Contextualized Co-creation:

Innovating with Individual External Contributors Throughout the Product Life Cycle

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Abstract: A co-creation strategy for product innovation ought to be customized for the specific context in which it is to be implemented. Despite the obvious common-sense appeal of this idea, the context-dependent character of co-creation has not yet been clearly recognized and analysed in the pertinent literature. We address this intellectual gap by positing the concept of "contextualized co-creation." By focusing on the evolving opportunities for product innovation, and related extant conditions and potential risks, we see the early and the latter stages of the product life cycle as distinct contexts for co-creation. For each respective context our concept suggests what type of actors may be involved as co-creators in product innovation projects, which type of co-creation may be appropriate, and how a suitable co-creative setting may be developed. Our contextualized co-creation concept may be applied by companies as a rubric for strategic decision-making related to collaborative innovation with individual external contributors in product development projects.

Keywords: contextualized co-creation; collaborative innovation; product life cycle; innovation context; product innovation; individual external contributors, innovation management; strategic management

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1. Introduction

Academic literature in the field of innovation management has undergone a series of paradigm shifts during the last half-century or so, from an early emphasis on technology-push thinking through to market-pull thinking, and eventually to the so-called "sixth generation" model of innovation management, emphasizing total innovation systems and innovation networks, as well as knowledge generation, knowledge management and learning (Roberts and Chaminade, 2002). The "do-it-yourself" mentality in innovation management has become out-dated (Gassmann, 2006). As part of this trend, the importance of companies generating or obtaining knowledge from *both* internal and external sources has received much attention in the literature (Huff et al., 2013). This general trend towards emphasizing "openness" rather than "closed-ness" in innovation has led to recognition in the academic literature that there may be much value in companies involving a diversity of participants in innovation projects, with the result that product offerings may be taken in unexpected directions that serve a much broader range of needs in the market (Brown and Hagel III, 2005).

Along with networks and social media, co-creation has become one of the most interesting research areas related to open innovation (Barczak, 2012), receiving remarkable attention by scholars. Nevertheless, the literature offers a variety of definitions of co-creation, making it difficult to build a comprehensive body of knowledge about this topic. Some scholars define it as collaboration with all stakeholders in a value network (Kirah, 2009; Russo-Spena and Mele, 2012; Roser et al., 2013), while others define it more narrowly as collaboration between producers and users (Prahalad and Ramaswamy, 2004; Sawhney et al., 2005; Kristensson et al., 2008; Wu and Fang, 2010; Rayna and Striukova, 2015). After extensive analysis of the

co-creation literature (see Tekic and Willoughby, 2016) we define *co-creation as a form of collaborative innovation initiated by a company, involving individual external contributors who may provide valuable input to the company's innovation projects.*

The concept of co-creation has immense practical implications and can be interpreted and applied in many different ways. However, the context-dependent nature of co-creation has not yet been clearly recognized, understood and systematically discussed in the literature. As a consequence, the literature is yet to produce structured guidance about the management of co-creation projects in different contexts. This paper addresses that gap by positing the idea of *"contextualized co-creation,"* taking the respective stages of the product life cycle as the relevant context. Our research, based on a review of existing theory and pertinent nascent theory from the literature, has enabled us to systematically elaborate the concept of contextualized co-creation. We suggest a potential solution to the problem of determining *how a company may innovate with individual external contributors throughout the product life cycle*.

The balance of this paper, following this introduction, commences by addressing the theoretical background of our research, focusing on the product life cycle as the context of co-creation. In the third section we propose how companies might properly couple the elements of co-creation—namely co-creators, co-creation types, and co-creative settings—to their specific context at each stage of the product life cycle. In the fourth section we then discuss the conceptual framework of contextualized co-creation in detail. The fifth, and last, section offers conclusions, and summarizes theoretical and managerial implications of our analysis, as well as limitations of our current research and suggestions for further research.

2. Theoretical Background

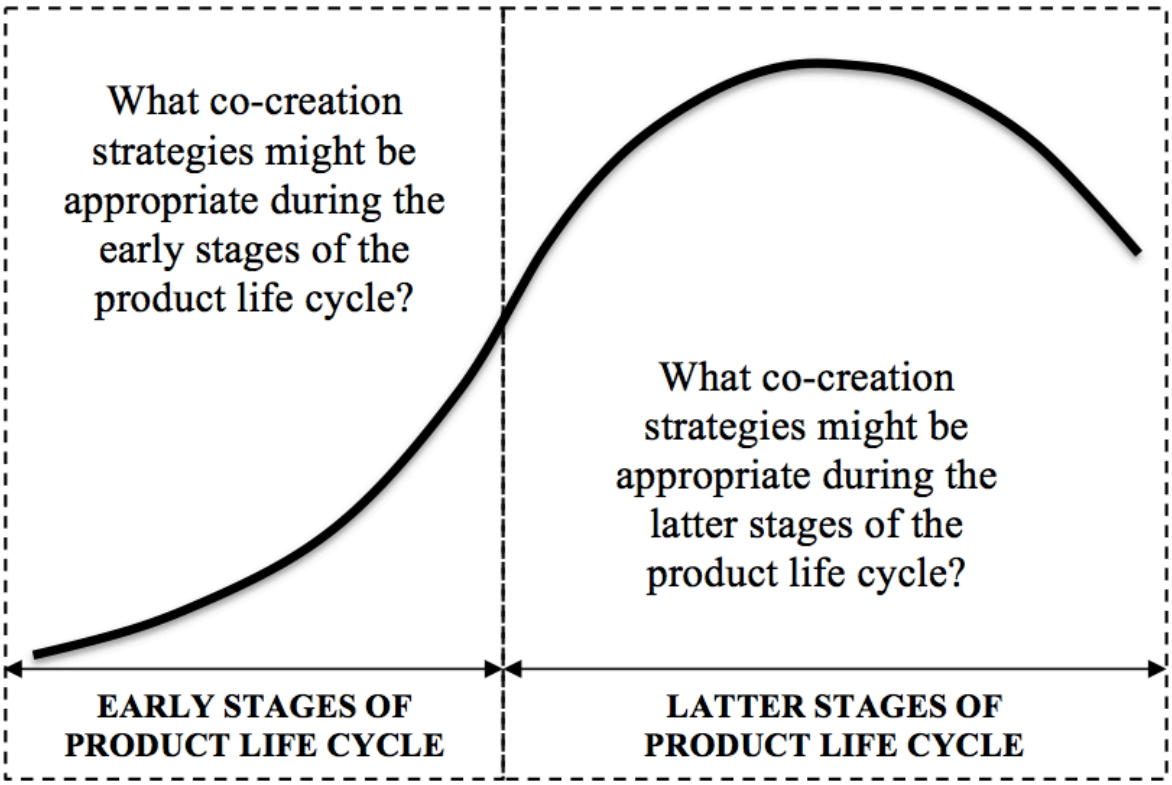
It is unlikely that a particular innovation management approach will work effectively in every situation (Huizingh, 2011). The most successful innovative companies do not achieve outstanding results simply by means of a single innovation approach, but by judiciously selecting the most appropriate one for a given context (Griffin, 1997). The idea of the context-dependent innovation—that is currently emerging in the field of innovation management—emphasizes that managers may improve their innovation-related decision-making by recognizing that there is a range of alternative strategy choices for different innovation contexts (Tidd, 2001; Ortt and Duin, 2008; Huizingh, 2011; Edvardsson et al., 2012). Seeing co-creation as a form of collaborative innovation (Tekic and Willoughby, 2016), we argue that it also has a context-dependent character, calling for the artful matching of its elements to the specific characteristics of particular contexts.

"Context" as an organizing concept for research is becoming more prominent in innovation studies and cognate fields of inquiry such as strategic management (Bamberger, 2008; Galvin, 2014). Drawing inspiration from such research in cognate fields, we could imagine a number of contextual frames that might be relevant, in principle, for configuring co-creation strategies. Contexts that have received serious attention in the literature include, for example, geography (Feldman and Florida, 1994; Rosenthal and Strange, 2003; Scott, 2006), industry (Rumelt, 1982; Dess et al., 1990; Zahra, 1993; Stimpert and Duhaime, 1997), and culture (Hofstede, 1994; Nakata and Sivakumar, 1996; Jones and Davis, 2000; Rhyne et al., 2002; Evanschitzky et al., 2012). Innovation management literature broadens the perspective by introducing a number of different innovation-relevant contexts, typically belonging to the internal environment of an organization, such as size of organization (Huizingh, 2011), type of organization (Tidd, 2001; Ortt and Duin, 2008), type and degree of innovation (Tidd, 2001; Ortt and Duin, 2008; Huizingh, 2011), stage in the product life cycle (Huizingh, 2011), or stage in the innovation process (Tidd, 2001; Huizingh, 2011). In this paper we have chosen to direct our attention towards one particular contextual frame, namely that of the *product life*

cycle (PLC). We have chosen to do this partly because of the need to be prudent in the scope of our inquiry; but also because the literature on product innovation itself points to the centrality of the product life cycle as a driving and constraining factor in product innovation, and emphasizes that opportunities for innovation, and the accompanying risks, vary at different stages of the product life cycle (Levitt, 1965; Kotler et al., 2004; Nadeau and Casselman, 2008). Additionally, the literature emphasizes the need for innovation throughout the product life cycle overall, embracing both discontinuous, radical innovation, and continuous, incremental innovation (Bessant et al., 1994; Corso et al., 2001).

Thus, leaving other potential contextual frames aside for future research, in this paper we focus on stages of the product life cycle as contexts for product innovation through co-creation. We differentiate between the early and the latter stages of the product life cycle, and argue that companies need to adapt their co-creation strategies to the distinctive conditions of these stages (Figure 1).

Figure 1 Product life cycle as the context of co-creation



During the *early stages of the product life cycle* companies emphasize basic product design and development, as well as the launching of new products on the market (Levitt, 1965; Kotler et al., 2004). The early stages are characterized by exploratory modes of behaviour by companies aimed at developing new products that may differ fundamentally from previous product generations. Companies invest heavily in R&D and breakthrough projects aimed at bringing new inventions and discontinuous innovation to the market (Garcia and Calantone, 2002; Poli, 2009). Being accompanied by high risks and uncertainties, these product-oriented projects demand exploration of knowledge about new materials, methods and technologies that will hopefully later lead to commercial success of a product in the market (Wheelwright and Clark, 1992; Aleixo and Tenera, 2009; Zhang et al., 2009). Conversely, the *latter stages of the product life cycle* are marked by a strong market orientation, characterized by growth of product sales, maturity of product design and, eventually, product decline in the market

(Levitt, 1965; Kotler et al., 2004). During the latter stages companies generally do not introduce major modifications to their products. They focus instead on differentiating products in the market, by incrementally improving product features or by building customers' experience through platform and derivative projects (Wheelwright and Clark, 1992; Garcia and Calantone, 2002; Aleixo and Tenera, 2009). These types of projects are less risky, usually require less resource commitment, and have a shorter development cycle than R&D and breakthrough projects (Wheelwright and Clark, 1992; Zhang et al., 2009). During the latter stages of the cycle companies generally do not need to explore new knowledge, but exploit knowledge that already exists to further improve current products (Zhang et al., 2009).

3 Co-creation throughout the product life cycle

Innovation with individual external contributors throughout the product life cycle calls upon companies to properly combine the elements of co-creation and make informed decisions about who to involve in co-creation, which co-creation type to adopt and how to develop a suitable co-creative setting, depending upon the context in question. In this section we propose how companies might make the right choice concerning the three elements of co-creation, namely co-creators, co-creation types, and co-creative settings, properly coupled to the context of the early and the latter stages of the product life cycle.

3.1 Co-creators

The first and probably the most important element of co-creation consists of the *co-creators*, whom we define as individual external contributors who are willing to get involved in co-creation and who may provide valuable input to the company's innovation projects (Tekic and Willoughby, 2016), based on their skills, knowledge, needs or experience. From the vantage point of the inputs they are able to contribute, we differentiate between "expert co-creators" and "consumer co-creators." Expert co-creators are individuals whose specific knowledge and skills are valuable primarily for a specific innovation project. Typical examples of expert co-creators will be field specialists, researchers, students, innovation enthusiasts, and lead users (Potts et al., 2008; Adamczyk, Bullinger and Möslein, 2012; Füller et al., 2012; Schweisfurth and Raasch, 2015; Roberts et al., 2016). On the other hand, consumer co-creators are individuals who may provide inputs that are essential for product improvement, based on their needs and experience. They are meant to represent the majority in the existing market and may often be found among companies' current or potential customers, or among typical consumers of the product category in question (Prahalad and Ramaswamy, 2004; Kristensson et al., 2008; Potts et al., 2008; Barczak, 2012; Greer and Lei, 2012; Lee et al., 2014; Candi et al., 2015).

If a company decides to engage in co-creation by involving individual external contributors in its innovation projects during the early stages of the product life cycle, those co-creators would need to possess a certain level of expertise and competence, a specific set of knowledge and skills, as well as vision and creativity, appropriate to the projects. They would also need to be the type of people who are interested in new technologies, who are able to foresee trends, who like to explore and solve problems, who are able to apply complex technical knowledge to practical challenges, and who normally adopt new products, whether technology-intensive or otherwise, earlier than other members of a social system (Rogers, 1962; von Hippel, 1986; Moore, 1991; Lettl et al., 2006; Gassmann et al., 2010; Nicholas et al., 2015). Potential co-creators with these kinds of attributes may provide valuable input to R&D and breakthrough projects focused on the development of products with a high level of

novelty and distinctiveness compared with products of previous generations (Poli, 2009). Thus, we offer the following research proposition:

Involvement of expert co-creators in companies' innovation projects fosters co-creation in the product-oriented context of the early stages of the product life cycle, because of their input based on knowledge and skills that are valuable in R&D and breakthrough innovation projects.

On the other hand, if a company decides to co-create during the latter stages of the life cycle of a product, it would need to involve individual external contributors who are not "paradigm changers." Co-creators involved in innovation during the latter stages arguably need to be mainstream-market consumers who have the ability to adapt the product based on their own experience and needs, and to help companies to understand which features and functionalities need to be added to enhance and broaden a product, or which need to be excluded to make a product more attractive to the majority in the market. Being relatively late in adopting new technology, their risk averseness may be of great value for enhancing product quality, as they tend to look for proven and guaranteed, but still much better, ways of doing things that they already do (Rogers, 1962; Moore, 1991; Füller, 2010; Nicholas et al., 2015). In this sense, companies' current or potential customers with these attributes would fit well with platform and derivative projects focused on incremental innovation and continuous improvements (Poli, 2009). Thus, we offer the following research proposition:

Involvement of consumer co-creators in companies' innovation projects may foster co-creation in the market-oriented context of the latter stages of the product life cycle, because of their input based on experiences and needs that are valuable in platform and derivative innovation projects.

3.2 Co-creation type

The second element of co-creation in our theoretical framework is the *co-creation type*. In our previous research on co-creation we have identified two fundamental types of co-creation, namely "company-to-one" and "company-to-many" co-creation (Tekic and Willoughby, 2016). Company-to-one co-creation is based on inbound open innovation processes (Chesbrough, 2003) and it takes place mainly through crowdsourcing contests, between a company and a co-creator who contributes the best solution to a specific problem. Even though a company usually collects numerous potential solutions to its problem, it normally chooses the best one as the winning solution and optimal contribution to its product innovation project (Bogers and West, 2012; Felin and Zenger, 2014). The co-creation therefore happens with only one co-creator, the winner, who in most cases is involved in further stages of product innovation (Tekic and Willoughby, 2016). On the other hand, being based on an interactive model of coupled open innovation (Enkel et al., 2009; Piller and West, 2014), company-to-many co-creation takes place between a company and a group of co-creators who also co-create among themselves and join their efforts to develop a solution to a specific problem (Bogers and West, 2012; Felin and Zenger, 2014). This type of co-creation happens within communities of people who share interests, or in co-creation workshops organized by companies to solve specific problems with selected groups of co-creators (Tekic and Willoughby, 2016).

Being directed towards future markets and long-term performance, product innovation within the context of the early stages of the product life cycle calls for intensive exploration of new knowledge (March, 1991), supporting companies in the development of new products that differ in essence from existing products in the market (Zhang et al., 2009; Valkokari et al., 2012; Revilla et al., 2016). New knowledge exploration enables companies to become more proactive, shift from their existing organisational routines and knowledge bases, and

turn their focus to the search for new possibilities, risk-taking, discovery and experimentation (March, 1991; Levinthal and March, 1993; Jansen et al., 2006; Lavie et al., 2010). In this sense, the co-creation type that is appropriately practiced during the early stages of the product life cycle would be one that facilitates great intensity of sharing, and the recombination and profound evaluation of ideas, resulting in a smaller number of thoroughly conceptualized co-created solutions, based on newly generated knowledge. It would enable interaction and co-creation among all participants, not just between a company and co-creators, but also among co-creators themselves, creating synergy in problem solving. Thus, we offer the following research proposition:

Adoption of the company-to-many co-creation type fits the context of the early stages of the product life cycle because it supports the exploration of new knowledge—through interactive coupled open innovation processes—that is important in R&D and breakthrough innovation projects.

On the other side, product innovation within the market-oriented context of the latter stages of the product life cycle calls for the intensive exploitation of existing knowledge (March, 1991) that would enable companies to improve their products (Zhang et al., 2009; Valkokari et al., 2012; Revilla et al., 2016) by responding to mass-market consumers' needs and experiences. Knowledge exploitation here expresses a reactive strategic orientation, aimed at short-term performance with low risks, concerned with efficiency, implementation and execution (March, 1991; Levinthal and March, 1993; Jansen et al., 2006; Lavie et al., 2010). In this sense, the type of co-creation that is appropriately practiced during the latter stages of the product life cycle would be one based on an outside-in process to access external knowledge sources (i.e., via crowdsourcing) to complement the company's internal knowledge base, thereby enabling companies to expose their problems to a large number of potential co-creators with diverse backgrounds and perspectives (Garcia Martinez and Walton, 2014). It would also allow companies to access and exploit existing knowledge about their products and find "quality in quantity" at low cost. Thus, we offer the following research proposition:

Employment of the company-to-one co-creation type fits the context of the latter stages of the product life cycle because it supports the exploitation of existing knowledge—through inbound open innovation processes—that is important in platform and derivative innovation projects.

3.3 Co-creative setting

Finally, even if co-creators with the required set of characteristics for co-creation within the specific context have been located and engaged, and even if the appropriate co-creation type has been adopted, it is also important for a suitable co-creative setting, or platform, to be provided for the co-creation project. That can be either an online setting or an offline (face-to-face) setting. Companies may virtually integrate (i.e., connect online) potential co-creators in product innovation projects and challenge them to share their ideas and solutions online, through crowdsourcing contests, social networks, forums, or communities, empowered by innovation toolkits (Füller and Matzler, 2007; Piller et al., 2011; Haavisto, 2014). In addition to the online environment, companies can engage co-creators through specific workshops, competitions, or hackathons, organized in purposefully designed offline co-creative spaces, such as living labs, idea labs, or innovation labs, fab labs and hacker spaces (Almirall Mezquita and Wareham, 2008; Schaffers et al., 2009; Tekic et al., 2013; Wilhelm, 2013).

Because it is focused on invention and discontinuous innovation as highly creative and risky endeavours in dynamic technological environments and unexplored knowledge domains, co-creation during the early stages of the product life cycle requires an in-depth,

richly textured and multi-faceted form of engagement with a few key external sources of innovation that are able to provide valuable inputs for a company's innovation project (Laursen and Salter, 2006; Cruz-González et al., 2015). To support deep external searching, the co-creative setting needs to facilitate face-to-face collaboration and efficient communication among co-creators, enabling them to join their efforts in product innovation and thorough analysis of a small number of proposals. These conditions are typically found only in the offline setting, where it is possible for a work-space or interaction-space to be purposefully designed to stimulate creativity and to evoke an innovative spirit amongst participants in co-creation, through brainstorming sessions, teamwork or experimentation in real-world settings (Almirall Mezquita and Wareham, 2008; Schaffers et al., 2009; Tekic et al., 2013; Wilhelm, 2013). Thus, we offer the following research proposition:

The offline setting is suitable for co-creation within the context of the early stages of the product life cycle because it supports an in-depth, richly textured and multi-faceted form of engagement with external sources of innovation that facilitates harvesting the potential of R&D and breakthrough projects towards high product novelty.

Conversely, to achieve a high quantity of potential proposals for product improvements—as is required during the latter stages of the product life cycle—it is appropriate for companies to scan a wider number of search channels when seeking external sources of innovation (Laursen and Salter, 2006; Cruz-González et al., 2015). In the latter stages, external search breadth increases a company's innovation performance, as it intensifies the use of existing knowledge in less risky and less resource-committing projects in technologically stable environments (Cruz-González et al., 2015). Contemporary resources in information and communications technology—particularly those available on the Internet—enable companies to conduct broad-based external searching and to crowdsource knowledge from outside the boundary of their respective organization (Haller et al., 2011; Natalicchio et al., 2014). Such activity may be supported by the online environment of social networks, by companies' own platforms, or by innovation intermediaries that offer such services to companies on a commercial basis. Thus, we offer the following research proposition:

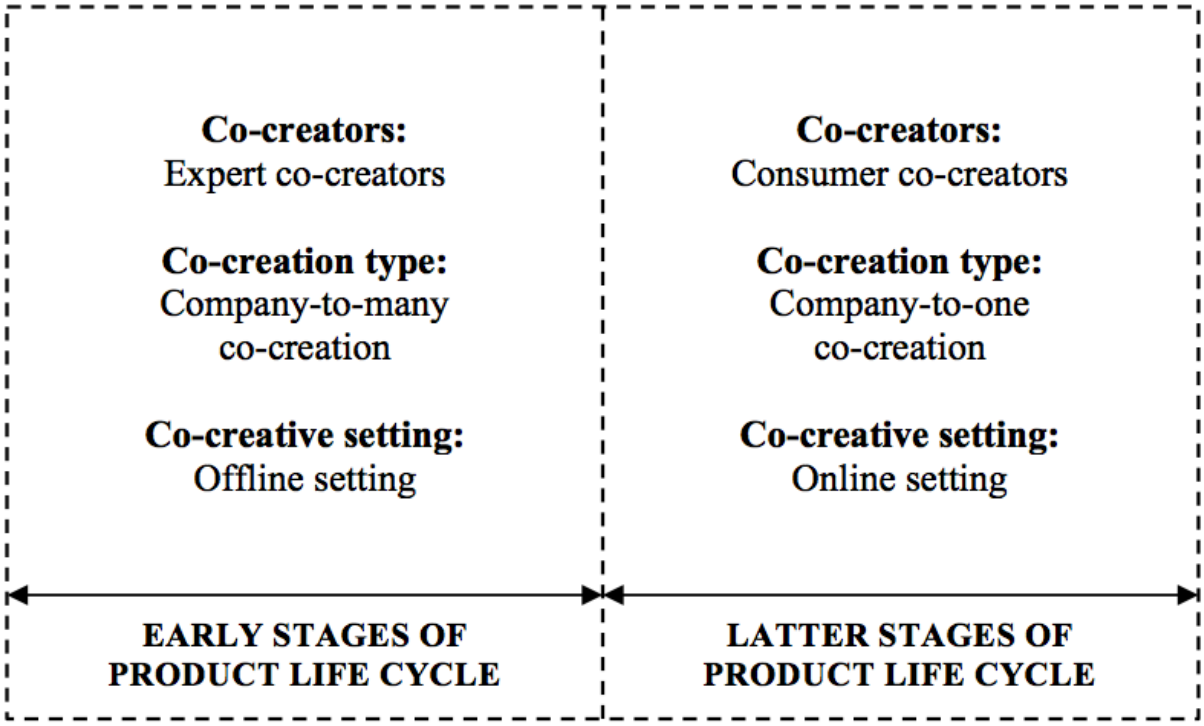
The online setting is suitable for co-creation within the context of the latter stages of the product life cycle because it supports a broad-based approach towards accessing external sources of innovation, thereby garnering the potential for continuous improvements in products through platform and derivative projects.

4 Contextualized co-creation: conceptual framework and discussion

We began our analysis by defining two distinct contexts for co-creation and then built on that foundation by calling for companies to adapt their approach to co-creation by appropriately configuring the three primary elements of co-creation—namely, co-creators, co-creation types, and co-creation settings—for each respective context. We then proposed *how* companies might decide what is the appropriate configuration of those three elements for each of their co-creation projects. In other words, we proposed an approach to deciding *who* to involve in co-creation projects, *which* co-creation type to adopt and *what* the most suitable co-creative setting would be, for the contexts of both the early stages and the latter stages of the product life cycle. These propositions serve as the basis for our conceptual framework for *contextualized co-creation* (Figure 2). They also enable us to suggest a potential solution to the practical problem of how a company may manage its innovation process strategically, through co-creation projects, with individual external contributors throughout the product life cycle. Thus, our conceptual framework may also act as a rubric for decision-making in design and management of co-creation projects.

On one side, considering the strong emphasis on the potential for radical innovation and development of new products during the early stages of the product life cycle, our conceptual framework suggests that *co-creation with expert co-creators through the company-to-many co-creation type within the offline co-creative setting is an appropriate configuration of co-creation elements within the context of the early stages of the product life cycle.* This configuration may be illustrated by the example of the Co-Creation Awards winner for 2012 in the "For Profit Innovation" category, namely Mobile FliteDeck, developed by Jeppesen Inc. The company invited 58 pilots from nine airline companies, who were familiar with 24 different airplane models, as expert co-creators to contribute their knowledge and skills to the co-creation of this industry's first interactive mobile route flight application, setting new standards for the field. The company-to-many co-creation type was adopted, with both company personnel and co-creators joining their efforts to cover differences in workflows and workload. It took place within the offline setting, generally in airline cockpits as a certified complex environment, with the aim of understanding the pilots' mental models and contexts of use (Co-Creation Awards, 2012; Jeppesen Inc., 2012).

Figure 2 Contextualized co-creation – conceptual framework



On the other side, our conceptual framework suggests that *co-creation with consumer co-creators through the company-to-one co-creation type within the online co-creative setting is an appropriate configuration of co-creation elements within the context of the latter stages of the product life cycle*, bearing in mind the efforts directed towards incremental innovation and continuous product improvements during the latter stages. It can be illustrated by the example of the Oral-B product co-creation initiated by Procter & Gamble, resulting in the Oral-B SmartSeries 7000, the world's first electric toothbrush connected to an app via Bluetooth. The company organized a crowdsourcing contest supported by the eYeka online platform, adopting the company-to-one co-creation type within an online setting. Solutions were submitted by consumer co-creators, mostly users of electric toothbrushes, who uncovered their needs for more personalized dental regimens, and ideas for unique brushing experiences.

All submitted solutions were reviewed by a jury and the most interesting and promising ones were rewarded by a financial prize (eYeka, 2016).

The core idea behind *contextualized co-creation* is the possibility that particular co-creators, a particular co-creation type and a particular co-creative setting, may be more suitable than others for a particular product life cycle context (which we define here as either the early or the latter stages of the product life cycle). We are aware that companies in fact practice a wide variety of configurations of co-creation elements throughout the product life cycle, many of which do not conform to our propositions. However, co-creation during the early stages of the product life cycle involving consumer co-creators, the company-to-one co-creation type or online co-creative setting, arguably does not allow companies to benefit fully from input based on expert knowledge and skills, from high levels of new knowledge exploration and from in-depth tapping of external sources of innovation, all of which are typically crucial for R&D and breakthrough innovation projects. Nevertheless, the online setting, when combined with either the company-to-one (e.g., online crowdsourcing contests) or company-to-many (e.g., online innovation communities) co-creation type, might be useful in enabling companies to locate promising expert co-creators who would later be involved in company-to-many co-creation activities within the offline setting. Even though, if managed well, company-to-many co-creation within the online setting can allow intensive collaboration among participants, this co-creation approach raises numerous IP-related problems (e.g., patentability of concepts published online, IP protection and control in the online environment, etc.), consequently leading companies to eventually transfer projects to the offline setting. Company-to-many co-creation within the offline setting empowers companies to co-create with carefully selected co-creators, engaging the efforts of all in joint development of new products, while building proper incentive structures for each and every participating co-creator. This enables companies to avoid creating the impression that they are maltreating or abusing co-creators as a result of treating them as an un-compensated workforce. Additionally, it enables companies to maintain control over the process of knowledge exploration, keeping it within a small and closed group of people, deploying non-disclosure agreements or other IP control mechanisms.

On the other hand, co-creation during the latter stages of the product life cycle involving expert co-creators, the company-to-many co-creation type or the offline co-creative setting, does not allow companies to take the advantage of the input based on consumer experiences and needs, intensive exploitation of existing knowledge and broad scoping of external sources of innovation that are significant for platform and derivative projects. As expert knowledge and skills for technical modifications of a product can typically be found inside the company itself during the latter stages of the product life cycle, there is instead greater need at such stages for input from consumer co-creators and for companies to use co-creation to generate pools of ideas for product improvements. Considering that the offline setting does not allow companies to engage in broad-scope searching for sources of innovation, and usually calls for additional resources, we propose that it will generally be appropriate for companies to choose the online setting in the latter stages of the product life cycle. As we stated earlier, company-to-many co-creation within online communities may allow intensive collaboration among participants, but it brings along with it IP-related issues, as ideas are shared freely and intermingled extensively. Accordingly, we propose that during the latter stages of the product life cycle it may be appropriate for companies to employ company-to-one co-creation through online crowdsourcing contests, inviting co-creators to submit their ideas (one co-creator — one idea) and vote for the ideas of others. This co-creation approach would enable companies to establish adequate control mechanisms, but nevertheless still benefit from the community spirit typically associated with company-to-many co-creation, while also gaining insight in to mass-market consumer preferences.

Bearing in mind the foregoing discussion, we believe that our concept of contextualized co-creation may be useful for companies that wish to hone their product innovation strategies to take advantage of the extant opportunities for innovation at both the early and the latter stages of the product life cycle, while also taking into account the concomitant prevailing risks at each stage.

5 Conclusions

Although co-creation has attracted much attention in the academic world since the beginning of the 21st Century, there are still gaps in our understanding of how it is practiced, and how it may be practiced, in different contexts. We address this gap by positing the concept of *contextualized co-creation.* This concept enables us to put forward a solution to the practical problem of how a company may manage its innovation process strategically, through co-creation projects, with individual external contributors throughout the product life cycle; and it does so by emphasizing the distinctiveness of the early and the latter stages of the product life cycle. The proposed concept also provides researchers in the field of product innovation strategy with a constructive approach to defining the character of co-creation and its basic elements that hitherto have not been clearly identified or explained in the pertinent literature. In this way, our paper evinces some new research insights, contributes to the on-going academic debate about co-creation and facilitates the creation of a new research agenda. Additionally, our research evokes strong implications for practice. When implemented, the concept of contextualized co-creation, as we have articulated it here, may form the basis of a powerful specialized strategic decision matrix for companies, giving them insight about how to run co-creation projects throughout the product life cycle—articulating who might be appropriate as co-creators in innovation projects, which type of co-creation might be appropriate to adopt, and what the appropriate co-creative setting might be—taking in to account the respective context at each stage of the product life cycle.

Alongside the opportunities for further research, some limitations of the research reported in this paper are worth mentioning. Our research at this stage has been mostly exploratory and descriptive, drawing upon extant theory in the literature. The research would therefore be enhanced by substantial new empirical work, particularly comparative analysis of a wide variety of co-creation cases. The focus of such research would be verification of the pertinence of the three primary co-creation elements we have enunciated as well as their strategic coupling with the two defined co-creation contexts. However, even though the findings of our current research must be viewed as tentative, and as calling for empirical confirmation, we believe that this paper provides a valuable foundation for deeper research. It offers useful insights into an under-researched topic, specifically, the context-dependence of co-creation in relation to the product life cycle. Additionally, this paper opens some new research questions, such as whether there are other strategically important elements of co-creation beyond the three that we have enunciated. It also raises the question of what co-creation contexts other than stages of the product life cycle—such as geography, industry or culture—deserve careful analysis. Nevertheless, despite these limitations and caveats, our research has provided plausible support for the idea that, in general, a successful co-creation strategy for product innovation will be customized for the specific context in which it is implemented, and for the idea that the early and the latter stages of the product life cycle may be treated as distinct contexts for co-creation.

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