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Boosting creativity in co-creation with consumers in the fuzzy front-end of new product development: A literature review and organising framework

Abstract

Interest in consumer co-creation in the fuzzy front-end of the new product development (NPD) process has increased in recent years. It is generally acknowledged that integrating consumers into collaborative idea generation leverages the potential of social interactions, knowledge sharing and collective creativity, and it may improve the success of NPD. Despite extensive literature on value co-creation, little is known about how creativity can be enhanced and encouraged in this process. Based on a thorough literature review, the author develops an organising framework and six propositions on how creativity can be stimulated at the fuzzy front-end of the innovation process. By exploring the relevant literature, this study extends the understanding of the role that creativity plays in co-creation for NPD and provides some guidelines that may help boost the creative output and interest in co-creation activities during the development stage of an idea.

Keywords: creativity, co-creation, new product development, idea generation, ideation

Introduction

Creativity is considered to be an important organisational resource (Styhre & Sundgren, 2005; de Vasconcellos et al., 2019), which is to a great extent a determinant of new product success (Sethi et al., 2001; Xu, 2020) – to gain advantage a firm needs to effectively innovate, that is to implement more creative ideas than its competitors (Im et al., 2013), as any innovation invariably begins with new ideas, regardless of whether they are sourced externally or internally (O'Brien, 2020). These innovation capabilities are no longer limited by the boundaries of the organisation (Chesbrough, 2006; West & Bogers, 2017). Creative ideas can be also acquired externally from suppliers, customers or rivals and blended together with internal ideas (Chesbrough, 2012; Chesbrough et al., 2018). One source of external ideas are consumers (Hoyer et al., 2010; Roberts & Darler, 2017), who can potentially add value to the firm's innovation process (Füller et al., 2012; Loureiro et al., 2020; Payne et al., 2008). In this sense consumers can be used as a simple source of ideas for new products (von Hippel, 2005) or can be transformed into active partners with whom ideas are co-created through dialogue (Sawhney et al., 2005). The underlying assumption is that creativity as a key resource can be acquired directly from consumers through co-creation (Djelassi & Decoopman, 2013). With this in mind, companies should ensure that the process of co-creation is conducive to creative behaviour, which means that creative thinking is encouraged and supported. Many studies show that creativity can, to a large extent, be enhanced (Sternberg, 2019). However, a thorough review of extant literature showed that little attention is being paid to how creativity can be fostered in consumer co-creation for new product development. Herein we address this research gap by exploring the relevant literature and transposing selected findings to the praxis of co-creation.

Co-creation for New Product Development

The role of consumers in NPD, further defined as “a systematic process in which ideas are converted into commercial products” (Guzel et al., 2020, p. 1048; Costa & do Vale, 2018), has changed over the last decade. Firstly, the concept of customer centricity has shifted the marketing perspective from serving customer segments to delivering unique value to customers considered as individuals (Chesbrough, 2017; Piller et al., 2010). Secondly, the emergence of the open innovation paradigm has allowed companies to cross boundaries of the organisation to explore, assimilate and exploit external sources of ideas (Chesbrough, 2006; Chesbrough et al., 2018; West & Bogers, 2017). Thirdly, the advent of service-dominant logic revealed that value is always co-created in interactions among producers and consumers (Boukhris et al., 2017; Vargo et al., 2008). Lastly, technology, especially social media, has allowed for knowledge transfer on a scale heretofore unknown (Zhang et al., 2020). Consequently, once passive, consumers have now become empowered (Fuchs et al., 2010; Nguyen et al., 2020) and active participants of the innovation process (Hoyer et al., 2010; Roberts et al., 2022).

According to recent literature reviews (Galvagno & Dalli, 2014; Leclercq et al., 2016; Ranjan & Read, 2016; Tran, 2017), co-creation can occur in a variety of contexts and a broad range of applications (e.g. branding, innovation). Moreover, it comes in many forms, e.g. crowdsourcing (Rayna & Striukova, 2015); it can be classified into numerous categories, e.g.: co-conception of ideas, co-design (Frow et al., 2015); it may take on a variety of forms, e.g.: competitions, gamification (Mazurek-Łopacińska, 2021; Patricio et al., 2020); and it is possible to be ventured in both virtual and non-virtual environments (Kohler et al., 2011). One context, which has received particular attention, is NPD, in which co-creation is defined as “a collaborative NPD activity in which customers actively contribute and/or select various elements of a new product offering” (Hoyer et al., 2010, p. 287; Morgan et al., 2021; O’Hern & Rindfleisch, 2010). This active collaboration can appear either at the front end (idea generation and concept development) or at the back end (product design and testing) of the innovation process (Piller et al., 2010), as well as across all stages of the NPD process (Hemonnet-Goujot et al., 2020; Hoyer et al., 2010). It is suggested that co-creation can provide an opportunity to humanise the NPD process (Roberts & Darler, 2017).

Active involvement of consumers in NPD reflects some underlying assumptions. Firstly, it is believed that ideas generated through co-creation will mirror complex consumer needs more closely and will be more likely valued by consumers (Hoyer et al., 2010; Mahr et al., 2014; Witell et al., 2011). Secondly, need information and solution information are often ‘sticky’

– the costs of transferring information in a usable form from the source to a specified site is often high (von Hippel, 2005). Thirdly, counterintuitively, ideas generated by ordinary consumers can be more original than ideas developed by professionals (Kristensson et al., 2004; Kristensson & Magnusson, 2010; Poetz & Schreier, 2012). And lastly, the literature suggests that co-creation in NPD is beneficial also to consumers, as it leads to a better fulfilment of their needs and provides other benefits, such as social, learning, and hedonic (Gemser & Perks, 2015; Zare et al., 2019).

Creativity for new product development

Creativity has proved to be a complex phenomenon. Despite ongoing debates, creativity is frequently conceptualised as an outcome – that is, *the production of novel and useful ideas* (Amabile & Pratt, 2016; Runco & Jaeger, 2012; Stein, 1953). However, more recently researchers have begun to highlight the need for more dynamic conceptions of creativity to account for the fact that the assessment of creative outcomes is subjective, context-dependent, time-related and should entail both instances of creative achievement and creative inconclusiveness (Beghetto & Corazza, 2019; Corazza, 2016; Glăveanu & Beghetto, 2021; Walia, 2019). In this dynamic optics creativity is most frequently defined as “a context-embedded phenomenon requiring potential originality and effectiveness” (Corazza & Lubart, 2020, p. 2).

Creativity is usually perceived as a starting point for innovation, further defined as *the successful implementation of creative ideas within an organisation* (Amabile & Pratt, 2016; Anderson et al., 2014; April et al., 2019). The predevelopment phase of the innovation process – the fuzzy front end (FFE)¹ (Koen et al., 2001; Schweitzer et al., 2018), defined “as the early stage/early phase of the innovation process, where ideas are generated and evaluated, potential concepts are formulated, and further development is initially planned” (Chamakiotis et al., 2020, p. 182) – seems to have a particularly significant impact on the future product performance (Henard & Szymanski, 2001; O’Brien, 2020) and may exert substantial influence on the succeeding formal NPD process (Zhang & Doll, 2001). Hence, it is assumed that innovation would not appear without creative ideas developed at the FFE.

Research method

The aim of this study is to answer the following research questions: how can creativity be enhanced in co-creation with consumers in the fuzzy front-end of new product development? The study is based on an extensive literature review in the field of co-creation and creativity. Three databases were used to collect information for the literature review: Scopus, Web of Science and Google Scholar. Various combinations of

¹ The FFE is described as ‘fuzzy’ because it usually involves informal, unstructured, chaotic processes by which new ideas are born or sought out (O’Brien, 2020).

keywords were used to identify the pertinent articles (e.g. to identify the research gap a combination of keywords 'co-creation' OR 'cocreation' AND 'creativity' OR 'idea generation' OR 'ideation' was used). Additionally, a number of supplementary papers were identified through backward sampling (Jalali & Wohlin, 2012), i.e. screening the references cited by the sampled papers to minimise the risk of missing out on important studies pertaining to the scope of the research. Based on the literature review, an organising framework for enhancing creativity of co-creation in NPD has been proposed, leading to the development of six propositions. The number of propositions is limited by the need to comprehensively explain the chosen factors.

Organising framework

Figure 1 presents the organising framework, which constitutes a theoretical groundwork for how creativity in co-creation can be enhanced. The central tenet of this paper is that co-creation can be classified as a specific form of creative activity – collective and time-constrained. Based on this assumption, the framework has been established on four rudimentary *attributes of creativity* referred to as the 4P's, which stands for: *Person, Process, Product, and Press* (Rhodes, 1961). In the 4P framework (Lubart, 2017; Sternberg & Karami, 2022) the Person refers to diverse attributes of those who create, e.g. their intellectual, personality or biographical characteristics, the Process pertains to the chain of actions and events involved in creative work, the Press denotes the environmental forces that stimulate creative thinking and behaviour, and the Product refers to the outcomes of the creative process. The optics of the 4P's model has been conceptually transposed to the context of co-creation: a group of individuals taking part in a co-creation activity (the first element of the model depicted in the Figure 1, i.e. the Co-creation Participants), whose members engage in the act of co-creative expression embedded in a virtual or physical environment (i.e. the Environment of Co-creation) and follow iteratively through the co-creation process (i.e. the Co-creation Process), generating ideas for new products (i.e. the Co-creation Outcomes). The iterative relationship between the co-creation process and outcomes of co-creation is represented by the dashed arrow that connects these two elements. Each of the four aspects is further elaborated in subsequent sections.

Creative person: creative actors and co-creation

In co-creation, actors² are considered to be the source of operant resources (e.g. knowledge and skills, networks of relationships), which act upon physical and tangible operand resources (e.g. raw material and infrastructure) to create value (Arnould et al., 2006;

Vargo et al., 2008). As a source of operant resources for the firm, actors enrich the process of value co-creation by co-opting their competencies and expertise (Prahalad & Ramaswamy, 2000; Waseem et al., 2018), self-efficacy and social capital (Alves et al., 2016), networks (Hunt & Derozier, 2004), and contributing creativity (Ind & Coates, 2013).

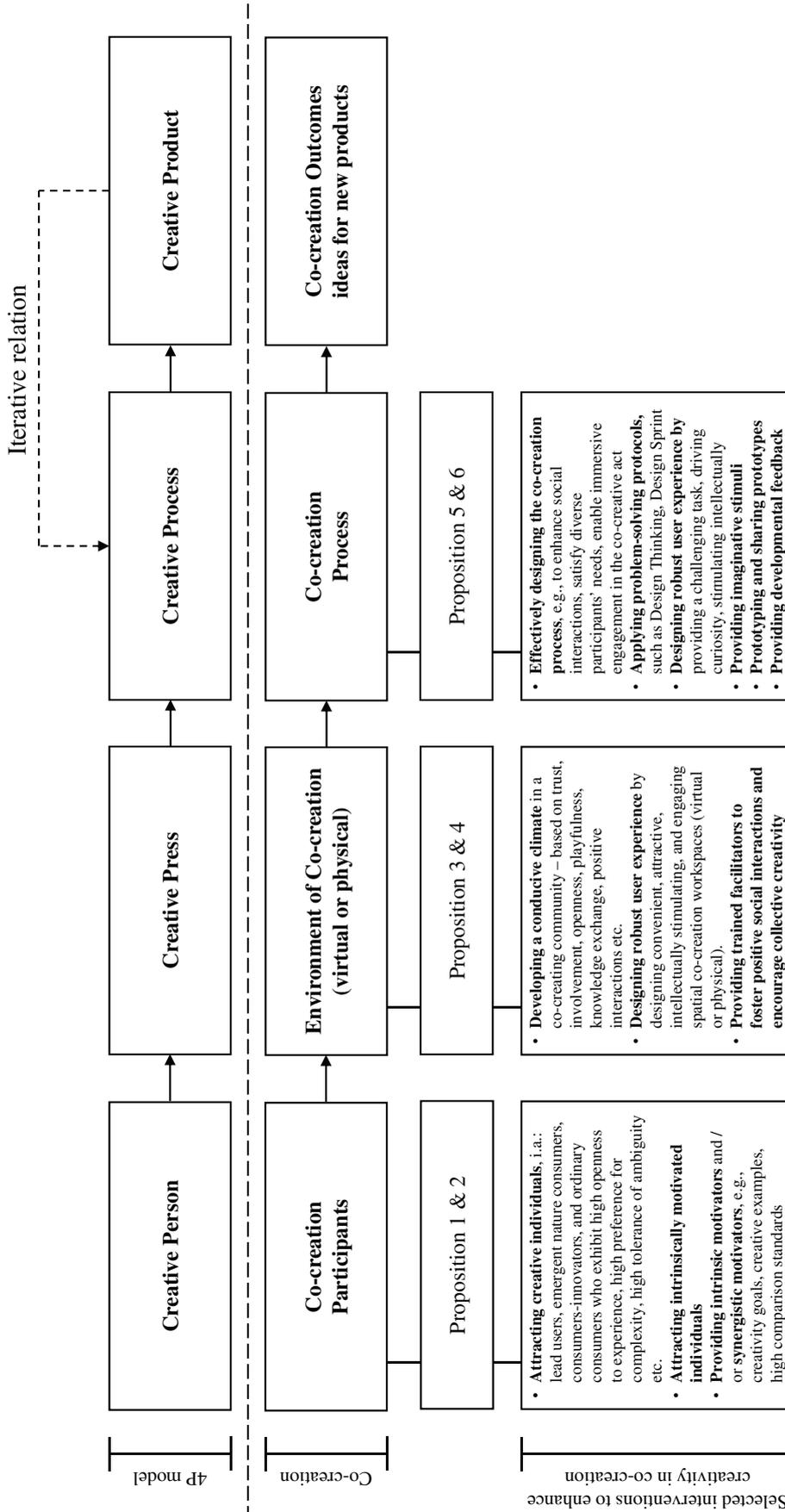
Prior literature has identified various profiles of actors that may engage in the value co-creation process (Leclercq et al., 2016). Lead users can serve as a need-forecasting laboratory for marketing research (von Hippel, 1986). They experience needs ahead of a marketplace trend and expect relatively high benefits from obtaining a solution, which makes them a valuable source of ideas and concepts (Franke et al., 2006). Emergent nature consumers possess the rare capability to imagine or envision how concepts might be developed in order to be successful. These actors exhibit high openness to experience, possess large amounts of internal reflection and the ability to synergistically process information in rational, experiential, verbal, and imaginal styles; their emergent nature is also correlated with creativity and optimism (Hoffman et al., 2010). Some studies indicate that ordinary consumers, who are not aware of technological restrictions, can also generate ideas that are more radical and higher in customer benefit than professionals or advanced users, provided that they understand how the product or service creates value for them (Kristensson et al., 2004; Kristensson & Magnusson, 2010; Poetz & Schreier, 2012). It is believed that some of ordinary consumers may be more creative and more likely to experiment with a firm's offering. These 'creative consumers' adapt, modify, or transform products, motivated often by their personal interest. They represent a gold mine of ideas and business opportunities for firms (Berthon et al., 2007).

Although the firm may collaborate with various actors, it is an individual's ability to come up with creative ideas that constitutes the foundation of co-creation. In their study exploring the impact of Amabile's components of creativity (Amabile, 1996) on various aspects of co-creation projects, Fuller et al. (2012) observed that whereas the absence of domain-relevant skills (i.e. factual knowledge, technical skills, domain-relevant talents) does not have a strong impact on idea generation, the higher a person's score in creativity-relevant skills (i.e. cognitive style, knowledge of heuristics, work style), the better it is for ideation. Thus, it seems reasonable for firms to attract the most creative individuals to the co-creation process.

There is abundant research identifying individual traits that determine creativity. In general, creative people are characterised by high openness to experience (Zare & Flinchbaugh, 2019; McCrae, 1987), defined as "an imagination and curiosity when con-

² The term 'actors' is used in this text in a wide context, relating to all potential participants of the co-creation process.

Figure 1
Organising framework for enhancing creativity in co-creation for NPD



Source: author's own work.

sidering new ideas, sensations, and feelings” (Runco, 2014, s. 281; McCrae & Sutin, 2009), high intuition, high self-confidence and assertiveness (Feist, 2010), high tolerance of ambiguity (Zenadni et al., 2008), high self-efficacy (Bonetto, 2020; Prabhu et al., 2008), high curiosity (Schutte & Malouff, 2020), high creative imagery abilities (Jankowska & Karwowski, 2015), high risk tolerance, autonomy, flexibility, preference for complexity (Runco, 2014), sensitivity (Bridges & Schendan, 2019), as well as by low conscientiousness, low neuroticism and low conventionality (Feist, 1988; Fürst et al., 2016; Puryear et al., 2017), among others. In addition, creativity may be partly domain-dependent; for example, creative artists and scientists may possess different sets of personality traits (Feist, 1988). It may also be that no one trait alone leads directly to creativity, but rather they create (often paradoxical) constellations of traits that allow for unconventional creative expression (Runco, 2014).

Proposition 1. Creative individuals certainly represent a distinct and distinguishable group of people (Feist, 1988). That said, an assumption can be made that co-creation activities can and should be addressed principally to this valuable group of talented individuals, with the aim to attract them, hold their attention over time and, in doing so, presumably enhance the creative output of the co-creation process. Hypothetically, this goal could be fulfilled by designing a co-creation task, which would reflect specific needs of the creative user’s profile. For example, designing robust experience environments (Pralhad & Ramaswamy, 2004; Verleye, 2015) that drive curiosity, challenge conventionality, and intellectually stimulate open to experience and ambitious consumer-creators could be beneficial. Similarly, such a profile could serve as a basis for recruitment, marketing activities and targeted communication with present and potential participants.

The consumers’ motivation to engage in co-creation activities is thought to be another essential factor for successful collaborative NPD. As co-creation goes beyond transactions, it is a form of engagement behaviour emerging from motivational drivers (van Doorn et al., 2010). Co-creation requires individuals to activate their cognitive skills to ideate, and to be willing to share their ideas. But most importantly, consumers are expected to invest a substantial amount of their time, the use of which reflects economic, social, and psychological costs (Etgar, 2008). Therefore, it is emphasised that the propensity of individuals to contribute constitutes the bedrock of co-creation (Zwass, 2010).

Generating and maintaining participants’ engagement in co-creation projects over time has been the focus of numerous studies. It is generally suggested that individuals can be intrinsically and extrinsically motivated (Füller, 2010; Roberts et al., 2014). Intrinsic motivation refers to ‘doing something because it is inherently interesting or enjoyable’, whereas ‘extrinsic motivation refers to doing something because it

leads to a separable outcome’ (Ryan & Deci, 2000, p. 55). According to Füller (2010), while extrinsically motivated consumers’ interest lies in utility obtained from interactions, and by extension they seem to favour goal-oriented behaviour, intrinsically motivated consumers focus more on an enjoyable experience and thus have a tendency to favour experiential-oriented behaviour. It should be noted that co-creators can also dynamically switch between intrinsic or extrinsic motivations during the innovation process (Shah, 2006; Suhada et al., 2021).

Intrinsic motives may have a more desirable influence on the creative performance of co-creation than the extrinsic ones. It is believed that intrinsic motivation (i.e. interest in innovation, curiosity and willingness to show ideas) drives engagement, whereas extrinsic motivation (i.e. monetary compensation) positively influences the participation frequency (Füller, 2006). This view is supported by other researchers, who also suggest that in comparison to intrinsic motives, financial rewards are less important motivators for individuals’ willingness to engage (Fernandes & Remelhe, 2016; Frey et al., 2011), may result in only goal-oriented contributions (Roberts et al., 2006), and supersede intrinsic motivation (Zwass, 2010). Recently, Mandolfo et al. (2020) have not observed any significant influence of extrinsic motivations on the willingness to co-create, but have found strong evidence that it is positively affected by intrinsic motivations and internalised extrinsic motivations, understood as behaviour aligned with personal values and lifestyle that have separate rewards, e.g. an opportunity to enhance technology knowledge. Hence, although some studies do not detect only negative effects of monetary compensation (Dargahi et al., 2021; Roberts et al., 2006; Zhu et al., 2018), intrinsic motivation seems to be desired in the first place. In addition, intrinsically motivated participants are also more interested in co-creation, more creative and more knowledgeable (Füller, 2010).

Although the significance of the role that motivation plays in co-creation activities seems to be well recognised, not much has been said about how its different types influence creativity of co-created ideas. Schemmann et al. (2016) have found no evidence that implemented ideas are more likely to come from highly motivated consumers who suggested many ideas. However, they have found that potential innovativeness of an idea significantly increased the likelihood of an idea being implemented. Therefore, we may assume that within the field of co-creation, motivation that leads to high-quality ideas, i.e. creative, is more desirable than motivation that results in many average ideas.

Motivation has been a widely acknowledged antecedent of individuals’ creativity (Amabile, 1996). It is believed that intrinsic motivation (when people are motivated by the sheer enjoyment, interest, or personal challenge of the task itself) is conducive to creativity, whereas with extrinsic motivation this is the case only under certain specific conditions (Ama-

bile & Pratt, 2016; Hennessey, 2010; Liu et al., 2016). Indeed, task motivation as the Amabile's creativity component (Amabile, 1996) has been found not only to be a prerequisite for consumers' participation in virtual generation of new ideas and problem solutions, it has been also recognised as an enhancement factor that, when delivered above a certain level, increases the creative output and interest in co-creation activities in the development stage of an idea (Füller et al., 2012).

In contrast, extrinsic motivation (i.e. rewards, expected evaluation, recognition, surveillance, competition) seems to have, in general, a detrimental effect on creative achievement (Hennessey, 2010), although mainly when it undermines intrinsic motivation by leading people to feel controlled by the situation (Hennessey & Amabile, 2010) or when it displaces attention from the task towards the reward (West & Richter, 2008). However, if extrinsic motivators acknowledge competence, convey useful information in a complementary way (informational extrinsic motivators) or enable people to do what they were already intrinsically motivated to do through directly increasing the person's involvement (enabling extrinsic motivators), it may increase intrinsic motivation and enhance creativity (Amabile, 1993; Byron & Khazanchi, 2012). This type of motivators are called 'synergistic extrinsic motivators' and are the most effective with strong initial levels of intrinsic motivation (Amabile, 1997; Hennessey & Amabile, 2010).

Both intrinsic and extrinsic motivation can take the form of a temporary state and a relatively stable personality trait (Amabile, 1993). As a state, motivation can be affected by environmental conditions, some of which may positively influence an individual's motivation to act creatively, whereas others may have a detrimental effect on intrinsic motivation and creative behaviour. Thus, it is assumed that creativity can be enhanced by providing appropriate context. Contextual factors may include intrinsic motivators, such as a challenging task intended to maximise intrinsic motivation (Amabile, 1993), a mobilising creativity goal (Shalley, 1995), a creative example (Shalley & Perry-Smith, 2001), high comparison standards (Paulus & Brown, 2003), prosocial motivation (Grant & Berry, 2011), gamification (Treiblmaier & Putz, 2020), as well as synergistic extrinsic motivators, for example informational evaluation (Shalley & Perry-Smith, 2001), or informational (Zhou, 1998) or developmental feedback (Zhou, 2008).

Proposition 2. One could hypothesise that creativity and participation in co-creation activities could be enhanced by three motivational procedures. Firstly, addressing co-creation activities to consumers who are primarily intrinsically motivated (motivation as a personality trait). Secondly, providing intrinsic motivators such as a challenging and highly creative task or a creative example. Thirdly, providing synergistic extrinsic motivators that do not displace attention from the task towards the reward but rather acknowl-

edge the participant's competence and convey useful information.

Creative press: environmental conditions of co-creation and creativity

Creativity is a contextually embedded phenomenon (Lubart, 2010). Certain environmental influences can either facilitate creativity (though not absolutely assure it) or inhibit creative expression (Runco, 2014; Woodman et al., 1993). The social environment is particularly important for creative behaviour (Perry-Smith & Mannucci, 2017). For example, social interaction with diverse others and communication of information and ideas generally facilitates creative cognition – during conversations an individual is prone to exposure to new knowledge that may lead to conceptual combination (synthesis of previously separate knowledge) or conceptual expansion (developing of new ideas) (Perry-Smith & Shalley, 2003). The significance of social interaction is increased by the fact that some creative solutions can be seen as the products of a momentary collective process or collective creativity (Hargadon & Bechky, 2006).

The social environment seems to be similarly important for co-creation (Pralhad & Ramaswamy, 2004) – value co-creation is an enactment of interactional creation (Ramaswamy & Ozcan, 2018). If ideas tend to be developed by groups working together, “rather than focusing on how to spot individual creativity, co-creation practitioners should concentrate on how to make groups productive by working to create an atmosphere where people trust each other and the organisation” (Ind & Coates, 2013, p. 92). Indeed, trust has been found to have a positive effect on consumers' willingness to participate in co-creation activities and on consumer knowledge development (Cortese, 2014). In addition, some studies suggest that both a very high and very low cooperative climate enhance innovative performance of co-creative idea contests (Bullinger et al., 2010), while other researchers claim that co-competition is more conducive to creativity, in comparison to cooperation or collaboration, as it results in generating more ideas, and more creative ones at the same time (Zhao et al., 2017). Despite these few studies, not much is said in regard the 'atmosphere' that could possibly improve social interactions and creativity of co-creation activities.

In organisational literature, the importance of climate and climate perceptions, at both the individual and group level, is stressed by many researchers (Hunter et al., 2007). According to this meta-analysis, a work environment is the most conducive to creativity when employees have positive relationships with colleagues with whom they can exchange ideas and are provided with challenging, meaningful and intellectually stimulating tasks. In a similar vein, Isaksen and Lauer (2002) maintain that the most creative teams experience the revealingly distinct climate of, inter alia, challenge and involvement, freedom, trust and openness, idea time, and playfulness. The authors also suggest that the climate for successful

team creativity and performance is clearly identifiable, measurable and manageable; we believe that as such it can be established among communities taking part in co-creation activities.

Proposition 3. One could hypothesise that a similar set of climate-related factors can enhance creativity in the co-creation process. Managed by trained facilitators, such a climate might be established and nourished through the suitable design of a co-creation activity which provides a meaningful and challenging task, fosters knowledge exchange, develops positive and cooperative interactions based on trust, openness and humor.

Spatial context may facilitate or reduce the enhancement of creativity by allowing certain cognitive processes while restricting others (Kristensen, 2004). This pertains also to co-creation, which, as earlier mentioned, can take place in both virtual and non-virtual environments. Recently, a virtual platform was found to have a moderating effect on customer creativity and co-creation experience in new idea generation (Nohutlu et al., 2021). Similarly, other authors suggest that interaction tools that inspire consumers to actively engage in virtual co-creation trigger the experience of empowerment and enjoyment of a virtual NPD task; they may also improve realistic product understanding and enhance consumers' creative articulation (Füller et al., 2009). Verleye (2015) suggests that the co-creation experience depends on the one hand on customer characteristics, such as *expected benefits* and *customer role readiness* (i.e., the degree to which customers are ready to engage in co-creation), and on the other hand on characteristics of co-creation environments, such as *technologisation* (i.e. the availability of technical solutions that help achieve a co-creation goal) and *connectivity* (i.e. the availability of help from other co-creators).

Thus, in order to make the co-creation task fun and enjoyable, and also boost creative outcomes, virtual platforms should be designed specifically to enable supportive navigation and smooth cooperation between peer participants (Nohutlu et al., 2021). They may also include various gamification mechanics, through which participants' engagement toward a co-creation platform can be created, amplified, and maintained (Leclercq et al., 2017). A physical or virtual workspace should at the same time be attractive, intellectually stimulating, and symbolically reflect creativity-conducive values, such as open-mindedness and collaboration (Oksanen & Ståhle, 2013).

Proposition 4. Regardless of whether the co-creation workspace is virtual or physical, it should be mindfully crafted to foster engagement, stimulate creative thinking, and reinforce creative production. A vast array of communication tools and gamification features, presented in an aesthetically pleasing way, may help provide meaningful and relevant experiences to users.

Creative process: processual dimensions of co-creation and creativity

The creative process is traditionally defined as a series of thoughts and actions that lead to an original and appropriate production (Lubart, 2001; 2018). There are many models of the creative process (see Botella et al., 2018 for a review), the earliest being Wallas' (1926) model of creative production, comprising a linear series of four independent steps: preparation, incubation, illumination and verification. The recent dynamic perspective (Corazza, 2016) adopts a different view and suggests that the creative process is nonlinear – numerous stages of the creative process, including i.a.: ideation, illumination and realisation, occur in a highly dynamic, recursive and complex way while intensively interacting with each other (Botella & Lubart, 2019; Botella et al., 2018; Botella et al., 2019).

It is acknowledged, not surprisingly, that creativity understood as a process can be managed (Leonard-Barton & Swap, 1999; Slavich & Svejenova, 2016). Importantly, organisational and social creativity-relevant processes have been found to be a comparably important factor to the group having creative members (Bissola & Imperatori, 2011; Taggar, 2002). Moreover, it seems to be the case that the application of various cognitive stimuli or problem-solving protocols during brainstorming, such as Design Thinking, may enhance the creative quality of the ideas produced (Howard et al., 2010; Rao et al., 2021). Since co-creation also has a processual dimension, it can be accordingly designed to benefit all the involved contributors and their creative output.

Proposition 5. One could assume that some creativity-relevant techniques and methodologies, such as Design Thinking (da Silva et al., 2020) or de Bono's six thinking hats (de Bono, 2000), could be applied to the improvement of the creative quality of ideas generated in co-creation. Literature on brainstorming and creativity provides some guidelines and solutions that the author of this article believes could be helpful in achieving this goal. Some of them are presented in Table 1. The author also believes that the outcome could be greatly improved if the co-creation process followed the iterative approach, known from agile project management methodologies; in fact, creativity is an iterative process of trials and errors, in which ideas are explored, modified, transformed, extended, combined or rejected (Ward, 2004).

Intrinsic or extrinsic motivation alone may not fully explain consumers' participation in co-creation activities – their needs are multifaceted and complex; individuals may be driven by a multidimensional combination of various motives and benefits (see Table 2 for details). The design of the co-creative process should reflect these needs, as well as provide an opportunity for participants to satisfy them.

Boosting creativity in co-creation with consumers...

Table 1

Chosen creativity-relevant techniques improving the quality of outcomes of the co-creation process

Feedback	It is acknowledged that feedback can enhance creativity (Ezzat et al., 2017). Creativity-relevant feedback can improve the intrinsic motivation of the recipient, additionally becoming a source of information helpful in learning and clarifying the standards of creative output, facilitating the acquisition of creativity-relevant skills and strategies (Zhou, 2008). Füller also observed that feedback is slightly more important for creative consumers than less-creative ones (Füller, 2010).
Facilitators	Trained facilitators can enhance productivity of brainstorming groups by increasing participants' motivation (e.g. by asking to "do one's best" and generally energising a group) and maintaining a tight procedural structure (delaying the evaluation of ideas, preventing interruptions, and asking participants for additional ideas) (Kramer et al., 2001).
Sequential priming	Cognitive stimulation through exposure to external ideas from low accessible categories reduces information overload and may lead to new associations. Diverse stimuli seem to be particularly effective if they are presented sequentially (Paulus & Brown, 2003).
Stimulating mental imagery	Some researchers have found that stimulating mental imagery through a suitable instruction (that stimulates self-relatedness) and/or by prior practice can improve the creative quality and quantity of ideas generated by ordinary individuals involved in a co-creation activity (Vellera & Gavard-Perret, 2016).
Explicit instructions to be creative	Ideation performance and divergent thinking can be enhanced by providing explicit instructions to be creative and original (Runco, 2010). Explicit instructions are especially potent if they include relevant information on how to find or identify original ideas (Runco et al., 2005).
Sharing ideas and building on each other's ideas	Group idea sharing can enhance cognitive stimulation and idea production of a group taking part in a brainstorming session (Dugosh et al., 2000). Explicit instructions to build on each other's ideas in group brainstorming may lead to the production of more original and feasible ideas (Kohn et al., 2011).
Pleasantness of the task	Some studies suggest that perceived pleasantness of divergent thinking tasks increases the number of ideas generated (Zenasni & Lubart, 2011). Designing a co-creation activity should be focused around it being a pleasant experience for the participants.
Upward comparison	Brainstorming groups are strongly affected by performance information about other groups. Providing high performance expectations can increase creative performance by almost 40% (Paulus & Dzindolet, 2008).
Prototyping	Prototypes help people to summarise, express and communicate their ideas to others. When shared, they can also inspire others, leading to improved outcomes, exploration, and group rapport (Dow et al., 2011).

Source: author's own work.

Table 2

Selected drivers of consumer participation in co-creation

Authors	Motives and perceived benefits	Examples
Füller, 2010; Mandolfo et al., 2020; Roberts et al., 2006	Purely intrinsic	Curiosity, intrinsic playful task
	Internalised extrinsic	Altruism – community support, making friends, self-efficacy, information seeking, skill development, recognition – visibility
	Purely extrinsic	Personal need – dissatisfaction, compensation – monetary rewards
Nambisan & Baron, 2009	Cognitive and learning	Knowledge about products and technologies
	Social integrative	Social identity, sense of belongingness
	Personal integrative	Sense of self-efficacy and reputation among peer consumers
	Hedonic	Mental or intellectual stimulation, a sense of pleasure
Leclercq et al., 2016	Altruistic	Helping others
	Non-altruistic:	Expecting benefits from participation
	1) extrinsic	Monetary rewards, social recognition, willingness to work with companies
	2) Intrinsic	
	a) social	Need for personal development, fun, escapism, passion, desire to increase skills, competencies
b) personal	Need for belonging, recognition, feedback	
Suhada et al., 2021	Non-pecuniary (intrinsic)	Altruism enjoyment, ideological reasons self-efficacy
	Delayed-pecuniary initially	Personal development, reputation building, reciprocity, sense of community
	Pecuniary (extrinsic)	Career development, financial interest
Franke & Shah, 2003		Dissatisfaction with the product
Hoyer et al., 2010		A sense of self-expression, pride or positive affect that enhances creative action

Source: author's own work.

Proposition 6. Individuals taking part in co-creation are driven by multifarious motives. Meeting them allows for behavioural, cognitive and emotional engagement in the act of co-creation, which is a sine qua non condition for capturing creative potential of the contributors.

Creative product: Outcomes of co-creation activities

Within the narrowly defined context of co-creation with consumers for NPD, creative outcomes of co-ideation primarily take the form of ideas for innovative products (Frow et al., 2015). Once successfully generated, creative ideas are often evaluated by the involved participants, based on selected assessment criteria, such as: originality (novelty), user benefits, technical feasibility, quality, desirability and user benefits (Filiari, 2013; Trischler et al., 2017). However, if they do not meet the adopted evaluation criteria or are not deemed sufficiently attractive for other reasons, they may be improved in further co-creation iterations. This reciprocal relation is depicted by a dotted arrow that connects the last two elements of the 4P model in Figure 1. Alternatively, if a company employs an idea management programme (Gerlach & Brem, 2017), generated ideas can be stored in a repository and serve as a starting point or an inspirational stimulus (Goucher-Lambert & Cagan, 2019) in future ideations.

Conclusions

In this article the author discussed the role of creativity in co-creation at the fuzzy front-end of the innovation process. The main theoretical assumption was that the creative behaviour that lead to novel and useful ideas for NPD in co-creation can and should be encouraged and enhanced. It was hypothesised that creative output may be improved through, among others, recruiting creative individuals, fostering certain forms of motivation, facilitating social interactions, designing robust user experiences, establishing a climate conducive to creativity and through application of creativity-supporting techniques. As a result, an organising framework for how creativity in co-creation can be enhanced was proposed. The main limitation is that the suggested propositions are yet to be tested empirically. Future studies could also examine other antecedents of creativity within the context of co-creation and develop other propositions.

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