



Co-creation still an innovative new product development approach?

The impact of customer-company
identification and age

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ABSTRACT

Title: Co-creation still an innovative new product development approach? The impact of customer-company identification and age

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The co-creation concept was introduced at the beginning of the 21st century. Previous research stated the perceived innovation ability of co-creation in the 2010's. Therefore, this paper examined whether this perception is still valid. Further, we are investigating the impact of customer-company identification on the perceived innovation of co-creation. Then we assess the effect of age on perceived innovation ability and customer-company identification, as well as if co-creation is still leading to favoured behavioural intentions.

Our results showed that co-creation is perceived as innovative. Customer-company identification has a mediating effect on co-creation and perceived innovation ability. Age had no effect on the innovation perception of co-creation and on the connection between customer-company identification and perceived innovation ability. Due to the innovation perception, consumers still have a higher purchase intention, willingness to pay and willingness to recommend towards co-created products, compared to non-co-created products.

Nevertheless, co-creation is still an effective innovation approach that companies should consider in their innovation strategy. Customer-company has a positive effect on co-creation. However, we recommend more investigation of age to gain a deeper understanding how this factors might impact the perception of co-creation.

Keywords: Co-Creation, Innovation, Customer-company identification, Age cohorts, Purchase Intention, Willingness to Pay, Willingness to recommend

SUMÁRIO

Título: A co-criação continua a ser uma abordagem inovadora de desenvolvimento de novos produtos? O impacto da identificação cliente-empresa e da idade

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O conceito de co-criação foi introduzido no início do século XXI. Investigações anteriores indicaram a capacidade de inovação percebida da co-criação na década de 2010. Por conseguinte, o presente documento examinou se esta percepção ainda é válida. Além disso, estamos a investigar o impacto da identificação cliente-empresa na inovação percebida da co-criação. Em seguida, avaliamos o efeito da idade na capacidade de inovação percebida e na identificação cliente-empresa, bem como se a co-criação ainda está a conduzir a intenções comportamentais favoráveis.

Os nossos resultados mostraram que a co-criação é considerada inovadora. A identificação cliente-empresa tem um efeito mediador sobre a cocriação e a capacidade de inovação percebida. A idade não teve qualquer efeito na percepção de inovação da co-criação e na relação entre a identificação cliente-empresa e a capacidade de inovação percebida. Devido à percepção da inovação, os consumidores continuam a ter uma maior intenção de compra, vontade de pagar e vontade de recomendar produtos co-criados, em comparação com produtos não co-criados.

A co-criação continua a ser uma abordagem de inovação eficaz que as empresas devem considerar na sua estratégia de inovação. A relação cliente-empresa tem um efeito positivo na co-criação. Recomendamos que se investigue mais a idade para compreender melhor o impacto que este fator pode ter na percepção da co-criação.

Palavras-chave: Co-criação, inovação, identificação cliente-empresa, coortes de idade, desatenção na compra, vontade de pagar, vontade de recomendar

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1. Introduction

1.1 Background

German football clubs like Borussia Dortmund, Karlsruher SC or Schalke 04 started or plan to start collaborating with equipment suppliers and club fans to create new designs for the team's football kits (Sport 1, 2022; KSC, 2022; Schalke 04, 2023). Football is a global industry (McNamara et al., 2013; Pongsakornrungsilp et al., 2008). German first division football clubs had merchandise turnovers between 174 billion euros and 184 billion euros during the seasons from 2017 until the season in 2022 (Statista, 2023). Such a collaboration between the football club, the equipment suppliers, and the club's fans is an example of co-creation, an innovation strategy. Co-creation is a strategy developed in the early 2000's (Prahalad & Ramaswamy, 2004a). Co-creation is an interactive process between a company and its consumers with the aim to create value together (Galvagno & Dalli, 2014). Although co-creation is a common innovation approach in several industries (Alves, 2013; Barile et al., 2020; Chen et al., 2017; Dahl et al., 2015; Schreier et al., 2012), in football is becoming a trend (Soccerbible, 2022). As such, understanding the success of co-creation in football becomes a relevant question for football club managers.

Co-creation research entails three distinct perspectives: the focal firm that co-creates, those involved in co-creation and the broader market, those that learn that a new product was the result of co-creation strategy. Co-creation includes benefits for companies, participating consumers and observing consumers (Alves & Wagner, 2017). First, for companies the goal is to bring new products to the market that meet consumers' needs better (Fuchs and Schreier, 2011). The implication is that value creation shifts from company's internal capabilities towards interactions with consumers (Ramaswamy, 2009). Therefore, the company's focus is on creating an environment that facilitates the interactions for co-creation for all participating stakeholders (Ramaswamy & Gouillart, 2010). Companies can gain a competitive advantage among competition and financial benefits (Nishikawa et al., 2013; Van Doorn et al., 2010). Secondly, those consumers that participate in co-creation, experience two types of co-creation effects: regarding the product and buying behaviour. Further, participating consumers develop psychological connections (Fuchs et al., 2010). Finally, observing consumers are the major part of the market (Kristal et al., 2016; Zhang et al., 2022). Observing consumers have positive association resulting in innovation perceptions (Schreier et al., 2012) and behavioural intentions such as purchase intentions (Dahl et al., 2015). Further, observing consumers receive a company that focuses on customer needs (Fuchs & Schreier, 2011; Nuttavuthisit, 2010). However, scholars have also pointed to negative associations of co-created products namely, in

case of high complexity or luxury products (Fuchs & Schreier, 2011; Franke et al., 2009; Fuchs et al., 2013).

The main objective of this study is to understand how observing consumers' age affect the perception of firms that co-create with consumers. The positive effect of co-creation effect is measured in perceived innovation ability (Schreier et al.,2012), which will then influence behavioural change through higher purchase intention, willingness to pay and willingness to recommend (Dahl et al.,2015; Franke et al.,2010; Schreier et al., 2012). As such, we address a gap in literature, to understand the value of co-creation effect for firms, through a quantitative study where we test how age of observing consumers affect perception of firms that co-create. This research argues that from the point of view of observing consumers, co-creation may not be as beneficial as stated in the literature during the 2010's (Alves, 2013). We used one boundary conditions for the effect, relating to the social account, firm identification, as stated by Dahl and colleagues (2015). The integration of consumers into the business, enhances company identity assumptions among observing consumers, as they belong to the same consumer category. User-driven companies go along with the consumer's own social identity and strengthen his psychological bond with the company (Dahl et al., 2015). When user-driven companies enable observing consumers to establish a company identification, consumers develop a preference to buy from user-driven firms compared to designer-driven firms (Park et al., 2010).

Consumers rely on corporate associations when evaluating new products, especially in case of the innovation association (Brown & Dacin, 1997; Gürhan-Canli & Batra, 2004). Schreier et al. (2012) explains the innovation perception of co-creation based the number of participating consumers, their diverse characteristics, the consumer himself and no constraints by the company. Following generational theory, people belonging to the same generation have comparable underlying value systems that shape their attitudes and serve as indicators of expectations and behaviour (Schewe & Noble, 2000). Therefore, generational differences have an impact on the innovation perception of co-creation. Generational theory is a socio-cultural theoretical framework to identify tendencies and patterns among different generational groups (Pendergast, 2009).

Understanding the relevance of the co-creation effect is important for firms and managers. First, firms are pressured by markets to constantly introduce new products in the market, thus needing to rely on an effective innovation strategy (Tellis et al., 2009). Second, Schimdt and colleagues (2012) indicated that innovations targeted to consumer groups with similar traits are more likely to succeed. With this reasoning addressing age cohorts that display favourable behavioural

attitudes to co-created products is a desired strategy. In fact, research indicated significant differences between age cohorts to the introduction of new products. Older consumers differ from younger consumers in their decision buying processes, important for managers (e.g. purchasing intention, brand loyalty, risk-taking and openness to new products) (Lambert-Pandraud et al., 2005; Lambert-Pandraud & Laurent, 2010). As such, studying age can provide insights for firms adopting a co-creation strategy.

Innovation scholar have referred to co-creation since the beginning of the century (von Hippel, 2005), nonetheless the way consumers' age moderates the positive effect still lacks further analysis (Lude et al., 2016). Reviewing the literature sheds some answer why some confusion still prevails. On one hand, several studies have used different levels of product complexity when testing the co-creation effect on the broader market, which challenges generalization of findings. On the other hand, the level of consumer involvement in the co-creation process has been advertised to different degrees. At the same, the cauterization of age groups is far from being uniform across research. As a result, studies are difficult to compare.

The aim of this study is to provide an extension of existing literature on co-creation. We want to research the impact of social identification with the company and age effects on co-creation.

1.2 Dissertation structure

The second chapter of this dissertation provides an academic literature review of co-creation, its perceived innovation ability and the effect on behavioural intentions of consumers. Further, the potential impact of customer-company identification and age on the perceived innovation of co-creation are investigated. The aim of the literature review is to build a base for the development of the conceptual model and the hypotheses. Chapter three explains our conceptual research framework for our study. Chapter four illustrates the applied methodology for the data collection. Chapter five shows our analysis. In the end, chapter six presents the findings of the study, informs about limitations, provides academic as well as managerial implications and gives an outlook for further research.

2. Literature Review

2.1 Definition of co-creation

Through theoretical essays and empirical investigations, co-creation has rapidly gained popularity since the early 2000s, challenging some pillars of capitalist economies. During the 19th and 20th century value in capitalist economies was typically established prior to a market trade (Prahalad & Ramaswamy, 2000, 2004a, b; Vargo & Lusch, 2004). When introducing co-creation, Prahalad & Ramaswamy (2000) noted how roles in the market were evolving. There was a new role noted in consumers, consumers were becoming part of the value creation process of companies (von Hippel, 2005; Franke et al., 2010). Suppliers and customers work together with the focal company outside of the traditional pricing framework. The pricing framework is mediating supply-demand connections, considering commercial and consumer marketplaces, as well as the linkages with suppliers and customers (Prahalad & Ramaswamy, 2000). There are big differences in the way of value creation compared to the classic demand vs supply model. In co-creation, companies and consumers are on the same side in developing new business opportunities, meaning that consumers are part of the process. In the classic model, only the company and its internal capabilities are responsible for the development of new products (Galvagno & Dalli, 2014).

Prahalad & Ramaswamy (2004a) define co-creation as the: “joint creation of value by the company and the customer.” Therefore, the process of co-creation can be summed up as collaboration between the firm and its customer in co-ideation, co-design, and co-development of new products (Prahalad & Ramaswamy, 2004a). Co-ideation is a collaborative dialogue to generate and share new ideas (Pearce et al., 2020). Research often mentions co-ideation in the design and technology integration context (Boudhraa et al., 2021; Chiou et al., 2023; Fitzpatrick et al., 2023; Rassmus-Gröhn et al., 2017). Co-design is a coming together of researchers, designers and consumers to cooperate together, often applied in the public sector (Blomkamp, 2018; Donetto et al., 2015; Huybrechts et al., 2017; Visser et al., 2005). In co-development, the consumers take a role of an active team member, used in technological industries (Athaide et al., 2003; Chesbrough & Schwartz, 2007; Neale & Corkendale, 1998). Further, Galvagno & Dalli (2014) define co-creation as interactive process, that allows companies and its customers to create value. These two definitions of value co-creation have in common an interaction between the company and the consumer. Companies view customers as a possible source of competence. Consumers offer companies more resources and activities with the goal of long-term relationships (Prahalad & Ramaswamy, 2000).

2.2 Perspectives of co-creation

Co-creation directly influences the company, through associations and product perceptions and feelings of belonging and empowerment of participating consumers (Ramaswamy & Gouillart, 2010). Foregoing studies discovered that co-creation also impacts observing consumers (Nishikawa et al., 2013; Schreier et al., 2012).

Company: Although the market introduction of new products is a complex and difficult task, the successful launch of new products is part of organization's main goals (O'Hern & Rindfleisch, 2009; von Hippel, 2005). Failure rates by the market introduction of new products are extremely high, as the products are not exactly matching the consumer needs (Ogawa & Piller, 2006). Research discovered four key advantages when companies use co-creation as their innovation strategy: (1) Number of ideas, (2) diversity of ideas, (3) consumer-insights, and (4) just-in-time knowledge. Including consumers in the innovation process, enables a high amount of people to participate with their ideas (Schreier et al., 2012). Quantity provides quality, the higher the number of ideas, the higher the likeability to result in a new, innovative product (e.g. Troy et al., 2001; Valacich et al. 1995). Threadless has a user community of over 800.000 members submitting nearly 200 new design ideas per day, at least nine of the new product ideas go into sale each week (Nishikawa et al., 2013).

Consumers seem to have an advantage over professional designers in terms of innovation, as interpreting customer needs and wishes is easier for consumer and therefore resulting in more successful innovations (Nishikawa et al., 2013). In addition, some consumers probably tried to solve product issues on their own behalf. Consequently, these consumers could be able to predict future customer needs and provide companies an advantage among competitors (von Hippel, 2005).

The big number of people accessing co-creation, have a higher diversity as the company's designers (Nishikawa et al., 2013). Scholars propose that a high diversity has an increased probability to produce an outstanding idea (e.g. Schreier et al., 2012; Surowiecki, 2004; Terwiesch & Ulrich, 2009).

Lastly, co-creation gives companies access to just-in-time knowledge. The direct communication between the companies' employees and the consumers, increases the likeability to recognize flaws in products or services rapidly. The recognition of flaws is an advantage among competition (Roser et al., 2009). Henkel & von Hippel (2004) state that reliable just-in-time information about consumer preferences are the key source for the innovation process. The four key advantages of co-creation, closely go along with the findings of a study by Schreier et al. (2012). Schreier and researchers (2012) also use the four assumptions to explain

the innovation ability of co-creation: number of participants, perceived diversity, the consumer itself.

Customer involvement is an effective part of the innovation process due to number of ideas, diversity of ideas, consumer-insights, and just-in-time knowledge, increasing the possibility of consumers valuing the new product leading to a successful launch (Hoyer et al., 2010). Maintaining an effective innovation process through co-creation gives companies a sustainable competitive advantage in the market (Prahalad and Ramaswamy, 2004b).

Participating consumers: Foregoing research identified a positive effect of consumer involvement on participating consumers of co-creation activities. The consumer-involvement in co-creation activities can be divided into two streams: the co-creation effect of participating consumers regarding the product and the co-creation effect on the participating consumers buying behaviour. While investigating the co-creation effect, Fuchs et al. (2010) noted the development of psychological connections, such as loyalty and ownerships feelings, by participating consumers. Further psychological effects of consumer-involvement are emotional bonding, commitment, trust and greater customer satisfaction (Brodie et al., 2013). Higher ownership feelings of products by consumers lead to a higher product demand (Peck & Shu, 2009). According to Fuchs and researchers (2010), participating consumers show a stronger demand for their selected product. Additionally, Sawhney et al. (2005) discovered that participating consumers have a higher brand loyalty and purchase intentions towards products they have created. Researchers agree that involved consumers normally have a higher loyalty and commitment, leading to an increasing demand for the company's products.

Observing Consumers: The majority of consumers are observers of co-creation (Kristal et al., 2016). Observing consumers are the most extensive market component (Zhang et al., 2022). These consumers perceive companies relying on co-creation as an innovation strategy, with positive attitudes and as a customer-oriented company. These perceptions lead them to behavioural intentions, in particular increased trial, purchase repetition, positive word-of-mouth and willingness to recommend (Fuchs & Schreier, 2011; Van Dijk et al., 2014). Further, consumers get stimulated to perceive these companies as innovative (Meißner et al., 2017). Research in advertising co-creation discovered that these advertisements contain information about participating consumers of the co-creation process. Therefore, observing consumers have similarity perceptions with these participating consumers and a higher company evaluation (Thompson & Malaviya, 2013).

On the other side, observers do not have only positive perceptions of co-creation. If the

consumer engagement is perceived negative this could lead to co-destruction (Siddique et al., 2021). In case of high complex products, participating consumers are missing knowledge and observing consumer review critical the innovation potential (Franke et al., 2009; Schreier et al., 2012). Regarding luxury products, research examines that observers see the products with lower quality and status (Fuchs et al., 2013).

2.3 Benefits of co-creation

Terwiesch & Ulrich (2009) state that roughly a quarter of all innovation opportunities, result from customer interactions and new customer requirements. As such, firms are now turning their attention to consumers as potential sources of innovation.

Pursuing co-creation as innovation strategy brings benefits to the company. Increased consumer participation in value creation processes results in the integration of consumer's knowledge and skills, thereby generating new and important capacities (Prahalad & Ramaswamy, 2004b). Further, scholars classify co-creation as a source of competitive advantage because these products are closer to consumer needs (e.g. Lilien et al., 2002; Nishikawa et al., 2013; Poetz & Schreier, 2012; von Hippel, 2005; Zhang & Chen, 2008). Another point is, that co-creation stimulates innovation and the development of new market trends (Vargo et al., 2008). According to Van Doorn et al. (2010), co-creation means remarkable financial gains for companies. Further, co-creation leads to a higher customer satisfaction (Vega-Vazquez et al., 2013). During co-creation, companies receive the consumers capacities and knowledge as part of their resources (Alves & Wagner, 2017).

Participating in co-creation provides a number of benefits for those consumers. Consumers have the opportunity to receive a product that meets customer needs (Nuttavuthisit, 2010). According to Arnould et al. (2006) and Baron & Harris (2008), actively participating in experiences enables consumers to obtain personal value through the integration of their operating resources into the co-consumer of experiences as well as collective value through the integration of their physical, social, and cultural resources into the experience of consuming. Furthermore, consumers generate benefits for themselves or others (Nuttavuthisit, 2010). Generated benefits from participating consumers are self-efficacy, trust, or perceived benefits, such as lower costs, better adaption, higher speed of service, higher convenience or more brand differentiation (Alves & Wagner, 2017). Research shows that there could be psychological effects among participating users. According to Fuchs et al. (2010), participating consumers co-creation activities lead to a positive influence on the demand for the products of a company fostering co-creation (see also Ramani & Kumar, 2008).

Observing consumers tend to prefer user-driven companies (Dahl et al., 2015). Conforming to Schreier et al. (2012), observing consumers relate companies pursuing co-creation in low-tech industries with a higher ability to develop new and useful products. Consumers have the belief that they prioritize consumer interests, and therefore they have a better understanding and a higher willingness to take user needs into account (Fuchs & Schreier, 2011).

Following that, Prahalad & Ramaswamy (2003, 2004a, b) analysed and outlined the different ways that co-creation could lead benefits to businesses and clients. In concrete, these benefits are improving consumption and usage experiences (Gentile et al., 2007; Payne et al., 2008) or stimulating product and service innovation (Sawhney et al., 2005; Bitner et al., 2008).

2.4 The co-creation effect: Perceived Innovation Ability

Consumers base their assumptions corporate associations when evaluating new products (Brown & Dacin, 1997). Consumers have several associations in mind about a company's product (Keller, 2003), namely the innovation association (Gürhan-Canli & Batra, 2004). The innovation association refers to the perceived company efforts in research and development, employing new technologies and manufacturing new products (Keller, 2003). Innovation ability perceptions influence how consumers view the company and how the consumers rate the company's products. Consumers refer to associations of the company when evaluating new products (Gürhan-Canli & Batra, 2004).

Corporate ability associations have an influence on subjective attribute perceptions (Brown & Dacin, 1997), specifically on the firm's innovation potential. When a company is perceived as innovative, the company has a competitive advantage among competitors, as the competitive advantage as a positive impact on the consumer's buying behaviour (Schreier et al., 2012). Scholars are still discussing the ideal innovation strategy model for companies (Poetz & Schreier, 2012): internal professionals or outside sources. Based on a detailed marketing research and the use of theoretical approaches for new product development, (e.g., Amabile et al., 2005; Goldenberg et al., 2001; Majchrzak et al., 2004; Schulze & Hoegl, 2008), companies' professionals aim to identify and solve a significant consumer problem. The traditional belief is that the professional employees of a company have the necessary experience and expertise to develop new product ideas that better match consumer needs than ideas and products that are developed by users (thus external to the company) (Ulrich, 2007; Ulrich & Eppinger, 2008). The reasoning is that a new product is mainly outside the scope of the consumer's experience (Cooper, 1990). Scholars have argued that customers are too familiar with the actual product and have not the ability to develop innovative product ideas (Leonard & Rayport, 1997). As

Schulze & Hoegl (2008) show when users are asked to describe a new potential product, most often consumers cannot bring out different novel products (Schulze & Hoegl, 2008, p. 1744). Following this line of thought companies should rely on professionals to develop new product ideas (Poetz & Schreier, 2012).

An alternative literature stream argues that users are well equipped to develop new products (Jeppesen & Frederiksen, 2006). A growing number of studies illustrates that consumers innovate products for their own purpose and that the majority of these innovations are very interesting from a commercial point of view (Dahl et al., 2015; Schreier et al., 2012; von Hippel, 2005). Take the open-source software Apache or Linux for instance, exclusively developed by a user community for firms (Bagozzi & Dholakia, 2006; Lakhani & von Hippel, 2003; Lerner & Tirole, 2002; Pitt et al., 2006). The success of Apache, outperforming Microsoft in the web server security market, had a strong impact on users in new product development processes (Poetz & Schreier, 2012). Some leading companies started to test the potential of their consumers (Schreier et al., 2012). A study of Schreier et al. (2012) found evidence that companies focusing on co-creation as innovation strategy were perceived as more innovative than companies relying on professional designers as innovation strategy. The first argument is the number of participating consumers. As higher the number of ideas, the higher the likeability of resulting in highly creative new products (Troy et al., 2001; Valacich et al., 1995; Van Gundy, 1988). Conversely, companies are limited in cause of financial resources and are only able to hire a certain number of professional designers. The principle is known as quantity – quality inference (Osborn, 1963). The second argument is the perceived diversity, similar to the number's argument, a high number of consumers has diverse characteristics interests, skills, or background (Schreier et al., 2012). A small number of professional designers might only partly represent the diversity of the general public (Rigby & Viswanath, 2006). If contributors of creative processes have a similar background, the possibility of the results being similar too is high (Sethi et al., 2001). The third finding is the consumer itself, as they probably associate co-creation with a higher innovation ability as consumers are a part of them. Contrary company designers are not mandatory consumers. Therefore, designers are not directly exposed to the problems that customers face and could not be aware of consumer requirements and wants. In fact, it appears that consumers view co-creation as a method to have deep insight into unsolved consuming issues, which could give them a variety of places to start when coming up with original and helpful solutions (Von Hippel, 2005). The fourth and last finding is constraints. Consumers are perceived as less constrained by company conditions as profit targets, deadlines, corporate design, or brand positioning (Schreier et al., 2012). Furthermore, it will be easier for

users to lead their visions and ideas in their direction. Conversely, the creativity of corporate designers may be perceived as limited due to their subordination to higher-level corporate objectives and their limitations imposed by formally defined procedures (Schreier et al., 2012).

Importantly, research showed broad empirical evidence on consumer perception on innovation of the company itself and its products, linked to positive purchasing behaviour and customer satisfaction (Chun & Davies, 2006; Szymanski et al., 2006; Troy & Davidow, 1998). To sum up, this paragraph outlines the reasons of the perceived innovation ability of co-creation compared to professional design in the innovation context.. Therefore, the first hypothesis is the following:

H1: Observing consumers perceive companies that use co-creation for new product development with higher innovation ability compared companies to professional designed products.

2.5 Customer-company identification and co-creation

The interactions between consumer and company are the centre of co-creation (Ramaswamy & Gouillart, 2010). Through the interactions with the consumers, the company gathers customer needs, and is able to use these needs to offer their customers better value propositions in future (Randall et al., 2011) Referring to co-creation, consumers are one of the most important sources of innovation and value co-creation, thus a business needs to engage with them to understand their requirements and desires (Grott et al., 2019). Linking to the findings of Schreier et al. (2012), the higher the number of participants, the higher the possibility of an innovative outcome in co-creation. Social identity theory proposes that people express a sense of themselves, when developing a social identity (Tajfel & Turner, 1986). Identity theory also suggests that people don't perceive themselves as "me" but also as "we" or "us" (Turner, 1999). Dahl et al. (2015) discovered that observing consumers have feelings of belonging to the group of participating consumers. Research in advertising co-creation discovered that these advertisements has been created with consumers. Therefore, observing consumers have similarity perceptions with participating consumers and evaluate the company higher (Thompson & Malaviya, 2013). Organization identification is when a person feels a connection to an organisation and starts to define themselves in terms of the organisation, (Mael & Ashforth, 1992). Organizational identification describes the extent to which a person's self-concept and the perception of the company overlap (Dutton et al., 1994). People's perceived

alignment with the organisation raises one self-esteem because individuals see the organization as conforming to their norms and values, which are reflections of their self-concepts (Scott & Lane, 2000).

In the beginning of the 2000's, marketing researchers (e.g., Bhattacharya & Sen, 2003; Sen & Bhattacharya, 2001), have extended the concept of organizational identification, to include the customer and labelled the new concept as customer-company identification. Customer-company identification is the psychological bond that customers have with a company as a result of the significant overlap in how consumers see the firm and themselves (Du et al., 2007). Customer-company identification has a strong impact on the consumers' co-creation activities (Luu, 2019). Consumers aim to take part in co-creation activities by providing input and helping to design products and services once having a connection to the company (Bhattacharya & Sen, 2003). Referring to the social identity theory, organizational identification with a company increases the number of social interactions between the company and its consumers, resulting in customer citizenship behaviour (Dutton et al., 1994; Hur et al., 2018). When a consumer identifies himself with the company, the consumer is willing to participate in the company's co-creation activities through providing feedback and being involved in product and service design (Bhattacharya & Sen, 2003). Raza et al.'s (2020) study revealed a positive effect of customer-company identification on the relationship with co-creation.

As literature illustrated, customer-company identification has a positive influence on the number of consumers participating in co-creation activities (Luu, 2019). Examining the relevance of the mediator, Dahl et al. (2015) revealed that observing consumers develop feelings of similarity towards participating consumers in the co-creation process. Referring to quantity-quality inference by Troy et al. (20019 aligned with the numbers argument of Schreier et al. (2012) towards perceived innovation, we propose that customer-company identification is mediating the relationship between co-creation and perceived innovation ability. More formal:

H2: Observing consumers preference for co-created products will be mediated by consumer company identification such that for consumer who feel low (high) company identification perceived lower (higher) innovation ability.

2.6 Age cohorts and perceived innovation ability co-creation

Age cohorts can be defined as homogeneous groups of individuals, born in the same particular time period, experiencing a series of historic occurrences, sharing their experiences and creating unique experiences (Gardiner et al., 2013). According to generational theory, people with a

similar age have comparable underlying value systems that shape their attitudes and serve as indicators of expectations and behaviour since those people had similar experiences and events (Schewe & Noble, 2000). Generational theory is a socio-cultural theoretical framework that helps identify tendencies and patterns among different generational groups (Pendergast, 2009). There exist four different generations in social sciences (McCrinkle, 2013): Baby boomers, born between 1945 and 1964, receiving the name baby boomers due to baby and economic boom (Szromek et al., 2019). Generation X is born between 1965 and 1980, growing up during the economic crisis of the 70's (Williams & Page, 2011). Generation Y is born between 1981 and 1994, during the era of globalization and worldwide access to the internet, therefore also known as Millennials (Young, 2015). People born between the range of 1997 and 2012 are considered as Generation Z (Beresford Research, 2022).

Lambert-Pandraud and colleagues (2005) conducted research on age and the way age affects the evaluation of new products. Findings revealed that older respondents tend to value new products lower than younger consumers. The reason is that older consumers appreciate long term relationships and therefore have a preference for established products (Lambert-Pandraud et al., 2005; Schmidt et al., 2012; Laurent & Lambert-Pandraud, 2010). Although younger consumers are more likely to switch brands and to show a more innovative attitude (Laurent & Lambert-Pandraud, 2010). This phenomena of younger consumer is classified as exploratory behaviour by Lesser & Kunkle (1991). Exploratory behaviour leads younger consumers to a higher willingness to try new products, without knowing if the new product leads to satisfaction or not. In contrast, older consumers have a higher probability to rely on well-known products with the aim of eliminating the risk of new products prioritizing over satisfaction (Laurent & Lambert-Pandraud, 2010). Lude et al. (2016) states that co-creation is perceived as new concept by observing consumers. As younger consumers are more willing to try novelties compared to older consumers, younger consumers might have a preference for co-creation. A study by Lude et al. (2016) investigated how age has an effect on the perception of companies that co-create with consumers. Findings of the study discovered that younger consumers have a higher perceived innovation ability of companies pursuing co-creation with consumers as innovation strategy, compared to older consumers. Lude et al. (2016) divided participants into the following four age cohorts: 14-25 years, 26-30 years, 31-47 years and 48+ years. Results show that respondents aged between 14 and 25 years had the highest positive reaction towards co-creation, respondents having 48 years, or more weren't concerned whether the product was co-created or not.

An important assumption of the innovation effect of co-creation is that observing consumers

have the feeling that the company has the innovation ability to come up with new product ideas. Research has shown that younger consumers are more likely to perceive co-creation as new concept compared to older consumers (Lude et al., 2016). More formally:

H3: The positive effect of co-creation on perceived innovation ability is strengthened in younger consumers.

2.7 Age cohorts and customer-company identification

In the study of the effect of consumer's age on perceived innovation ability of co-creation, Lude et al. (2016) argues for the investigation of the effect of observing consumers perceived familiarity with participating consumers. Based on their sample, Lude et al. (2016) propose that younger consumers have higher identification towards participating consumers than older consumers. The suggested similarity might affect the perceived innovation ability of co-creation for younger consumers. To illustrate the relevance of our moderator we follow the findings of Dahl and researchers (2015): Observing consumers feeling similar to participating consumers, could feel a connection to the company due to the "we" effect of (Turner, 1999). An important assumption of the innovation effect of co-creation is that observing consumers feel that the firm has that innovation capacity to come up with products that are relevant to the focal consumer. As such the more consumers identify with the firm the more likely they are to perceive innovation potential in the firm. This can be drawn from the knowledge in use perspective (von Hippel, 2005) since as more people like me are contributing to the firms products the more I feel the company understands me and can provide me a more innovative product catered to my needs. As such, our hypothesis is the following:

H4: The positive effect of customer-company identification on perceived innovation ability is strengthened in younger consumers.

2.8 Co-creation and behavioural intentions

Innovation ability perceptions have an impact on how consumers evaluate companies and products (Schreier et al., 2012). Consumers refer to associations with the company when evaluating the company's new products (Gürhan-Canli & Batra, 2004). There exists broad empirical evidence company's innovation perception, the innovation perception of their products and positive behavioural intentions of consumers (Chun & Davies, 2006; Szymanski et al., 2006; Troy & Davidow, 1998). A high perceived innovation ability of co-created products indicates positive behavioural intentions from observing consumers towards the firm (Schreier et al., 2012, Lude et al., 2016). That also has a positive impact on the consumers' purchase

intention (Dahl et al.,2015). Also, studies showed that consumers are willing to pay more for co-created products (Franke et al., 2010; Franke & Piller, 2004). Further, a study by Schreier et al. (2012) revealed that consumers have a higher willingness to recommend by co-created products. In our research, we want to investigate whether observing consumers still behave in favour of co-creation. We assume that consumers have a stronger demand towards co-created products. Our hypothesis therefore is the following:

H5: Observing consumers tend to have more favourable behavioural intentions in specific, purchase intention, willingness to pay and willingness to recommend towards companies-focusing on co-creation compared to companies focusing professional designed products.

The following model was drawn to illustrate the conceptual model for the investigation and to summarise the previous literature review.

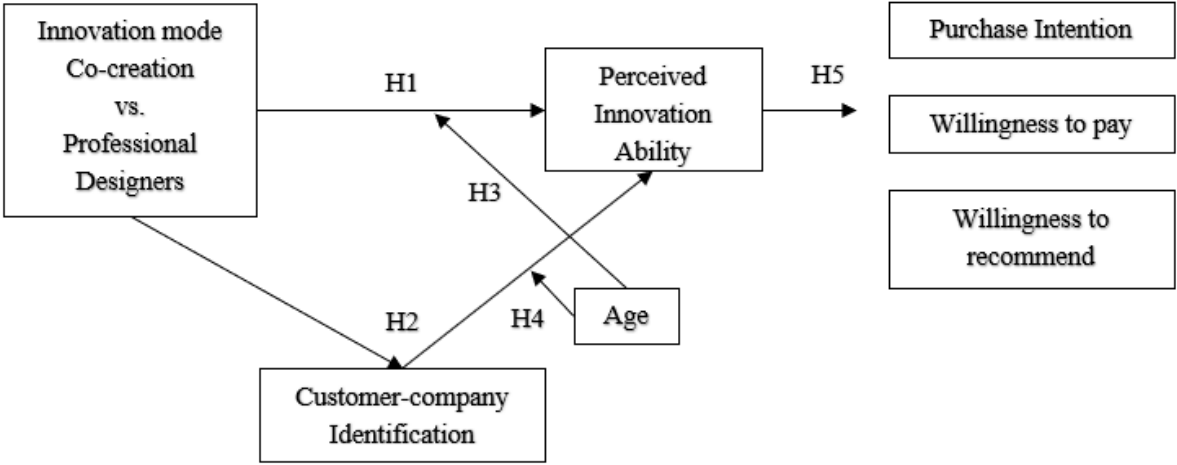


Figure 1: Conceptual model

3. Methodology

Study overview

The hypotheses presented were tested by using football shirts as the product category. First, we aimed to confirm the positive influence of co-creation, on perceived innovation ability (H1). Then we tested the positive relationship of company identification on perceived innovation ability of firms that co-create (H2). Then we explored the main purpose of this study, to evaluate how age affects perception of the firms’ innovation ability (H3). The we investigated the relationship between customer-company identification and age H4). Lastly, we tested the effects of co-creation on the behavioural outcomes, namely purchase intention, willingness to pay and willingness to recommend (H5).

An experimental research design was used to evaluate the study used in this thesis. Experimental design is characterised through a controlled environment that enables high precision for specific conclusion on a hypothesis statement. Therefore, experimental design enables to verify the presented hypotheses in the literature review. In general, the goal is to determine how an independent variable or factor affects a dependent variable. A researcher can establish causal linkages and draw conclusions about causality more effectively when using an experimental design that ensures accurate and precise empirical measurement and control. Further, the experimental approach is very popular in scientific research and was used by former research in the context of co-creation (Bell, 2009; Schreier et al., 2012).

Our study aims to evaluate whether co-creation is still perceived as an innovative approach. The influence of customer-company identification and the age of the participants on the perceived innovation ability of co-creation will be analysed. As co-creation is still suggested as innovative the behavioural intentions towards co-created products and the effect of age will also be investigated.

Product Category

The choice of a football shirt as a stimulus was based on existing research on perceptions of co-created products. T-shirts are categorized as low-complexity product, are common among all age groups and can be applied to every gender (Schreier et al., 2012). A football shirt can be compared to a normal t-shirt and is therefore a good fit for the research in the area of co-creation.

Age Cohorts

The choice of age cohort was based on foregoing studies on age and the perception of products. Generational cohorts baby boomers, Generation X, Y and Z, are not applicable due to our sample. We do not have sufficient representatives for each generation. A study by Schmidt et al. (2012) used a classification of 21 years and younger, 21 - 34 years and 35 years and older. By applying Schmidt et al.'s (2012) age cohort, our sample would not be distributed equally. A study by Statista (2022) on the demographics of worldwide inter users used the following age cohort: 18-24, 25-34, 35-44, 45-54, 55+. As there is no overall agreement when a person is considered as old (Yoon et al., 2009). Based on the demographics of our participants we classified 19-24 as young and 25+ as old, as this age cohort gives us a balanced dataset (younger consumers (48.3%); older consumers (52.7%)). A demographic overview of our participants can be found in the appendix.

3.1 Method

The survey was administered online to collect respondents view on the topic co-creation. The survey method was applied because online surveys have a several benefits: flexibility, speed

and timeliness, no costs, large sample easy to obtain and mandatory to answer all questions (Evans & Mathur, 2005). The online survey was conducted via Qualtrics and shared among the personal network of the author with the help of social media as Instagram and WhatsApp. Answering all questions was mandatory and the participants were encouraged to answer all questions as honest as possible. The participants were informed before participating, that all their answers will be kept confident and anonymous. Thus, it is impossible to find a link between the participants responses and their identity.

3.2 Study Design

116 participants answered the survey ($M_{Age} = 25.37$ years, 16.4% females). The study followed a between-subject design of the innovation mode: co-creation vs non co-creation. At the start of the questionnaire, participants were randomly assigned to one of two scenarios. Scenario one is co-creation:

The survey is about co-creation and innovation. Co-creation is a collaboration between the company and its customer. German football club Karlsruher SC and their football kit manufacturer Macron have invited their fans to submit new design ideas for a football shirt. From more than 300 football shirt designs, representatives of the club and the manufacturer as well as fans have made a final choice:



Figure 2: Co-created football shirt

Participants exposed to scenario two (professional designs) were shown a distinct introduction: The survey is about professional design and innovation. Professionals of the manufacturer are responsible for the design of the football shirt of German football club Karlsruher SC. The result of their work is shown below:



Figure 3: Professional designed football shirt

A detailed overview of the two scenarios is provided in the appendix (block 2, block 3). After reading the perspective scenario participants answered the manipulation check where participants had to choose the innovation strategy of their scenario. Afterwards, participants answered a question about the perceived rate of the innovation ability in the innovation strategy presented (Ziamou et al., 2003). Next, participants had to indicate their agreement to three statements regarding purchase intention towards the football shirt either co-created or professional designed (Mohr & Webb, 2005). The following question related to participants' willingness to pay for the product, in particular if they are willing to pay more (Ha-Brookshire & Norum, 2011). And then respondents had to state their position in two statements regarding their willingness to recommend the product (Hosany & Prayag, 2013). Before the final question, participants were asked about whether the innovation strategy enhanced participants' identification with the football club. Participants had to express their opinion to six statements adapted from a study of Mael & Ashforth (1992).

The final part of the survey were questions about the demographics of the participant including age, gender, level of education, current employment status and nationality. The complete questionnaire is attached in the appendix.

Sample

We collected 116 valid answers in total. The participants were aged between 19 and 69. The majority of participants are ranged between 20 and 25 (69% of the sample).

81.4% of the participants were male, while 16.4% were female and one participant denied revealing his gender. Most of participants have a university degree, either bachelor (35.3%) or a master (37.1%). 58.6% of them are fulltime employees, while 36.2% are students. In total, people from eight or more countries participated in our survey. The majority is from Germany with 58.6%, followed by Portugal with 13.8% and Italy and Netherlands with 7.8% each. The rest of participants has either Austrian, French, Spanish or other roots.

3.3 Measures

Table 1 shows an overview of all measures and item sources of the questionnaire of the online survey. The order is the same as asked in the questionnaire. Results from related study areas were used to gather, compare, and choose the survey questions. For all the answers either a five-point, a seven-point or a nine-point likert scale was applied. Below in the table on the next page, there is an explanation of all measure to guarantee a full understanding.

Variable	Literature	Items	Scale
Perceived Innovation Ability	Ziamou & Ratneshwar (2003)	How innovative is the design of the football shirt?	<i>1 = minor variation of existing product – 9 = completely new product</i>
Purchase Intention	Mohr & Webb (2005)	How likely would you buy this football shirt?	<i>a) 1 = very unlikely / 7 = very likely b) 1 = impossible / 7 = very possible c) 1 = no chance / 7 = certain</i>
Willingness to pay	Ha-Brookshire & Norum, (2011)	(1) I would be willing to pay more for a co-created designed football shirt. (2) I would be willing to pay more for a professional designed football shirt.	<i>1 = strongly disagree and 5 = strongly agree</i>
Willingness to recommend	Hosany & Prayag, (2013)	(1) I would say positive things about this football shirt. (2) I would recommend this football shirt to my friends/family.	<i>1 = strongly disagree; 7 = strongly agree</i>
Identification	Mael & Ashforth, (1992)	How do you agree with the following statements? 1. When someone criticizes Karlsruher SC, it feels like a personal insult. 2. I am very interested in what others think about Karlsruher SC 3. When I talk about Karlsruher SC, I usually say 'we' rather than 'they'. 4. Karlsruher SC's successes are my successes. 5. When someone praises Karlsruher SC, it feels like a personal compliment. 6. If a story in the media criticized Karlsruher SC, I would feel embarrassed.	<i>1 = strongly disagree and 5 = strongly agree</i>
Demographics	Construct of the author	What is your age? Please insert. Gender, Education Level, Current Employment Status, Nationality	Open question for age, different scales for the other demographics

Table 1 - Overview - measures of the survey

3.3.1 Perceived innovation ability

To assess consumers' perceived ability for innovation, we adapted a question from Ziamou et al. (2003) study. Participants were asked one single question "How innovative is the design of the football shirt?" and evaluate the design on a scale from 1 (=minor variation of existing product) to 9 (=completely new product). According to Rossiter (2002), single item is applicable when the two following conditions are given: 1) The construct consists of one object that is easy to understand for the participant. 2) The construct itself is easy to understand for the participant. We assume that through our scenarios with a picture of the product and a short description, these two conditions are fulfilled and therefore decided for single item measurement.

3.3.2 Purchase intention

The purchase intention was investigated with Mohr and Webb (2005)' scale. The scale consists of three seven-point likert scales about the possibility of the participant buying the product. In detail the participant were asked to rate from 1 (=Very unlikely/impossible/No chance) to 7 (=Very likely/Very possible/Certain) their intention to buy the product. As the previous question, these answers are referred to the innovation strategy presented in the introduction.

3.3.3 Willingness to pay

To assess the willingness to pay, the participant had to answer a question from a study by Ha-Brookshire & Norum (2011). The answer is based on a five-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and refers to his willingness to pay more for either a co-created or a professional designed product depending on the scenario he was randomly assigned to.

3.3.4 Willingness to recommend.

To examine the willingness to recommend, participants had to state their opinion in two statements if they would say positive things about the product and recommend the shirt to their family or friends (Hosany & Prayag, 2013). The answer was presented through a five-point likert scale with a range from 1 (=strongly disagree) to 5 (=strongly agree).

3.3.5 Identification

The evaluation of the identification towards the football club was made through six statements adapted from a study by Mael & Ashforth (1992).). The statements ask about the personal connection regarding Karlsruher SC and their feelings when participants talk about the football club or somebody else does (1. When someone criticizes Karlsruher SC, it feels like a personal

insult. 2. I am very interested in what others think about Karlsruher SC 3. When I talk about Karlsruher SC, I usually say ‘we’ rather than ‘they’. 4. Karlsruher SC’s successes are my successes. 5. When someone praises Karlsruher SC, it feels like a personal compliment. 6. If a story in the media criticized Karlsruher SC, I would feel embarrassed.). The answers followed a five-point likert scale ranging from 1 (=strongly disagree) to 5 (=strongly agree).

3.3.6 Demographics

The demographics as final part of the survey consists of questions regarding the age, gender, education level, current employment status and nationality of the participant. As age is a relevant factor for our analysis participants were asked to insert their exact age.

3.4 Scale reliability

For the inspection of the analysis of the internal consistency between the concepts of the study, Cronbach's α is applied. Cronbach's alpha is an implicatory for the degree to which the survey's questions correspond to the study's subject. A value of $\alpha > 0.80$ indicates that the scale used in the survey is reliable (Field, 2013).

The variable purchase intention consisted of a block with three seven-point likert scales. Purchase intention shows a high reliability with a Cronbach's $\alpha = .927$ (see table 2). The identification variable consists of 6 questions with a five-point likert scale. A Cronbach's $\alpha = .952$ shows a high reliability.

Variable	Items	Cronbach's alpha	Items deleted	Final number of items
Purchase Intention	3	0.927	-	3
Identification	6	0.952	-	6

Table 2 - Cronbach's alpha for variables

The variable willingness to recommend has two items measured by a seven-point likert scale. To test reliability, Pearson's correlation coefficient was applied. If the correlation coefficient has a value between 0.50 and 1.00 it is a strong correlation, a between 0.30 and 0.49 indicates medium correlation and a value below 0.29 is an indicator for low correlation. The Pearson's correlation coefficient between the items is .753, indicating a strong correlation. A p-value of $<.001$ shows that the correlation is significant and indicates that this variable is reliable.

Variable	Items	Item Correlation	Significance
Intention to recommend	2	0.753	$<.001$

Table 3 - Pearson's correlation coefficient

As the variables perceived innovation ability and willingness to pay are single items variables, it is not possible to test their scale reliability.

3.5 Manipulation Check

We run a manipulation check to see if participants correctly understood the assigned scenario (co-creation vs professional design). The manipulation check was conducted by asking participants who was responsible for the innovation strategy, measured by the following three-point scale: 1 = “Professional designers”, 2= “Fans and professional designers” and 3 = “Fans”. The One-Way ANOVA test shows significant results comparing the two means, $M_{CC} = 2,92$ and $M_{Prof} = 1,05$, with $p < .001$. Significance is given by a p-value of $<.05$. More details are in the table below. For our analysis that means that both scenarios have been understood correctly and we can proceed with our analysis.

Scenario	N	Mean	95% LLCI	95% ULCI	Min	Max
Co-Creation	61	2.92	2.83	3.00	1	3
Professional Design	55	1.05	0.97	1.14	1	3
Total	116	2.03	1.85	2.22	1	3

Table 4 - Descriptives for manipulation check

	Sum of squares	Df	Mean Square	F	Significance
Between Groups	100.436	1	100.436	1002.024	<.001

Table 5 - One-Way ANOVA for manipulation check

4. Results and findings

4.1 Perceived innovation ability

Hypothesis 1 proposes that non-participating consumers perceive companies that co-create with consumers as having higher levels of innovation ability compared to firms that use professional designers.

H1: Observing consumers perceive companies that use co-creation for new product development with higher innovation ability compared companies to professional designed products.

To test H1, we performed a one-way ANOVA to test the effect of the innovation mode as the independent variable on perceived innovation ability as dependent variable. Co-created products were perceived as more innovative than the professional design ($M_{cc} = 6.15$, Std Dev = 1.642; $M_{Prof} = 4.25$, Std Dev = 2.171) (see table 6). The positive effect of co-creation on perceived innovation ability was identified ($F(1,103) = 28,394$, $p < .001$). A p-value of $p < .001$ indicates a significant impact of the innovation type on the innovation perception. As participants have a higher innovation perception towards co-created products compared to professional designed products, hypothesis H1 is accepted. Details of the test are provided in table 6 and table 7.

Innovation mode	N	Mean	Std Dev
Co-Creation	61	6.15	1.642
Professional Design	55	4.25	2.171
Total	116	5.25	2.126

Table 6 - Descriptives of Perceived Innovation Ability

Innovation mode	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	103.642	1	103.642	28.394	<.001
Within Groups	416.108	114	3.650		
Total	519.750	115			

Table 7 - ANOVA for Perceived Innovation Ability

4.2 Customer-company identification

Hypothesis 2 aims to investigate the mediating effect of customer-company identification on perceived innovation ability, more detailly:

H2: Observing consumers preference for co-created products will be mediated by consumer company identification such that for consumer who feel low (high) company identification perceived lower (higher) innovation ability.

For the analysis of the mediation of customer-company identification, Andrew F. Hayes model 4 in “PROCESS” was applied. Through this method, the mediation of customer-company identification on the relationship between innovation mode and perceived innovation ability can be analysed. Therefore, we conducted the analysis with perceived innovation ability as dependent variable (Y, outcome variable), customer-company identification as the mediator (M) and innovation mode as independent variable (X, predictor). The model R² is indicated with 0.1994 for the variable customer-company identification, suggesting that 19.94% of the variance in perceived innovation ability is explained by the predictor variable, which is the innovation mode. The $\beta_{\text{constant}} = 4.245$ and is highly significant with a measured p-value < .00.

Also, the innovation mode $\beta_{\text{Innovation mode}} = 1.8930$ was found to be highly significant (p < .00). For the perceived innovation ability, the R² indicates that 30.55% of the total variance in perceived innovation ability can be explained by the innovation mode. The coefficients for the constant term, the innovation mode and the customer-company identification were all measured to be significant.

Finally, the indirect effect of the innovation mode on the perceived innovation ability through the mediator customer-company identification was measured. An indirect effect of innovation mode on the perceived innovation ability was estimated to be .5187. That suggests that a one-unit change in the innovation mode leads to a .5187-unit change in the perceived innovation ability through the effect on customer-company identification. This indirect effect is statistically significant because the confidence interval (BootLLCI = .2115 and BootULCI = .9028) does not include zero.

With these results given, we have evidence of mediation, which indicates that customer-company identification plays a significant role in explaining how the innovation mode affects the perceived innovation ability. Therefore, we can confirm our hypothesis H2, showing that customer-company identification plays a mediating role in explaining the relationship of the innovation mode and the perceived innovation ability. Details of the mediation analysis are illustrated in table 8.

Variable	Coefficient	p-value	Results
Customer-company identification <ul style="list-style-type: none"> ▪ Model R-sq ▪ Constant ▪ Innovation mode 	 4.2545 1.8930	 .0000 .0000	.1994
Perceived innovation ability <ul style="list-style-type: none"> ▪ Model R-sq ▪ Constant ▪ Innovation mode ▪ Customer-company identification 	 3.1333 1.3743 0.6106	 .0000 .0002 .0001	.3055
Indirect Effect (through customer-company identification)	Effect = .5187 BootSE = .1728 BootLLCI = .2115 BootULCI = .9028		Mediator

Table 8 - Mediation analysis of customer-company identification

4.3 Age effect on perceived innovation ability of co-creation

Hypothesis three aims to investigate the moderation effect of age on perceived innovation ability of co-creation, more detailly:

H3: The positive effect of co-creation on perceived innovation ability is strengthened in younger consumers.

With our third hypothesis, we test whether age moderates the effect of the innovation mode on perceived innovation ability. For our moderation analysis, we used “PROCESS” version 4.2 by Andrew F. Hayes model 1.

The interaction between innovation mode and age is described with the $\beta = -0.3738$. The coefficient explains the change in the predicted perceived innovation ability for a change of one unit in the interaction term. In this case, we can suggest that the interaction between the innovation mode and age is not significant, indicated by a p-value of 0.6078. The model explains the proportion of variance of perceived innovation ability, represented through the $R^2 = 0.4553$. The value indicates that 45.53% of the variance of perceived innovation ability is explained by our predictor variables customer-company identification and age, as well as the interaction between those.

The $\beta = 4.4511$, is an indicator of the estimated mean level of perceived innovation ability when both predictor variables are zero. In the given case, it is statistically significant ($p < .00$).

When innovation mode changes from professional design to co-creation, perceived innovation ability increases by 2.5196. Statistical significance is given, through $p = 0.0311$.

$\beta_{\text{age}} = -0.1386$ is the prediction of decreased perceived innovation ability in case age changes by one unit, with all the other variables constant. The negative value is interesting as it means that with a higher age, there is lower perceived innovation ability, what goes along with our assumption that younger consumers have higher perceived innovation of co-creation. Here we also have no statistical significance ($p = 0.7920$), which means that age is not a predictor of perceived innovation ability.

To sum up the findings of this moderation analysis, the interaction between innovation mode and age is statistically not significant. That indicates that age does not moderate the relationship between innovation mode and perceived innovation ability of co-creation. For our hypothesis, it means that it can't be confirmed with the underlying data and is rejected. A detailed overview of the results of our moderation analysis can be found in table 9 below.

	Coefficient	SE	t	p
Constant	4.4511	0.7873	5.6538	0.0000
Innovation mode	2.5196	1.1543	2.1829	0.0311
Age	-0.1386	0.5243	-0.2643	0.7920
Int_Innovation mode x age	-0.3738	0.7264	-0.5149	0.6078
Dependent variable: innovation	Model interaction	R ² = 0.4553 R ² _{change} = 0.0019	F(3,112) = 9.7604 F(1,112) = 0.2648	p = 0.0000 p = 0.6078

Table 9 - Moderation analysis of age on innovation mode and perceived innovation ability

4.4 Age effect on customer-company identification

Hypothesis four aims to investigate the moderation effect of age between customer-company identification and perceived innovation ability of co-creation, more detailly:

H4: The positive effect of customer-company identification on perceived innovation ability is strengthened in younger consumers.

Our fourth hypothesis, we test whether age is moderating the effect of customer-company identification on perceived innovation ability. As in the foregoing moderation analysis, we used “PROCESS” version 4.2 by Andrew F. Hayes model 1.

The interaction between customer-company identification and age is described with the $\beta = -0.2316$. The coefficient explains the change in the predicted value for perceived innovation ability for a change of one unit in the interaction term. In the given case, we can suggest that the interaction between the customer-company identification and age is not statistically significant, indicated by a p-value of 0.4367.

The model explains the proportion of variance of perceived innovation ability, represented through the $R^2 = 0.4679$. The value indicates that 46.79% of the variance of perceived innovation ability is explained by the predictor's (innovation mode, age), as well as the respective interaction.

The $\beta = 2.3099$, is an indicator of the estimated mean level of perceived innovation ability when both predictor's are zero. In this case, it is not statistically significant ($p = 0.0725$).

When customer-company identification increases perceived innovation ability increases by 1.1784. Statistical significance is given, through $p = 0.0175$.

$\beta_{\text{age}} = 0.6867$ is the prediction of increased perceived innovation ability in case age changes by one unit, with all the other variables constant. In the given case, we have no statistical significance ($p = 0.3736$), which means that age is not a predictor of perceived innovation ability.

To conclude the findings of this moderation analysis, the interaction between customer-company identification and age is statistically not significant. That indicates that age does not moderate the relationship between customer-company identification and perceived innovation ability of co-creation. For our hypothesis, it means that it can't be confirmed with the underlying data and is rejected. A detailed overview of the results of our moderation analysis can be found in table 10 below.

	Coefficient	SE	t	p
Constant	2.3099	1.2741	1.8130	0.0725
Identification	1.1784	0.4886	2.4119	0.0175
Age	0.6876	0.7679	0.8955	0.3725
Int_ Identification x age	-0.2316	0.2967	-0.7805	0.4367
Dependent variable: innovation	Model interaction	R ² = 0.4679 R ² change = 0.0042	F(3,112) = 10.4663 F(1,112) = 0.6092	p = 0.0000 p = 0.4367

Table 10 - Moderation analysis of age on customer-company identification and perceived innovation ability

4.5 Behavioural intentions

Hypothesis 5 aims to investigate whether the perceived innovation ability of co-creation has a positive effect on purchase intention, willingness to pay and willingness to recommend more formal:

H5: Observing consumers tend to have more favourable behavioural intentions in specific, purchase intention, willingness to pay and willingness to recommend towards companies-focusing on co-creation compared to companies focusing professional designed products.

For the assessment of H5, we assume that the positive relationship between innovation mode and perceived innovation ability, that we verified in H1 is explaining the mediation effect of perceived innovation ability on behavioural intentions. We performed three one-way ANOVA tests with the different behavioural intentions as independent variables and innovation mode (co-creation vs professional design) as dependent variable.

The first behavioural intention is purchase intention. The co-created product has a higher purchase intention with $M_{cc} = 4.10$ compared to $M_{Prof} = 2.97$. A p-value of $p < .001$ indicates a significant impact of co-creation on purchase intention.

The second independent variable is willingness to pay. Comparing the two means ($M_{cc} = 4.69$, $M_{Prof} = 3.33$; $p < .001$), we identified a significant impact of co-creation on willingness to pay. Lastly, we tested the impact of co-creation on willingness to recommend. We also discovered a significant effect of co-creation on the independent variable ($M_{cc} = 4.81$, $M_{Prof} = 3.47$; $p < .001$).

To sum up the results, participants have favoured behavioural intentions towards the co-created football shirt, and we can accept hypothesis H4. Details of the results of the three ANOVA tests can be seen in the tables below.

Purchase Intention	N	Mean	Std Dev
Co-Creation	61	4.10	1.912
Professional Design	55	2.97	1.547
Total	116	3.56	1.831

Table 11 - Descriptives of purchase intention

Purchase Intention	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	36.805	1	36.805	12.031	<.001
Within Groups	348.755	114	3.059		
Total	385.559	115			

Table 12 - ANOVA for Purchase Intention

Willingness to pay	N	Mean	Std Dev
Co-Creation	61	4.69	1.698
Professional Design	55	3.33	1.846
Total	116	4.04	1.890

Table 13 - Descriptives of willingness to pay

Willingness to pay	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	53.593	1	53.593	17.105	<.001
Within Groups	357.191	114	3.133		
Total	410.784	115			

Table 14 - ANOVA for willingness to pay

Willingness to recommend	N	Mean	Std Dev
Co-Creation	61	4.81	1.475
Professional Design	55	3.47	1.576
Total	116	4.17	1.659

Table 15 - Descriptives of willingness to recommend

Willingness to recommend	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.836	1	51.836	22.317	<.001
Within Groups	264.791	114	2.323		
Total	316.627	115			

Table 16 - ANOVA for willingness to recommend

5. Discussion and conclusion

5.1 Discussion

Our study aimed to examine the effect age on the innovation mode (co-creation vs professional design) on the perceived innovation ability. Furthermore, we investigated which role customer-company identification plays in the relationship between innovation mode (co-creation vs. professional design) and perceived innovation ability. Then, we checked if age is moderating the connection between customer-company identification and perceived innovation ability. Lastly, we analysed how co-creation impacts on the behavioural intentions. More specific, hypothesis one tests if co-creation is perceived with a higher innovation ability than professional design.

Our results showed that still after 20 years of the introduction of the co-creation concept is perceived as an innovative approach for the development of new products and still displays positive effects from higher perceived innovation ability (mediation).

Regarding the influence of customer-company identification as a boundary condition of the effect co-creation innovation mode on the perceived innovation ability, our findings show that company identification does affect innovation perceptions. So, we can argue that customer-company identification is mediating the impact of co-creation on perceived innovation ability. More relevant the role of age in the relationship between innovation mode and perceived innovation ability did not show any effect suggesting that age could have a moderating role. Further, we also had no significant effect of age on perceived innovation ability in the connection with perceived innovation ability.

Nonetheless, co-creation displays positive behavioural intentions, in particular purchase intention, willingness to pay and willingness to recommend. In line with previous studies (Dahl et al., 2015; Schreier et al., 2012) our research demonstrates that co-creation leads to favoured behavioural intentions towards co-created products. In conclusion, this work tried to further investigate the innovation perception of co-creation. Co-creation is still perceived as an innovative approach for the development of new products. Customer-company identification has a positive effect on the relationship between innovation mode (co-creation vs professional design) and perceived innovation ability. Against our expectations, findings revealed that age neither had an effect on the relationship between innovation mode (co-creation vs professional design) and perceived innovation ability nor on the relationship between customer-company identification and perceived innovation ability. Among our assumption, co-creation led to positive results in terms of behavioural factors as purchase intention, willingness to pay and willingness to recommend. Also, in this relationship

To sum this up, co-creation is still attractive from the perspectives of innovation and consumer behaviour.

5.2 Theoretical implications

This thesis makes several contributions to the body of current literature. First, the stream of co-creation and innovation following various studies is supported (Alves, 2013; Barile et al., 2020; Chen et al., 2017; Dahl et al., 2015; Schreier et al., 2012). Co-creation is still perceived as a successful innovation approach even for industries that are now starting to use this approach to guide new products in the market.

Secondly, it strengthens the findings in the context of consumer identification towards companies relying on co-creation as an innovation approach. (Dahl et al., 2015, Raza et al. 2020).

Thirdly, Lude et al. (2016) asked for more investigation of the effect of age on co-creation. Unfortunately, our results in context of age weren't significant. Nevertheless, we recommend further research.

Further, the study's validation of co-creation's beneficial effects on behavioural intentions is consistent with earlier findings (Dahl et al., 2015; Schreier et al., 2012), but it also highlights how crucial it is to include behavioural outcomes in innovation studies.

Overall, the effect of age needs further investigation in all contexts of co-creation.

5.3 Managerial implications

Besides the academic implications, this research also presents some valuable implications for executives. Co-creation has a positive effect on the innovation perception of the company. When the company wants to position as innovative, co-creation is an effective strategy. Further, as discovered in our study, customer-company identification has a significant impact on the relationship between co-creation (innovation mode) and perceived innovation ability. That means a high customer-company identification leads to positive engagement in co-creation activities (Luu, 2019) and a higher innovation perception of the company. The source of the identification with the company, is the interaction with the consumer, therefore the higher the number of interactions, the better the identification (Dutton et al., 1994; Hur et al., 2018). Managers should take measures to enhance the interaction between their company and the customers. Technologies facilitate the interaction enormous (Mediyan & Purwanegara, 2022). In addition, many companies already pursue social media strategies to interact with their consumers (Baldus et al., 2015). An investment in customer engagement programs for instance, could be an interesting method for increasing customer-company identification.

Although, results didn't show significant results for age, the different characteristics across the generations should be taken into account in the marketing strategy of the company.

As our findings revealed positive outcome regarding behavioural intentions of co-created products, managers should check how to implement co-creation into their new product development process.

5.4 Limitations and future research

Despite the fact, that the findings of this dissertation provide helpful insights on co-creation and innovation the results have to be seen with some limitations. First, the size of the sample of this study is 116, what is sufficient to provide significant results. Anyway, to be able to generalise the findings it should be addressed to clearly larger sample size. Furthermore, the majority of participants were Germans, it would be helpful to have a sample with a higher variety of nationalities. In this case, a study with only participating football fans could also lead to interesting results.

Second, research is recommended to be done in other industries, as our research is restricted to the football industry. Especially industries, where co-creation is not a common praxis.

Further, our study used a football shirt for the stimulus. Schreier et al. (2012) demonstrated in their study that low-complex products, such as t-shirts, which can be compared to a football shirt, are good fit for the research in the area of co-creation. Therefore, product-complexity has to be considered while interpreting the results of our study. It would be interesting to know if the findings would be similar in a high-complex product category.

Lastly, our age cohorts were just two groups. Interesting would be a study with more groups or on different generations as Generation X, Generation Y and Generation Z.

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Image Football shirt

https://fanshop.ksc.de/trikot-ausweich-23-24.html?_gl=1*1cf0hr6*_up*MQ..*_ga*MTA4OTE4MzQ5MC4xNzAyMTUxNzUx*_ga_4TJSDGZCY7*MTcwMjE1MTc1MC4xLjEuMTcwMjE1MTc3MS4wLjAuMA..

Retrieved 15.08.2023

Appendix

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19	2	1,7	1,7	1,7
	20	8	6,8	6,9	8,6
	21	9	7,6	7,8	16,4
	22	5	4,2	4,3	20,7
	23	13	11,0	11,2	31,9
	24	19	16,1	16,4	48,3
	25	26	22,0	22,4	70,7
	26	9	7,6	7,8	78,4
	27	10	8,5	8,6	87,1
	28	3	2,5	2,6	89,7
	29	3	2,5	2,6	92,2
	30	3	2,5	2,6	94,8
	35	1	,8	,9	95,7
	36	2	1,7	1,7	97,4
	38	1	,8	,9	98,3
	62	1	,8	,9	99,1
	69	1	,8	,9	100,0
Total		116	98,3	100,0	

Block 1: Introduction

Dear participant,

this research is being conducted in order to fulfil the requirements for the master's degree at Católica Lisbon School of Business and Economics. By starting the survey, you accept that your participation is completely voluntary. Please note that the identity of the participants will remain anonymous, and that the data collected will be kept confidential and used only in the academic context of this research. If you are willing to participate in this survey, please click on the "Next" button.

In case you have any further questions, please feel free to contact me: s-lkammerer@ucp.pt.

Thank you very much in advance!

Louis Kammerer

Block 2: Co-Creation (Scenario)

Please read the following introduction carefully

This survey is about co-creation and innovation. The process of co-creation can be defined as collaboration between the firm and its customer in co-ideation, co-design and co-development of new products. There are different participation forms for the customer. German football club Karlsruher SC and their football kit manufacturer Macron have invited their fans to submit new design ideas for the third shirt of the club for the 2023/2024 season. More than 300 fans have sent their design ideas to the idea generation contest. A jury consisting of representatives of the club and the manufacturer have selected three favorites. These three favorites were put to the fans to make a final choice, which is the following:



Who do you think designed the football shirt?

- Professional designers
- Fans
- Fans and professional designers

How innovative is the design of the football shirt? (1= minor variation, 9=completely new product)

- minor variation of existing product
- very low variation of existing product
- low variation of existing product
- nearly medium variation of existing product
- medium variation of existing product
- nearly high variation of existing product
- high variation of existing product
- new product
- completely new product

Please indicate how much you agree with the following statement: How likely / unlikely will you purchase this football shirt.

- very unlikely
- unlikely
- moderately unlikely
- neither unlikely nor likely
- moderately likely
- likely
- very likely

Please indicate how much you agree with the following statement: How impossible / possible you purchase this football shirt.

- impossible
- moderately impossible
- slightly impossible
- neither impossible nor possible
- moderately possible
- possible

- very possible

Please indicate how much you agree with the following statement: How high rate you the chance that you purchase this football shirt.

- no chance
- highly no chance
- moderately no chance
- neither no chance nor certain
- moderately certain
- highly certain
- certain

What do you think about the following statement?

I would be willing to pay more for a co-created designed football shirt.

- Strongly disagree
- disagree
- somewhat disagree
- neither agree nor disagree
- somewhat agree
- agree
- strongly agree

Please indicate how much you agree with the following statements.

I would say positive things about this football shirt.

I would recommend this football shirt to my friends/family.

- Strongly disagree
- disagree
- somewhat disagree
- neither agree nor disagree
- somewhat agree
- agree
- strongly agree

How do you agree with the following statements?

When someone criticizes Karlsruher SC, it feels like a personal insult.

I am very interested in what others think about Karlsruher SC.

When I talk about Karlsruher SC, I usually say 'we' rather than 'they'.

Karlsruher SC's successes are my successes.

When someone praises Karlsruher SC, it feels like a personal compliment.

If a story in the media criticized Karlsruher SC, I would feel embarrassed.

- Strongly disagree

- somewhat disagree
- neither agree nor disagree
- somewhat agree
- strongly agree

Block 3: Professional Design (Scenario)

Please read the following introduction carefully

This survey is about professional design and innovation. That means the process is internal and all the ideas for development of new products come from the employees of the company. Macron, the kit manufacturer of the German football club Karlsruher SC, is responsible for the design of the football shirt. The design is made by the company's professional designer. The design for the 2023 / 2024 season is the following:



Who do you think designed the football shirt?

- Professional designers
- Fans
- Fans and professional designers

How innovative is the design of the football shirt? (1= minor variation, 9=completely new product)

- minor variation of existing product
- very low variation of existing product
- low variation of existing product
- nearly medium variation of existing product
- medium variation of existing product
- nearly high variation of existing product
- high variation of existing product
- new product
- completely new product

Please indicate how much you agree with the following statement: How likely / unlikely will you purchase this football shirt.

- very unlikely
- unlikely
- moderately unlikely

- neither unlikely nor likely
- moderately likely
- likely
- very likely

Please indicate how much you agree with the following statement: How impossible / possible you purchase this football shirt.

- impossible
- moderately impossible
- slightly impossible
- neither impossible nor possible
- moderately possible
- possible
- very possible

Please indicate how much you agree with the following statement: How high rate you the chance that you purchase this football shirt.

- no chance
- highly no chance
- moderately no chance
- neither no chance nor certain
- moderately certain
- highly certain
- certain

What do you think about the following statement?

I would be willing to pay more for a professional designed football shirt.

- Strongly disagree
- disagree
- somewhat disagree
- neither agree nor disagree
- somewhat agree
- agree
- strongly agree

Please indicate how much you agree with the following statements.

I would say positive things about this football shirt.

I would recommend this football shirt to my friends/family.

- Strongly disagree
- disagree
- somewhat disagree
- neither agree nor disagree
- somewhat agree
- agree

- strongly agree

How do you agree with the following statements?

When someone criticizes Karlsruher SC, it feels like a personal insult.

I am very interested in what others think about Karlsruher SC.

When I talk about Karlsruher SC, I usually say 'we' rather than 'they'.

Karlsruher SC's successes are my successes.

When someone praises Karlsruher SC, it feels like a personal compliment.

If a story in the media criticized Karlsruher SC, I would feel embarrassed.

- Strongly disagree
- somewhat disagree
- neither agree nor disagree
- somewhat agree
- strongly agree

Block 4: Demographics

What is your age? Please insert

What gender do you identify with?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

What is the highest level of education you have earned?

- High school
- Bachelor's degree
- Master's degree
- PHD or higher
- Trade school
- Prefer not to say

What is your employment status?

- Employed full time
- Employed part time
- Unemployed looking for work
- Unemployed not looking for work
- Retired
- Student
- Disabled

What is your nationality?

- Portuguese
- German
- Italian
- French
- Dutch
- Spanish
- Austrian
- Other