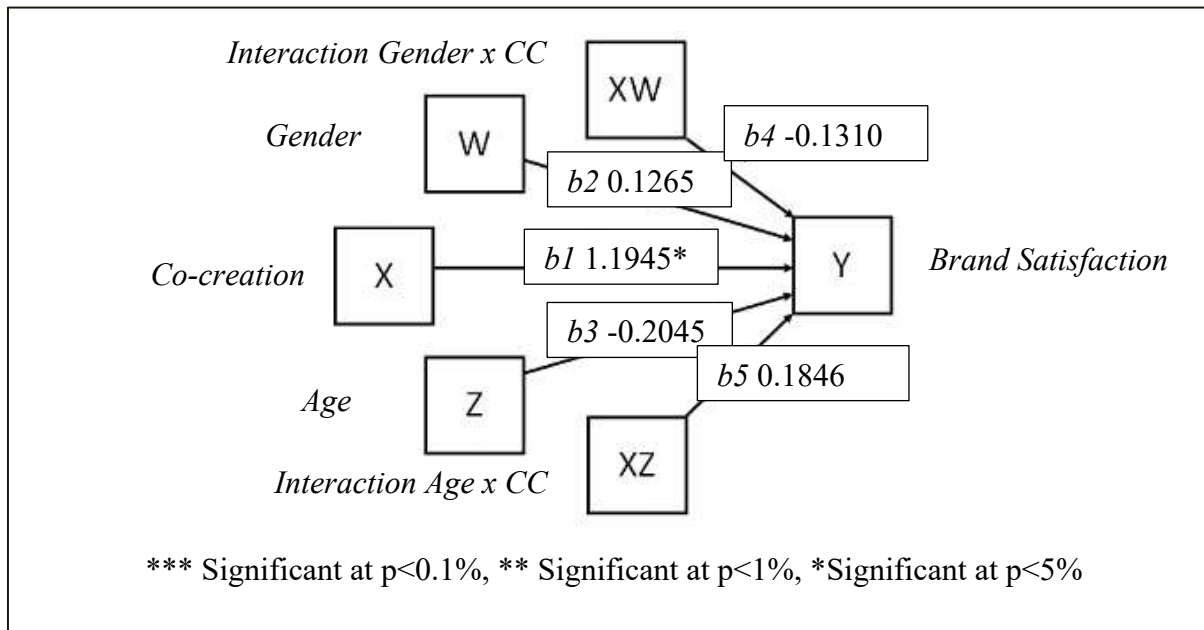


Figure 16: Statistical representation H7

4.1.5 Full Model Test

The proposed full model, which fits the conceptual model, is Model 2 by Hayes (2013). The conceptual model should assess the impact of the two moderating variables: 1. Characteristic traits ($Z =$ extroversion & openness to experience) and 2. Socio-demographic variable ($W =$ age & gender) on the relationship of CC and BS. Due to insufficient internal consistency, it was not possible to merge the items of gender and age to the W -variable. With proposed model 2, we will measure, for this case, the moderating impact of the two strongest, previously assessed moderators for each category: openness to experience (W) and age (Z).

$$Y_{\text{Brand Satisfaction}} = \beta_0 + \beta_X \text{Dummy CC} + \beta_W \text{Openness} + \beta_Z \text{Age} + \beta_{XW} \text{Int} + \beta_{XZ} \text{Int} + \varepsilon$$

This model explains an overall change of 45,89% in BS. Interaction 2 showed no significant moderating effect (b_5 coeff = 0.1823, $t = 0.7080$, $p = 0.4805$). Interaction 1 (b_4 coeff = 0.9674, $t = 3.5917$, $p = 0.0005$) shows a highly significant effect (Appendix 12). Therefore, the influence of OE as a moderating variable has the most significant and strongest moderating effect on the relationship.

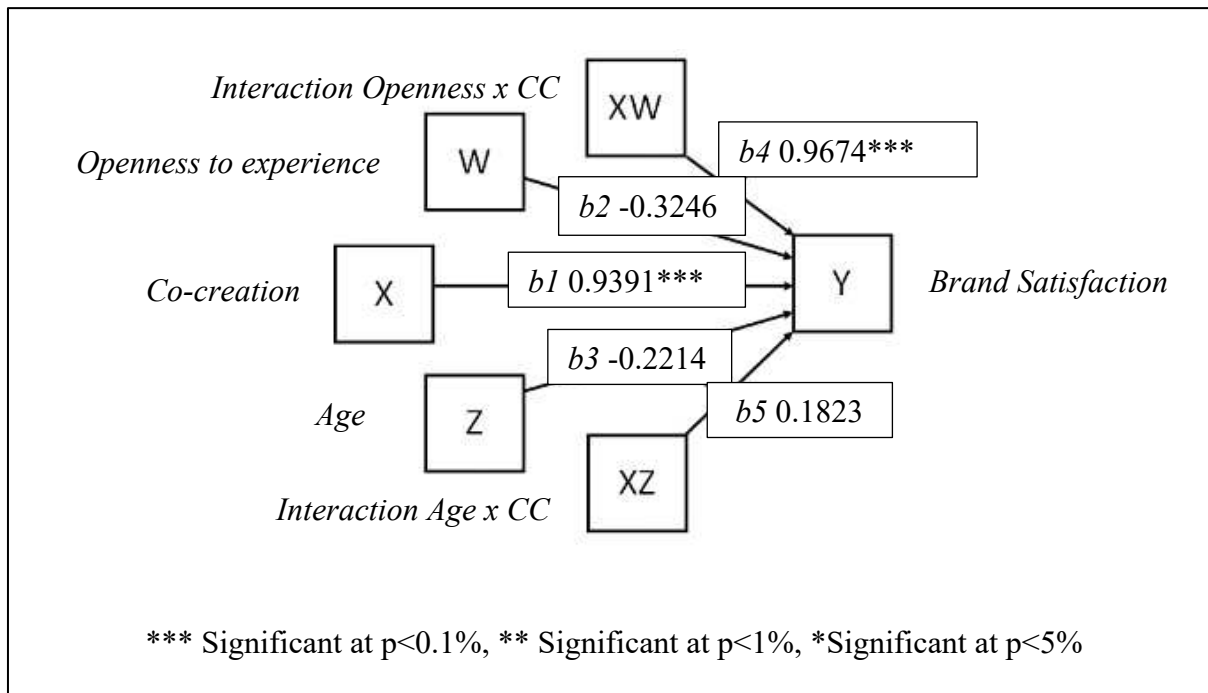


Figure 17: Statistical representation full model

4.1.6 Other Measures

Two questions were included in the survey to measure the enjoyment and likability of CC of the group that performed a CC. For the first question, the participants were asked to rate their enjoyment of the previous CC on a scale from 0 to 100, where 0 is 'Not Enjoyable at All' and 100 is 'Extremely Enjoyable.' The second question assessed on a 5-point Likert scale if they would CC for other products (1 = Definitely not to 5 = Definitely yes), resulting that co-creators enjoyed the previous CC by $M = 82.6615$ and are likely to co-create again ($M = 3.74$) which can be seen in Table 9.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Did you enjoy the Co-Creation ?	65	50.00	100.00	82.6615	11.90231
Do you want to Co-Create products in other categories for other brands?	65	1	5	3.74	.923
Valid N (listwise)	65				

Table 9: Descriptive statistics enjoyment CC

4.2 Discussion

This study analyzed the impact of co-creation on brand satisfaction, considering individual characteristics and demographic factors as moderators that strengthen this effect.

Of the original 392 participants, 341 completed the survey. 225 participants were eliminated as they did not meet the criteria (failed manipulation question, repeated IPS, outliers). The remaining 116 participants, divided into two groups, provided a meaningful sample because all participants with confounding factors, such as outliers, were removed. A reason for the number of eliminated participants could be the incentive of the Amazon voucher (Repeated IPs), the insufficiently specified manipulation question, and the language barrier. The majority of the participants are female, and the age groups of Generation Z and Millennials dominated, which makes a meaningful evaluation of the gender and the age groups (Hypothesis 5-7) complex. This could be caused by using non-probability sampling due to financial and time restrictions; nevertheless, it is an appropriate method for this research.

The data was collected using an online survey questionnaire with an A/B split test and two stimuli predesigned through a focus group. The focus group brought important takeaways for designing the stimuli. The internal consistency of the different item scales was considered good; therefore, no items had to be removed. The “socio-demographics” was the only scale that was not internally consistent; therefore, the full model had to be adjusted with other variables. The prerequisites for parametric data were not all met. The variance homogeneity was not confirmed, and the normal distribution was not assumed through the Kolmogorov-Smirnov-Test. Nevertheless, a sufficiently large sample was reached due to the CLT, making it possible to assume a normal distribution; therefore, possible data limitations must be considered for the hypothesis testing methods. Parametric tests are nevertheless preferred as they are more precise and meaningful in data analysis and interpretation, and SPSS cannot perform non-parametric tests for assessing relationships. Other statistical tests for assuring the data quality, like recoding, mean centering, test of manipulation, and descriptive, were calculated for a statistically correct and detailed data analysis.

The results showed that the co-creation group had significantly higher brand satisfaction than the non-co-creation group, supported by a Welch-test and a strong effect size, supporting H1 and confirming the success of the designed stimuli. The linear regression analysis confirmed a significant impact of co-creation participation on brand satisfaction, with 35.3% of the variance explained, supporting different findings in the literature by saying that co-creation increases brand satisfaction. As reviewed in the literature part, to be motivated to participate in a co-creation and to be satisfied afterward, a brand interest is presupposed, which was not tested in this survey. Therefore, it can not be confirmed for the participants that they like Kellogg's and are interested in co-creation; potentially, the satisfaction number would be higher only for participating consumers with brand interest. This is a substantial limitation when analyzing the data. Also, the participants who did not perform a co-creation could potentially answer the satisfaction questions inappropriately if they do not have a brand relationship and interest. Another factor influencing brand satisfaction after performing a CC is the social part (commenting, voting, interacting, chatbots), which could not be portrayed in reality. This would be another limitation of possibly decreasing the effect on satisfaction. Nevertheless, the effect of CC on brand satisfaction was significant, which reflects, despite the limitations, the relevance of this innovative experience for brands in the future.

Not every consumer has the exact needs, desires, and wishes, e.g., expressing their selves through co-creation. Therefore, when developing a co-creation strategy for your brand, it is crucial to consider that the characteristics of the participating consumers could impact the success (Freedman, 2019; Roth, 2011; Rehman et al., 2012; Clarke & Kinghorn, 2018). Therefore, it was important to explore possible moderation effects of personality and demographics on this significant and robust effect. The moderation effects showed that openness to experience had a robust and significant impact on the relationship between co-creation and brand satisfaction. Consumer who are highly open to experience are curious and imaginative, and they are urged to broaden their experiences. Openness to experience is associated with life satisfaction and affective loyalty. The explored data showed a negative relationship between the variable OE and BS without considering CC. The more the characteristic trait openness to experience increases, the more the brand satisfaction decreases if no co-creation is performed, which also supports the hypothesis.

On the other hand, extroversion as a characteristic trait resulted in a non-significant weak moderation effect on brand satisfaction. This was contrary to expectations. A possible reason

for this was the missing social component in this co-creation. Extroverts seek social interactions and friendliness (Barańczuk, 2019) and prefer interpersonal exchange (Zhao & Seibert, 2006). A CC method with high interaction, like collaboration (ex., interactive group workshop) or more social involvement in the chosen CC method co-designing (through commenting, voting, interacting) could improve the moderating effect for extroverted individuals. This shows the importance of designing specific CC methods or add-ons (like interactive chatbots or a comment function) for different target groups with different personalities to increase the effect of satisfaction for different personalities.

The demographic variables gender and age did not provide evidence for moderating the effect. As studied in the literature, demographics are important for predicting buying behavior – especially more meaningful than demographics, which is reflected by the study. A possible limitation of the research is that the sample is not representative of the population, as it was selected through a non-probability method. All participants belong to the Millennials or Generation Z. Therefore, no statements can be made about older generations. Nevertheless, it can be concluded that demographic data does not influence the effect of co-creation as much as characteristic traits. Therefore, brands should focus on exploring characteristics instead of demographics.

In the end, the participants of group 2 (co-creation) evaluated how they felt about the experience and whether they would do further co-creations for other products/brands. The benefits of CC are that it is an enjoyable method, increasing consumer experience, satisfaction, and loyalty (Prahalad, Ramaswamy, 2004). It was found that the participants mostly enjoyed the co-creation and were willing to perform another co-creation for other brands and products, linking the findings to the found literature. The participants who answered the question also had higher brand satisfaction after performing the CC, which we saw in hypothesis 1, and confirmed one of the benefits of CC.

In general, the single terms (X,W,Z) for the PROCESS model are, in some cases, not meaningful and should be interpreted if needed with caution (Hayes, 2018). The interaction term is the main measure researched when performing PROCESS model analysis. Therefore, the single interactions were not considered in detail in the analysis.

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

The final section of this paper summarizes the findings and concludes the analyses conducted. This research focused on the effects of co-creation on brand satisfaction, considering various factors such as personality traits, moderation effects, and socio-demographic variables. The general concept of the relationship between co-creation and brand satisfaction was highlighted by examining and discussing moderating factors. In addition, implications and possible approaches for future research are presented.

5.1 Main Findings & Conclusions

5.1.1 How does consumer participation in co-creation affect brand satisfaction?

Consumers are no longer looking for average products or services; they are looking for a unique and personal experience and want to play an active role in shaping their products collaboratively with their preferred brands. Many advantages arise from co-creation through the active participation of consumers. With low risk and costs, brands can learn more about their consumers' needs and wishes while consumers increase their satisfaction and loyalty through being "heard" and "asked" (Clarke & Kinghorn, 2018). As seen from this research, the customer journey is taken to the next level with success. Participation in a co-creation, in this case for a collaborative Kellogg's cereal, contributes significantly to increased brand satisfaction. This thesis's explorative and explanatory analysis discovered this research question. This confirms the previously examined theory and the hypothesis and highlights the significance of this topic.

5.1.2 What is the role of personality traits and demographics on co-creation participation and brand satisfaction?

It is crucial to consider that co-creation success (brand satisfaction) depends on the consumer's personality. It was discovered that openness to experience as a characteristic trait significantly affects this relationship. Consumers who are highly open to experience are interested and imaginative and urged to enlarge their experiences, which suits the co-creation approach. According to the research, people with extroversion as a characteristic trait do not have increased brand satisfaction after participating in co-creation. A reason for the low impact discovered in this research could be that extroverted participants enjoy social interaction. Due to the limitations of the survey, this component could not be incorporated in the shown CC method (commenting and interacting with another consumer). Interpreted, however, it is always essential to study the characteristics of the consumers to collaborate with different

consumers having different characteristics and, therefore, preferences. This could mean that brands need to find collaboration tools that satisfy the needs of different consumers, e.g., extroverts need a social component in co-creation to perceive brand satisfaction (Workshops, Chatbots, Social Community). In contrast, consumers with high openness to experience desire a creative component. More introverted consumers, for example, could expect a co-creation method like submitting without interaction. Through knowledge about the personality, brands can dive into their consumer minds and create benefits for them.

Unfortunately, the role of demographic variables was insufficiently confirmed, and no significant correlation was discovered. One reason could be that the sample needs to be more representative, and participants in different age groups must be included simultaneously. In addition, there was no difference in the effect of co-creation on brand satisfaction, which was strengthened or weakened by the variable gender.

5.1.3 Which is stronger, personality traits and demographic characteristics?

Personality traits are more efficacious than demographic variables in forecasting buying behavior. They predict human behavior and differentiate persons from others more than demographics (Gohary & Hanzae, 2014). These statements confirm that character traits are a more significant indicator of people's movements than, for example, age or gender. This was also found in the research. The participants' personality, such as openness to experience, strongly affects brand satisfaction after co-creating. In contrast, the demographic variables, age and gender, revealed no effect. Thus, human behavior and preferences can be better predicted by personality than by demographics. This shows that brands need to focus on the characteristics to create added value for all consumers in the future.

5.2 Managerial Implications

The results of this study provide important insights and provide practical implications. Co-creation challenges the traditional model by enhancing the customer experience, encouraging social interactions, and increasing the success of new products by considering the consumers' needs, leading to increased brand satisfaction, confirmed through this research.

Therefore, firms should consider this interactive approach, mainly as it develops in the future and becomes more accessible to develop for brands. Artificial Intelligence is revolting CC. Entertaining, exciting, interactive, and creative methods could increase consumer experience,

leading to loyalty and satisfaction. AI, especially the social part, can be outsourced to companies. "AIs are designed to emulate human thinking and learning abilities, enabling machines to perceive, understand, respond, and learn "(Wen et al., 2022). Chatbots, for example, could interact as a co-creation initiator, widening the social and personal experience. (Wen et al., 2022) Therefore, co-creation methods and add-ons can be developed and supported through AI by perceiving, comprehending, and forecasting consumer characteristics and preferences. It is also always essential to consider the diversity of consumers and not build generalizations. Instead, a deep knowledge of consumers' characteristics, needs, and preferences should be assumed to achieve a sustainable result (brand satisfaction) for every consumer.

These findings provide concrete guidelines for brands and companies to strengthen their relationship with consumers, create innovative products, and ultimately build a successful long-term partnership.

5.3 Limitations and Further Research

The limitations of this study were explained in detail in the discussion chapter. A general limitation of this research concerns the number of characteristic variables selected. In order to extend the scope of this research and the Master's thesis, it was impossible to investigate and compare different character traits. However, this could be an interesting research topic for the future to research diverse characteristics, like the need for uniqueness. Also, in-depth interviews with brands that successfully co-create with their consumer would be interesting to understand the other side and interviews with consumers to fully understand their perception of co-creation and the incentive to participate in practice. This was also not possible due to the limitations of the research. Additionally, a specific co-creation method was chosen for this study. Of course, various approaches, methods, and tools about the influence of character traits would have been worth investigating. Due to this study's limited resources and scope, this remains a favorable area for further research. Another interesting aspect could be investigating the impact of different co-creation methods, especially using Artificial Intelligence (AI), on brand satisfaction and the resulting brand loyalty.

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APPENDICES

Appendix 1: Survey Questionnaire

Introduction

Dear Participant,

my name is Sarah, and I am currently pursuing my Master's studies in Business at Catolica Lisbon School of Business and Economics. Thank you in advance for taking the time to complete this brief questionnaire, which should take less than 5 minutes. Please note that to participate in this research, you must have consumed Kellogg's cereal at some point in your life. As a token of appreciation for your participation, I will be giving away 2 x 25€ Amazon gift cards to randomly selected respondents who complete the survey. If you wish to enter this giveaway, please provide your email address at the end. Otherwise, feel free to skip this question. Neither of the information gathered will be used outside of this study and all data will be anonymised. There are no right or wrong answers, but please make sure to answer every question thoughtfully. I would greatly appreciate it if you could share this survey. If you have any questions or comments about this study, please don't hesitate to contact s-spress@ucp.pt. Ready? Let's start!

Block 1 Control Question

Q1: Have you ever consumed Kellogg's cereal before?

- Yes
- No

Q2: How often do you consume Kellogg's cereal in general?

- Never
- 1 time a year
- 1-2 times a month
- 2-3 times a week
- Daily

Block 2 “No participation in CC”

Recall the last time you enjoyed Kellogg's cereal for breakfast or as a snack. Was it a bowl of Kellogg's Cornflakes, Smacks, Tresor, or Choco Krispies? When was the last time you found yourself standing in front of the supermarket shelf, contemplating which one to choose? Take a moment to reflect on your past experiences with Kellogg's, and then answer the following questions.



Q3: Please answer those questions with the previous experience in mind.

- I am very satisfied with the service provided by Kellogg's.
- I am very satisfied with the brand Kellogg's.
- I am very happy with Kellogg's.
- This brand does a good job of satisfying my needs.
- Please click neither agree nor disagree.
- The products provided by Kellogg's are very satisfactory
- I believe that using Kellogg's is usually a very satisfying experience
- I made the right decision when I decided to use this brand.
- I am addicted to Kellogg's in some way

Block 2 "Participation in CC"

Kellogg's is launching its new 'MyKellogg's' Co-Creation campaign, allowing you to build your own cereal tailored to your personal preferences. Choose your preferred base, toppings, and design the packaging. Afterward, upload your creation and view the creations of all participants. You can vote for your favorite cereal, and others can vote for yours. The most-voted cereal will be launched by Kellogg's in the market. As a winner, you have the chance to win many prizes, such as a trip or a Kellogg's subscription for life. Pretend now, that you are participating in this campaign and choose from the given options. Then please answer the following questions.



Q4: Choose your base

Mini Croissants



Cookie Chips



Cornflakes



Loops



Q5: Choose up to three toppings

Dried Strawberry



Nuts



Dried Raspberry



Chocolate Drops

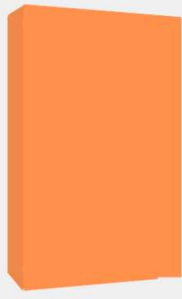


Q6: Choose the color of your packaging

Pink



Orange



Red

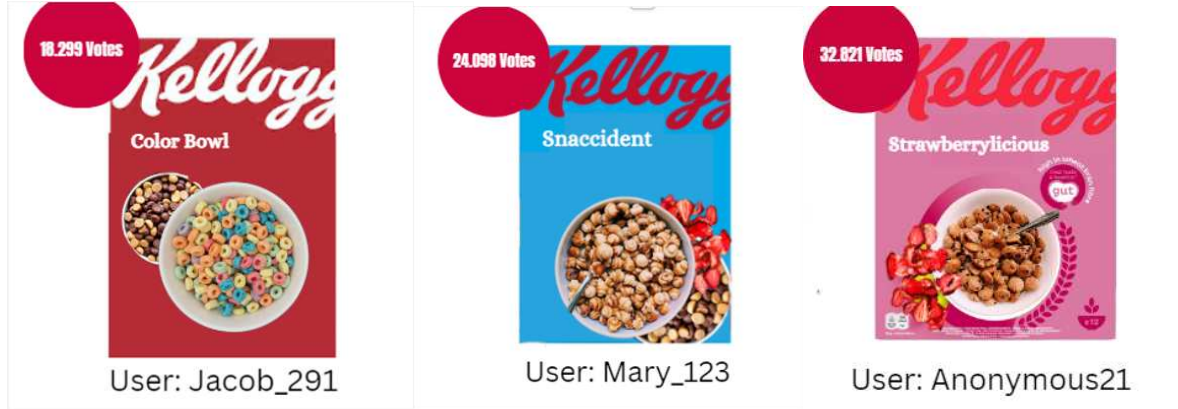


Blue



Q7: How would you name your cereal creation? (Open question)

Q8: Thank you for your creation! Maybe your cereal will be the winner. You can now vote for other creations!



Q9: Please answer those questions with the previous experience in mind.

- I am very satisfied with the service provided by Kellogg's.
- I am very satisfied with the brand Kellogg's.
- I am very happy with Kellogg's.
- This brand does a good job of satisfying my needs.
- Please click neither agree nor disagree.
- The products provided by Kellogg's are very satisfactory
- I believe that using Kellogg's is usually a very satisfying experience
- I made the right decision when I decided to use this brand.
- I am addicted to Kellogg's in some way

Block 3: Characteristics

Q10: To what extent do the following statements apply to you? Answer as open and honest as possible. There are no right or wrong answers.

- I always want to try new things.
- I am a curious person.
- I travel a lot to get to know new cultures.
- I would prefer everything to stay as it is.
- I like to discuss things.
- Please click neither applies or not applies.
- I always enjoy learning new things.
- In my free time, I love to spend time with art, music, and literature.
- I am very interested in philosophical questions.
- I read a lot about scientific topics, new discoveries, or historical events.
- I have many ideas and a vast imagination.

Q11: To what extent do the following statements apply to you? Answer as open and honest as possible. There are no right or wrong answers.

- I enjoy being with other people.
- I can quickly spread a good mood.
- I am an adventurous person.
- I like to be the center of attention.
- Usually, I prefer to be by myself.

- Please click neither applies or not applies.
- I am a loner.
- I like to go to parties.
- I am active in many clubs.
- I am a talkative and communicative person.
- I am very sociable.

Block 4: Manipulation & Likability

Q12: Have you previously done a Co-Creation?

- Yes
- No

Q13: Did you enjoy the Co-Creation? On a a scale from 0 to 100, where 0 is 'Not Enjoyable at All' and 100 is 'Extremely Enjoyable' rate your experience.

Q14: Do you want to Co-Create products in other categories for other brands?

- Definitely not
- Probably not
- Might or might not
- Probably yes
- Definitely yes

Block 5: Demographics

Q15: When were you born?

- 1995 - 2012
- 1980 - 1994
- 1965 - 1979
- 1946 - 1964
- 1945 and before

Q16: What describes your gender?

- Male
- Female
- Diverse

Q17: What is you nationality

- Portugal
- Germany
- UK
- US
- Italy
- Spain
- Other

Q18: What ist he highest level of school you have completetd or the highest degree you have received?

- Less dan high school degree
- High school graduate
- Apprenticeship degree

- Bachelor's degree
- Master's degree
- Doctoral degree

Q19: Only for statistical purposes, what is your approximate net yearly income, in euros?

- Less than 10.000€
- 10.000€ - 19.999€
- 20.000€ - 29.999€
- 30.000€ - 39.999€
- 40.000€ - 49.999€
- 50.000€ - 59.999€
- 60.000€ - 69.999€
- 70.000€ - 79.999€
- 80.000€ - 89.999€
- 90.000€ - 99.999€
- 100.000€ - 149.999€
- 150.000€ or more

Q20: What is your occupation?

- Student
- Employed
- Student with a job
- Unemployed
- Retired
- Other

Q21 Gift Card: Thank you for participating! As mentioned earlier, you have the chance to win one of two 25€ Amazon Gift Cards if you have completed the survey up to this point. If you wish to enter the raffle, kindly provide your email address for contact purposes.

Appendix 2: Descriptive Statistics

Descriptive Statistics^a

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Brand_Satisfaction	51	1.11	5.00	3.1699	.88286	.779
Openness	51	2.00	5.00	3.6235	.64237	.413
Extroversion	51	2.00	5.00	3.4688	.61721	.381
Age_Recoded	51	3.00	5.00	4.6863	.54736	.300
What describes your gender ?	51	1	2	1.67	.476	.227
Valid N (listwise)	51					

a. D_Co_Creation = No Co-Creation

Descriptive Statistics^a

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Brand_Satisfaction	65	2.89	5.00	4.1915	.49671	.247
Openness	65	2.10	4.90	3.9323	.48993	.240
Extroversion	65	2.09	5.00	3.8308	.50280	.253
Age_Recoded	65	1.00	5.00	4.3231	.66398	.441
What describes your gender ?	65	1	2	1.54	.502	.252
Valid N (listwise)	65					

a. D_Co_Creation = Co-Creation

Appendix 3: Prerequisites

Levene-Test / Welch-Test

Group Statistics

	D Co Creation	N	Mean	Std. Deviation	Std. Error Mean
Brand_Satisfaction	No Co-Creation	51	3.1699	.88286	.12362
	Co-Creation	65	4.1915	.49671	.06161

Independent Samples Test

Levene's Test for Equality of Variances

t-test for Equality of Means

	F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
					One-Sided p	Two-Sided p			Lower	Upper
					Brand_Satisfaction	8.235			.005	-7.879
Equal variances assumed										
Equal variances not assumed			-7.396	74.338	<.001	<.001	-1.02152	.13813	-1.29672	-.74632

Independent Samples Effect Sizes

		Standardizer	Point Estimate	95% Confidence Interval	
				Lower	Upper
Brand_Satisfaction	Cohen's d	.69309	-1.474	-1.885	-1.058
	Hedges' correction	.69769	-1.464	-1.872	-1.051
	Glass's delta	.49671	-2.057	-2.563	-1.542

Kolmogorov-Smirnov Test for Normal Distribution

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Brand_Satisfaction	.118	116	<.001	.940	116	<.001
Openness	.109	116	.002	.965	116	.004
Extroversion	.096	116	.011	.971	116	.013
Age_Recoded	.325	116	<.001	.673	116	<.001
What describes your gender ?	.389	116	<.001	.623	116	<.001

a. Lilliefors Significance Correction

Appendix 4: Multicollinearity

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	Age	.888	1.126
	Dummy_Co_Creation	.827	1.210
	Extroversion	.635	1.575
	Openness to experience	.652	1.534
	What describes your gender ?	.949	1.054

a. Dependent Variable: Brand_Satisfaction

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	Age	Dummy Co_Creation	Extr Over	Openness to experience	What describes your gender ?
1	1	5.490	1.000	.00	.00	.01	.00	.00	.00
	2	.402	3.696	.00	.00	.78	.00	.00	.01
	3	.070	8.882	.00	.00	.08	.02	.02	.87
	4	.023	15.419	.01	.43	.12	.13	.11	.10
	5	.010	23.667	.00	.01	.00	.81	.72	.00
	6	.006	29.926	.98	.56	.01	.04	.15	.01

a. Dependent Variable: Brand_Satisfaction

Appendix 5: Hypothesis 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.594 ^a	.353	.347	.40286

a. Predictors: (Constant), Brand_Satisfaction

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.075	1	10.075	62.079	<.001 ^b
	Residual	18.502	114	.162		
	Total	28.578	115			

a. Dependent Variable: D_Co_Creation

b. Predictors: (Constant), Brand_Satisfaction

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	-.731	.168		-4.349	<.001
	Brand_Satisfaction	.345	.044	.594	7.879	<.001

a. Dependent Variable: D_Co_Creation

Appendix 6: PROCESS Model H2

Model : 1

Y : Brand_Sa
X : D_Co_Cre
W : Extrover

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.6422	.4125	.4437	26.8150	3.0000	112.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.2329	.1313	24.6134	.0000	2.9727	3.4932
D_Co_Cre	.8874	.1435	6.1835	.0000	.6031	1.1718
Extrover	.3106	.2199	1.4129	.1605	-.1250	.7462
Int_1	.1360	.2386	.5701	.5697	-.3367	.6088

Product terms key:

Int_1 : D_Co_Cre x Extrover

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0019	.3251	1.0000	112.0000	.5697

Focal predict: D_Co_Cre (X)

Mod var: Extrover (W)

NOTE: The following variables were mean centered prior to analysis:

Extrover

Appendix 7: PROCESS Model H3

Model : 1

Y : Brand_Sa
X : D_Co_Cre
W : Openness

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.6707	.4498	.4155	26.4537	3.0000	112.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.1172	.1339	23.2777	.0000	2.8518	3.3825
D_Co_Cre	.9873	.1436	6.8738	.0000	.7027	1.2719
Openness	-.3050	.2117	-1.4406	.1525	-.7245	.1145
Int_1	.9457	.2517	3.7572	.0003	.4470	1.4444

Product terms key:

Int_1 : D_Co_Cre x Openness

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0931	14.1165	1.0000	112.0000	.0003

Focal predict: D_Co_Cre (X)

Mod var: Openness (W)

Conditional effects of the focal predictor at values of the moderator(s):

Openness	Effect	se(HC3)	t	p	LLCI	ULCI
-.5802	.4386	.1787	2.4537	.0157	.0844	.7927
.0000	.9873	.1436	6.8738	.0000	.7027	1.2719
.5802	1.5360	.2280	6.7378	.0000	1.0843	1.9878

NOTE: The following variables were mean centered prior to analysis:

Openness

Appendix 8: PROCESS Model H4

Model : 2

Y : Brand_Sa
X : D_Co_Cre
W : Extrover
Z : Openness

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.7181	.5156	.3724	17.6471	5.0000	110.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.1917	.1282	24.9030	.0000	2.9377	3.4457
D_Co_Cre	.9053	.1405	6.4423	.0000	.6268	1.1838
Extrover	.6149	.2461	2.4988	.0139	.1272	1.1026
Int_1	-.5133	.3020	-1.6998	.0920	-1.1119	.0852
Openness	-.5952	.2148	-2.7714	.0066	-1.0209	-.1696
Int_2	1.1719	.2951	3.9717	.0001	.5872	1.7566

Product terms key:

Int_1 : D_Co_Cre x Extrover
 Int_2 : D_Co_Cre x Openness

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0185	2.8893	1.0000	110.0000	.0920
X*Z	.0964	15.7746	1.0000	110.0000	.0001
BOTH	.0987	8.0072	2.0000	110.0000	.0006

Focal predict: D_Co_Cre (X)
 Mod var: Extrover (W)
 Mod var: Openness (Z)

Conditional effects of the focal predictor at values of the moderator(s):

Extrover	Openness	Effect	se(HC3)	t	p	LLCI	ULCI
-.5821	-.5802	.5242	.1927	2.7207	.0076	.1424	.9060
-.5821	.0000	1.2042	.2237	5.3825	.0000	.7608	1.6475
-.5821	.5802	1.8842	.3487	5.4030	.0000	1.1931	2.5752
.0000	-.5802	.2253	.1971	1.1431	.2555	-.1653	.6160
.0000	.0000	.9053	.1405	6.4423	.0000	.6268	1.1838
.0000	.5802	1.5853	.2434	6.5124	.0000	1.1029	2.0677
.5821	-.5802	-.0735	.3200	-.2296	.8188	-.7077	.5607
.5821	.0000	.6065	.2264	2.6787	.0085	.1578	1.0552
.5821	.5802	1.2865	.2423	5.3086	.0000	.8062	1.7667

NOTE: The following variables were mean centered prior to analysis:

Extrover Openness

Appendix 9: PROCESS Model H5

Model : 1

Y : Brand_Sa
 X : D_Co_Cre
 W : Gender

Sample

Size: 116

OUTCOME VARIABLE: Brand_Sa

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.5945	.3534	.4883	17.7532	3.0000	112.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.0392	.4717	6.4425	.0000	2.1045	3.9739
D_Co_Cre	1.1661	.5265	2.2148	.0288	.1229	2.2093
Gender	.0784	.2714	.2889	.7732	-.4594	.6163
Int_1	-.0874	.3012	-.2902	.7722	-.6843	.5095

Product terms key:

Int_1 : D_Co_Cre x Gender

Test(s) of highest order unconditional interaction(s):

R2-chng	F(HC3)	df1	df2	p	
X*W	.0006	.0842	1.0000	112.0000	.7722

Focal predict: D_Co_Cre (X)
Mod var: Gender (W)

Appendix 10: PROCESS Model H6

Model : 1

Y : Brand_Sa
X : D_Co_Cre
W : Age_Reco

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

R	R-sq	MSE	F(HC3)	df1	df2	p
.5988	.3586	.4844	18.0314	3.0000	112.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.2070	.1406	22.8167	.0000	2.9285	3.4855
D_Co_Cre	.9812	.1539	6.3772	.0000	.6764	1.2861
Age_Reco	-.1819	.2449	-.7430	.4591	-.6671	.3033
Int_1	.1615	.2546	.6343	.5271	-.3430	.6660

Product terms key:

Int_1 : D_Co_Cre x Age_Reco

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0030	.4024	1.0000	112.0000	.5271

Focal predict: D_Co_Cre (X)
 Mod var: Age_Reco (W)

NOTE: The following variables were mean centered prior to analysis:
 Age_Reco

Appendix 11: PROCESS Model H7

Model : 2

Y : Brand_Sa
 X : D_Co_Cre
 W : Age_Reco
 Z : Gender

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

	R	R-sq	MSE	F(HC3)	df1	df2	p
	.6005	.3606	.4916	10.9373	5.0000	110.0000	.0000

Model

	coeff	se(HC3)	t	p	LLCI	ULCI
constant	3.0006	.4716	6.3624	.0000	2.0660	3.9353
D_Co_Cre	1.1945	.5301	2.2535	.0262	.1440	2.2450
Age_Reco	-.2045	.2629	-.7777	.4384	-.7254	.3165
Int_1	.1846	.2727	.6770	.4998	-.3558	.7251
Gender	.1265	.2776	.4559	.6494	-.4236	.6767
Int_2	-.1310	.3084	-.4248	.6718	-.7421	.4801

Product terms key:

Int_1 : D_Co_Cre x Age_Reco
 Int_2 : D_Co_Cre x Gender

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0038	.4583	1.0000	110.0000	.4998
X*Z	.0013	.1805	1.0000	110.0000	.6718
BOTH	.0044	.2769	2.0000	110.0000	.7587

Focal predict: D_Co_Cre (X)
 Mod var: Age_Reco (W)
 Mod var: Gender (Z)

NOTE: The following variables were mean centered prior to analysis:

Age_Reco

Appendix 12: PROCESS Full Model

Model : 2

Y : Brand_Sa
 X : D_Co_Cre
 W : Openness
 Z : Age_Reco

Sample

Size: 116

OUTCOME VARIABLE:

Brand_Sa

Model Summary

	R	R-sq	MSE	F(HC3)	df1	df2	p
	.6774	.4589	.4161	17.0824	5.0000	110.0000	.0000
		coeff	se(HC3)	t	p	LLCI	ULCI
constant		3.1588	.1504	21.0097	.0000	2.8609	3.4568
D_Co_Cre		.9391	.1587	5.9167	.0000	.6246	1.2536
Openness		-.3246	.2324	-1.3969	.1652	-.7850	.1359
Int_1		.9674	.2693	3.5917	.0005	.4336	1.5011
Age_Reco		-.2214	.2515	-.8805	.3805	-.7199	.2770
Int_2		.1823	.2575	.7080	.4805	-.3280	.6927

Product terms key:

Int_1 : D_Co_Cre x Openness
 Int_2 : D_Co_Cre x Age_Reco

Test(s) of highest order unconditional interaction(s):

	R2-chng	F(HC3)	df1	df2	p
X*W	.0969	12.9005	1.0000	110.0000	.0005
X*Z	.0038	.5012	1.0000	110.0000	.4805
BOTH	.0994	6.4509	2.0000	110.0000	.0022

Focal predict: D_Co_Cre (X)
 Mod var: Openness (W)
 Mod var: Age_Reco (Z)

Conditional effects of the focal predictor at values of the moderator(s):

Openness	Age_Reco	Effect	se(HC3)	t	p	LLCI	ULCI
-.5802	-.6391	.2613	.3252	.8034	.4235	-.3832	.9058

-.5802	.0000	.3778	.2115	1.7863	.0768	-.0414	.7969
-.5802	.5172	.4721	.1871	2.5236	.0130	.1014	.8428
.0000	-.6391	.8226	.2768	2.9723	.0036	.2741	1.3711
.0000	.0000	.9391	.1587	5.9167	.0000	.6246	1.2536
.0000	.5172	1.0334	.1525	6.7771	.0000	.7312	1.3356
.5802	-.6391	1.3839	.3103	4.4603	.0000	.7690	1.9988
.5802	.0000	1.5004	.2334	6.4272	.0000	1.0378	1.9630
.5802	.5172	1.5947	.2457	6.4913	.0000	1.1078	2.0816

***** ANALYSIS NOTES AND ERRORS *****

NOTE: The following variables were mean centered prior to analysis:
 Openness Age_Reco

Appendix 13: Focus Group

Demographics:

1. What is your gender?
2. What is your Age?
3. Are you currently occupied, if yes what are you doing?
4. What is your location?

General:

1. How often do you consume Kellogg's cereal?

No Participation in Co-Creation (Written Stimuli)

1. Which of the following sentences, reminds you the most of your last experience with Kellogg's and helps you to bring out emotions for this brand?
 - a) Remember when you had Kellogg's for breakfast.
 - b) Remember when you stood in front of the supermarket shelf and thought about which flavor you should get.
 - c) Think about your favorite flavor.
 - d) Remember the last time you saw a commercial.
 - e) Do you remember any experience of eating Kellogg's in your childhood or now?

No Participation in Co-Creation (Visual)

1. What do you feel, when seeing this Logo?



2. Do you remember any experiences through this picture?
3. Would you be able to express your satisfaction with the brand through this logo?

4. What do you feel, when seeing these Packagings?



5. Do you remember any experiences through this picture?

6. Would you be able to express your satisfaction with the brand through this picture?

7. What do you feel, when seeing this supermarket shelf with the following Kellogg's products?



8. Do you remember any experiences through this picture?

9. Would you be able to express your satisfaction with the brand through this picture ?

10. Which picture made you feel the most for Kellogg's?

11. Which picture helped you the most to retrieve your thoughts and opinion about Kellogg's as a brand?

12. Would you be able to answer questions about your satisfaction about Kellogg's as a brand, with seeing a specific picture? If yes, through which one?

Participation in Co-Creation

Explanation about Co-Creation in the first place (McDonald's MyBurger Example)

1. Did you all understand the process of Co-Designing after seeing this example?

2. Overall, what do you think about this method of co-creation?

Co-Design

“Imagine now Kellogg’s would do such a campaign “MyKellogg’s” you could Co-create a new cereal with them - matched to your personal wishes and needs like we saw in the example before”.

1. Thinking now of a Kellogg’s cereal. Please tell me about the parts that you would like to choose by yourself and why? (Open Question)
2. Would you like to see different type of ingredients, that Kellogg’s never produced (e.g. mini croissants for cereal base)? If yes, could you name some? (Open Question)
3. How many different types of ingredients (Toppings, Cereal Base, Colors etc.) do you wish to choose from? Why? (Open Question)
4. Imagine now that you could upload your design on the “MyKellogg’s” campaign website. You now see different types of other cereals created by other consumer and you can vote for the cereals that you like most and others can vote for yours. Would you be more willing to participate if this would be an outcome and why? How would this impact your experience?
5. Imagine now, that your cereal got the most votes and Kellogg’s is producing it on the market for a time. Would you be more willing to participate if this would be an outcome? How would this impact your experience?
6. Imagine now, that you would get a reward if your cereal is produced for a time on the market. Would you be more willing to participate?
7. Would you feel more included in Kellogg’s as a brand through this opportunity? Why?