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To Be or Not to Be. The Servitization Dilemma and the Role of Design

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Abstract: This article seeks to answer the question of how value proposition is created using a human-centred approach in the context of deservitization, in general, and service dilution, in particular. The article aims to describe the journey of a company which undertook service dilution and used human-centred design to create a new product-oriented value proposition. The study adopted a research through design approach in conjunction with a single case study of an engineering and manufacturing services provider that recently initiated a service dilution process. Within the framework of university-business collaboration, a design project was developed. The main insights of the study pertain to the role of human-centred design as a way of learning and surpassing the pure exploitation of existing capabilities during the service dilution process. Learning by design is also seen as a potential alternative learning process that fuels exploration during the service dilution process.

Keywords: business model innovation, value proposition, deservitization, learning, human-centred design

1. Introduction and research aim

Servitization has traditionally been viewed as a process on the continuum from pure products to pure services, with increasing importance given to services in the value proposition (Maglio & Spohrer, 2013). Despite the popularity of servitization as a process aimed at manufacturer diversification, survival and growth, research reveals mixed results concerning its effectiveness (Cusumano, Kahl, & Suarez, 2015; Raja, Bourne, Goffin, Çakkol, & Martinez, 2013).

Furthermore, contrary to the general understanding, an increasing number of manufacturers are actually withdrawing from service initiatives—a process referred to as reverse servitization or deservitization (Kowalkowski, Gebauer, Kamp, & Parry, 2017). According to Kowalkowski et al. (2017), deservitization refers to the transformational process whereby a company shifts from a service-centric to a product-centric business model and logic. They explain that such a process naturally starts with service dilution, whereby the relative importance of service offerings to a

company decreases; its service portfolio decreases and is augmented with product business offerings. One example of deservitization is Xerox, which announced in 2016 that they were creating two different, independent companies. The first company (Conduent) would focus on the service-centric business, while the second (Xerox) would remain hardware-centric (Kowalkowski et al., 2017).

While researches have analysed servitization risks (summarised in Table 1, e.g. Benedettini, Neely, & Swink, 2015; Visnjic, Wiengarten, & Neely, 2013; Vladimirova, 2012), the challenges of service dilution have scarcely been studied.

Table 1. Servitization: Principal challenges. Adapted from Vladimirova (2012).

Principal Servitization Challenges	
Organisational	New capabilities, skills and knowledge(s); A new service-oriented culture; Change towards more relational and humanistic mind-sets; New organisational structures
Financial	New investments and/or the redistribution of existing financial resources; Difficulties identifying financial risks and the benefits of the new service-oriented value proposition; Prizing; Divergences on value and costs perception between providers and customers; Higher uncertainties regarding financial flows
Customer Relationship	New relationship models with customers (from transactional to relational models)
Supply chain	Expansion or modification of the existing status quo in the value chain; New relationship dynamics among value chain actors; Shifts of importance among value chain actors
Market	Uncertainties of the new offer in the market; Lack of market demand and conflicts with existing service providers in the market; New competitors; Regulatory barriers for the new service offerings

Additionally, existing research has not yet adequately addressed the underlying reasons behind companies pursuing such an approach or how new value propositions are designed. As Åkesson, Skålén, Edvardsson, and Stålhammar (2016, p. 341) state: 'We suffer from limited knowledge of how value propositions themselves are created, developed, and changed.' Additionally, there is little research on failed servitization cases or on deliberate deservitization strategies (Kowalkowski et al., 2017; Valtakoski, 2017). More specifically, there is surprisingly little evidence on management issues in organisations pursuing a deservitization journey (Johnstone, Wilkinson, & Dainty, 2014).

Thus, in this study, in focusing on management issues, we use a human-centred design (HCD) approach in the context of deservitization, in general, and service dilution, in particular, to answer the question of how value propositions are created. The research aim of this article is to describe the journey of a company which has undertaken service dilution and used HCD to create a new product-

oriented value proposition as part of its new business unit. Overall, the case is not an illustration of a total transformation from a service- to product-oriented business model; rather, it is an example of service dilution, whereby the company augmented its service offerings with a product business activity. Exploring this case will give us insights into the role of design in business and the opportunity creation at an established company, thereby answering the call for further research on managerial issues in the context of service dilution.

2. Prior literature

Researchers frequently examine business models and business model innovation (Chesbrough, 2010; Lambert & Davidson, 2013; Spieth, Schneckenberg, & Ricart, 2014). A business model presents an organisation's operational plans, revenue sources, customers and products (Margretta, 2002). Traditionally, the business model concept, which is multifaceted at the systems level, has taken a comprehensive approach in its description of how companies strive to be profitable. Every business model consists of a number of interrelated building blocks that form different configurations, which can be used to evaluate change choices (Teece, 2010). Business models, as configurations of interrelated activities, play an important role as devices that can be used to achieve new insights and to take new actions (Aversa, Haefliger, Rossi, & Baden-Fuller, 2015). This continuing process of change in developing or modifying a business model is referred to as business model innovation (BMI). According to Björkdahl and Holmén (2013), BMI requires designing and implementing novel and feasible business models by creating new configurations. In BMI, an organisation revises its current business model in order to achieve a competitive advantage. In this paper, we employ the definition of Santos, Trevinyo-Rodríguez and Velamuri (2009, p. 14) in seeing BMI as 'a reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes'. Researchers have emphasised that BMI is an ongoing, complex, collective, cyclical and interactive activity that involves active experimentation and learning. Thus, BMI is not a one-off event. It involves a long process of trial-and-error that often features iteration, failure and learning (e.g. Demil & Lecocq, 2015; McGrath, 2010; Sosna et al., 2010). Berends, Smits, Reymen and Podoynitsyna (2016) maintain that BMI is a complex process of joining action and cognition rather than a two-step, sequential process of conception and execution in which a new business model is developed as an idea and then implemented as a reality. In this process, the role of knowledge is crucial.

The transformation from service- to product- or from product- to service-oriented business models requires companies to undertake BMI. Generally, the key to BMI is a value proposition that aims to solve problems, meet customer needs and satisfy their wants (Osterwalder, Pigneur, Bernarda, & Smith, 2014). According to Macdonald, Wilson, Martinez and Toossi (2011), in the literature, 'value' is commonly described as profit, various other advantages and a sense of well-being enjoyed by beneficiaries from the acquisition of a product, service or relationship. Thus, value is an experiential and contextual concept. While the producer and beneficiary co-create value, the beneficiary alone evaluates it. Lusch and Vargo (2014, p. 57) define value proposition as the *'representation of how an actor proposes to positively participate in value creation with a beneficial actor.'* Thus, a value proposition is more than the offer of a product, service or relationship that the manufacturer thinks the customer needs or wants (O'Cass & Ngo, 2012).

Research and practice have suggested the use of tools for designing value propositions. Such tools should be used for learning, knowledge creation, and the identification, visualisation and demonstration of value to customers (Baines & Lightfoot, 2013; Kindström, 2010).

As conceptualised in this paper, during BMI and value proposition design, the main purpose of the firm is to enable the creation, integration and transfer of knowledge. The question, then, is how companies can manage these three processes. One possible way is to use design principles and tools for the creation of visual artefacts from an HCD approach. Such artefacts can be used to enable learning and knowledge creation, integration and transfer as well as to stimulate collaborative innovation and the communication of new value propositions. According to Täuscher and Abdelkafi (2017), choosing a visualisation tool influences cognitive processes, creates mental models and helps establish shared understandings. Eppler and Hoffmann (2012) claim that managers develop and communicate different mental images of their value propositions, depending on the tools they use. This raises the question of how value propositions are created using a design-led approach in the context of deservitization, in general, and service dilution, in particular.

One of the design-led approaches is HCD. It is a design philosophy that develops solutions by involving the human perspective in all steps of the design process (Norman & Verganti, 2012). Originally born in relation to human-computer interaction (Norman & Draper, 1986), today, HCD is used to communicate, interact, empathise and stimulate people into understanding their needs, desires and experiences for the development of new products, services or even business strategies (Giacomin, 2014).

The HCD toolbox is continuously expanding through the adaptation of tools from other disciplines (such as ethnography or computer sciences) or developing new tools from design practice (Hanington, 2003). As Giacomin (2014) indicates, HCD includes tools for collecting facts about people (such as anthropometric and cognitive models), design ethnography tools (Salvador, Bell, & Anderson, 1999) for interacting with people (so as to facilitate the detection of desires and needs, either by verbal or non-verbal means, such as interviews, questionnaires or cultural probes) and tools for visualising intuitions, opportunities and possible futures (such as Personas, Customer Journey Maps, Design Scenarios, Storyboards or Evidencing techniques). When organisations apply HCD tools for strategic purposes, strategic design serves as a discipline that helps companies determine what to do, both in the short and long terms (Danish Design Centre, 2004). In strategic design, HCD tools are combined with business mind-sets in order to support decision making and business risk mitigation (Brown, 2008).

3. Methodology

This study aimed to describe the journey of a company which undertook service dilution and used HCD to create a new product-oriented value proposition as part of its new business. We employed a research through design approach. Zimmerman and Forlizzi (2008, p. 42) define research through design as an iterative qualitative research approach that ‘employs methods and processes from design practice.’ They explain that the approach, which is appropriate for exploratory studies, uses design practice to inform research (see also Stappers, 2007). The approach can illustrate researchers’ initial theories as design artefacts (e.g. prototypes, visualisations and models). Thus, it is used to describe a preferred state, to offer a possible solution or to codify an understanding of a situation. For example, in research on value proposition design, design methods and artefacts from a design project may be used to develop conceptual frameworks and guidelines (e.g. Baldassarre, Calabretta, Bocken, & Jaskiewicz, 2017). In line with this prior research, the present paper describes how a value proposition was created using HCD in the context of deservitization, in general, and service dilution, in particular.

The research through design approach, in contrast with other qualitative method approaches, not only designs practice that informs research but also helps organisations embrace innovation (e.g. the transition towards servitization) and acquire knowledge (McNiff, 2017; Powell, 2016; Shani & Pasmore, 1985; Zimmerman & Forlizzi, 2008). Horváth (2008) states that research through design is an approach that facilitates scientific exploration and knowledge construction. The researcher who takes the research through design approach has a participatory role in the intervention, action and reflection cycles (McNiff, 2017). Through intervention, action and reflection, knowledge is gradually gathered, integrated and contextualised. At the same time, a solution develops (Coghlan, 2011; Reason & Bradbury, 2001).

In order to study the role of design, we used the research through design approach in conjunction with a single case study of a Spanish engineering and manufacturing services provider that recently began a service dilution process. As Lincoln and Guba (2002, p. 207) state, each '*case study is a construction, a product of interaction between respondents, site and researcher*'. Therefore, the combination of these two research approaches is aligned with the purpose of this study. We selected this case company because it recently initiated service dilution and selected HCD as the driver of the process. According to Eisenhardt and Graebner (2007), a single case study is appropriate for exploratory research when theory development is limited, empirical evidence is scarce and specific issues can be addressed. Research on the linkage between the service dilution and HCD processes is still at an embryonic stage. Greater use of qualitative data from exploratory single case study research may lead to additional studies on this linkage (Noda & Bower, 1996).

We conducted three interviews for the data collection, interviewing two managers – the business manager (BM) and the sales manager (SM) – and a product development engineer (PDE) at the case company. Each interview, which was audio-recorded, lasted between 30 and 45 minutes. We asked questions about the business model and value proposition design at the company, why a change towards service dilution was needed as well as the interviewees' perceptions of the role played by design in the process.

4. The service dilution journey – Case analysis

4.1. The context

The company – EKIDE – was established 30 years ago when three engineering students from Mondragon Unibertsitatea, supported by an entrepreneurship centre, developed a new numerical control (CNC) engraving system. At the beginning, EKIDE based its offering on manufacturing and selling automated engraving machines equipped with their new CNC system. Thus, the company started with a classic product-oriented value proposition. However, as the BM stated, very soon, and pushed by customer requirements, the company changed its business model towards services: *'During that time of economic crisis, the customers were not interested in acquiring the engraving machine but rather in the functionality of the machine'.*

Therefore, in order to survive, EKIDE started to offer three-dimensional machining and engraving services to other manufacturers. Through different service contracts with customers, EKIDE acquired deep knowledge on design, processing and manufacturing engineering in different technologies. Today, EKIDE is a small and medium-sized enterprise (SME), with nearly 100 employees and an

invoicing volume of EUR16 million per year. The company has three service business units operating globally.

The service dilution process took place in the manufacturing and engineering business unit. This unit offers integrated design, engineering, prototyping, rapid tooling and pre-series manufacturing services to large manufacturers operating in the healthcare, household appliances, transportation and automotive sectors, among others. Despite the fact that EKIDE transformed itself into a service company soon after its establishment and that the company gained success and rapidly expanded its service offerings, there was constant tension regarding the company's desire to be a producer and seller of its own products under its own brand. As the BM said: *'Our competitive advantage is based on our integrated manufacturing and engineering knowledge. Today, we are providing advance services based on our highly specialised competences and skills […] but the idea to develop our own products was something that we always had in mind and appeared recurrently during all these years*'. Therefore, the reason for initiating its service dilution was based on the inherent idiosyncrasy and cultural beliefs of the company rather than a market-pull or technology-push business strategy.

The company managers selected the childcare and well-being sector to explore which product to design. Management selected that sector because the manufacturing and engineering business unit had considerable experience developing electromechanical healthcare products for its customers. EKIDE was confident that it had a sufficient level of understanding of the functioning of the market, the dynamics of the value chain and the different stakeholders involved in it. However, as the BM recognised: *'we realised that while the company had strong engineering knowledge and skills on "HOW" to develop and manufacture a product, at that moment, we lacked the skills, and we didn't have the time to identify "WHAT" product to develop'.*

The company managers, therefore, contacted the university where the engineers who had founded the company in the late eighties had come from. The objective was to launch a design project in order to identify what product to design for the childcare and well-being sector. The BM highlighted: '*We decided to do this project with the university because we wanted to follow very closely the project and participate in all the process'.* Therefore, the case company relied on exploitation (e.g. building on existing knowledge and capabilities) in deciding on the scope of the service dilution, while at the same time relying on external competence in deciding what product and value proposition to design.

4.2. The design project and its influence in service dilution

The design project was developed within the framework of university-business collaboration. The project lasted six weeks and was set in a strategic design MSc. programme throughout a problem-based learning (PBL) course. According to Fink (2002), PBL frameworks are useful to foster knowledge transfer between university and business. The framework was set up to enable EKIDE to observe how the students applied HCD tools to identify new product concepts for the childcare and well-being sector. The interaction between the design students and the company managers and engineers took place through workshops. In these workshops, the students presented the progress of the project, explaining the HCD tools applied and the results obtained. EKIDES' managers then evaluated the students' work and shared impressions and discussions with them. In doing so, the company ensured that the students were working in line with company objectives, and the company members experimented with HCD tools.

The company delimited the project by setting the objective market, the age of the children to whom the product would be directed and the technologies available to develop and manufacture the

product. The exploration phase was guided by expert interviews (Bogner, Littig, & Menz, 2009) with psychologists, doctors, nurses, educators and pharmacists as well as by user interviews and observations (Kuniavsky, 2003) during the daily lives of parents with children between 0 and 5 years old. The objective was to uncover problems, needs and interests that could potentially lead to the identification of new product ideas. Visualisation tools, such as Personas (Cooper, 1999) and Customer Journey Maps (Koivisto, 2018), were created from data gathered from the interviews and observations. These visualisations were used during the workshops with the company members to summarise and share insights in a commonly understood, codified way. Afterwards, during the ideation phase, the students focused on generating new product ideas and visualised them through two-dimensional and three-dimensional models: Storyboards (Goodwin, 2009), Customer Journey Maps (Koivisto, 2009) and Design Scenarios (Manzini, Collina, & Evans, 2004). As a result, the company obtained a number of new product concepts.

One of these concepts, an automatic rocker for baby prams and strollers (Figure 1), was seen as valuable by the company managers. The concept was an artefact that attached to the bar of the baby pram or stroller, generating a transactional movement, rocking the pram or stroller forward and backward to help the child fall asleep.

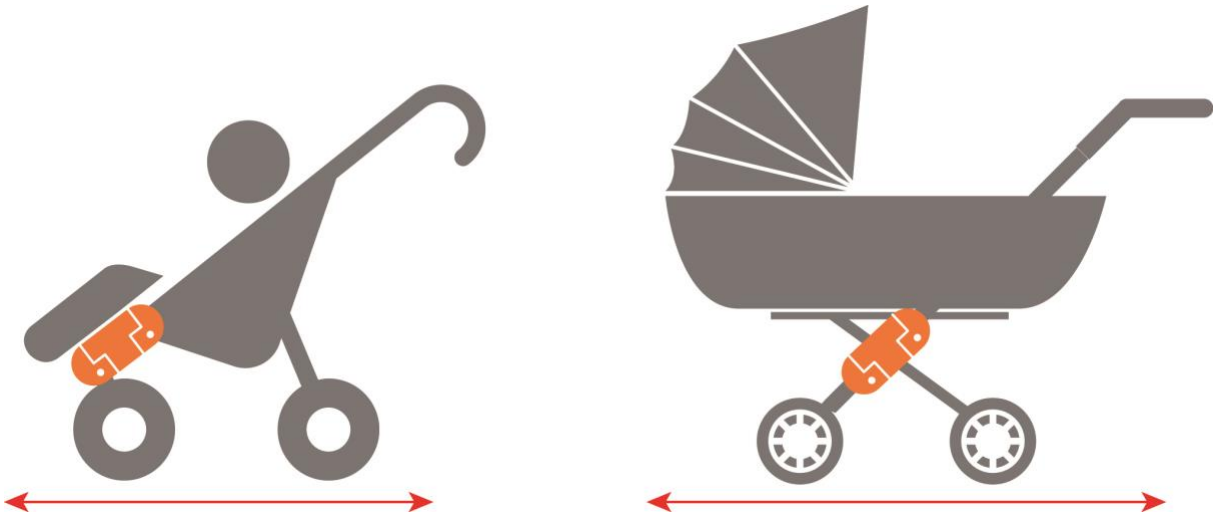

Figure 1. Visualisation of the automatic rocker conceptualised by the students.

Both the HCD tools (for interacting with people to facilitate the detection of desires and needs) and the tools for visualising intuitions, opportunities and possible futures were relatively new to the company members. However, they were found to be useful by the participants. In the interviews, the BM highlighted the ability of the students to empathise with users: '*I was surprised because the students weren't parents, but they were able to quickly stand in their shoes, thanks to the research they did*'. In addition, the design process was seen as a well-structured process by the BM: '*For me, the process looked clear and well-structured, for example, I remember how the students spent much more than half of the project time exploring and identifying what you called 'insights' […] we saw that this phase was crucial to have new ideas before product development starts'.* The PDE reinforced these ideas: *'I think that what made the process easy to understand was the use of visualisation tools for expressing complex and abstract ideas […] the students used them many times at different stages of the process'.* The PDE also noted that the exploratory phases were approached by putting the focus on what was meaningful and significant for the user rather than focusing on technology: '*We as developers, we are always dealing with limitations linked to technology, costs, the terms of delivery, etc. The students were able to not get stuck on those things and to propose solutions that were fresh and not limited from the beginning'.*

This was a good example of how HCD supports the learning process of a company, allowing for better balance between exploitation (with a focus on existing technological capabilities) and exploration, with the help of insights generated from the use of HCD visualisation tools. Therefore, in the case company, the design-led process was a way of learning in the context of service dilution because the HCD visualisation tools (such as Personas, Customer Journey Maps and Storyboards), which were created throughout the process, codified knowledge on customers' needs, collected from tools in design ethnography (interviews and observations). This knowledge was shared with the decision makers of the company in charge of the service dilution process and was embedded into new product concepts that led the company to a new product-oriented value proposition. Thus, as part of the company's service dilution journey, the HCD process worked as a driving force for exploration, helping the case company identify what product to design.

4.3. Product development and market launch

As indicated above, the company considered the automatic rocker concept to be valuable. The company deepened the market research originally carried out by the students, shared the concept with some stakeholders operating in the childcare and well-being sector to check the sales potential and analysed the patentability of the concept. Once the company understood the market potential of such a product, it patented the idea, decided to allocate financial and human resources to develop the product, created a marketing and sales strategy and began searching for providers to mass manufacture and distribute the product.

The company decided not to establish the new product-oriented activity as a new business unit prior to witnessing its evolution. However, even if it was set up under the leadership of the manufacturing and engineering business unit, the new activity was completely separated from the service activities: '*People working in the development of the automatic rocker have nothing to do with our service activities and vice versa. We have hired new people to work in the development of the rocker […] we don't want that this interferes with our service businesses; they are two completely different things'* said the BM.

Soon, the first prototype of the concept was developed by the engineers of the company. The original concept of the students was modified in order to ensure that the product could roll the great majority of baby prams and strollers (Figure 2). As the PDE indicated: *'we changed the original idea of the students by creating a basic model which can be used with all types of baby prams […] we are working now on the integrated version and on a new version for cradles, but we decided to present the basic version to the distributors in trade fairs to start receiving feedback from the market as soon as possible'.* The prototype was presented at several trade fairs and received several awards: The Juvenile Products Manufacturing Association Innovation Award, The Family Review Centre Gold Award and All Baby & Child's New Product Showcase Award of Distinction.

However, several barriers became apparent. EKIDE had no experience in the business-to-customer market: '*Now, we are face to face with the final customer; the interlocutors are new for us',* said the SM. The company decided to create a new brand 'DEKI' (DEKI, 2018), distinct from its industrial service activities. It then invested marketing resources in social media, bloggers and influencers and deployed commercial activity in sectorial trade fairs to gain visibility for the new brand and product.

Additional issues linked to value chain dynamics came to light. The company understood its inexperience in terms of how the value chain works: '*We didn't expect so many intermediaries between us and the final customer […] this has a direct impact on the price of the product',* stated the SM. For example, the SM highlighted the importance of distributors in seeking to enter the new

market. This pushed the company to develop new products, besides the rocker, in order to create a range of products that would give consistency to the brand: '*The plan is to launch one new product per year',* said the BM.

Figure 2. The first model of the automatic rocker developed by the engineers of the company (DEKI, 2018).

Finally, the problem of significant financial risk was raised: '*Some numbers are starting to be scary*', warned the BM. The company did not expect such high investments: *'It's time to measure carefully the risks we are taking',* said the BM. At the time of the interviews, the product was ready for mass production, and the first units had already been sold. However, the company managers also understood the risk of failure regarding the new value proposition: *'It wouldn't be the first time that I believe that a product we developed for our clients is going to have a great success in the market and then for expectations to go unfulfilled',* said the BM.

Thus, as illustrated in the description above, the case company faced most of the servitization challenges listed in Table 1 during its service dilution journey. The company needed to acquire new design skills and adopt more of an HCD vision to develop the new product-oriented value propositions. The company was also pushed to create a new organisational structure and to hire new people to work exclusively in the new product-oriented business in order not to interfere with its service-oriented businesses. Regarding financial risk, significant new investments were needed in human resources and marketing strategies. In terms of customer relationships, the customers were different from those in the service businesses, and the company had to learn how to relate with end users, a completely unfamiliar terrain. Supply chain issues also became evident in the process because of misunderstandings relating to how the value chain works. Furthermore, the company had to overcome unexpected price increments due to value chain dynamics. Finally, the company managers were constantly preoccupied with uncertainties linked to the lack of market demand for the new product.

5. Insights

In this article, we sought to answer the question of how value proposition is created using HCD in the context of deservitization, in general, and service dilution, in particular. The aim was to describe the

journey of a company which undertook service dilution and used HCD to create a new product-oriented value proposition as part of its new business.

The analysis showed that the case company embraced service dilution, not because of market-pull or technology-push business strategies, but because of inherent idiosyncrasies and cultural beliefs. Furthermore, the company's journey into service dilution and the new product-oriented value proposition were initially fuelled by the prior understanding of the managers about which specialised skills and knowledge serve as sources of competitive advantage and can be exploited to create a new business model. In line with the findings of March (1991) and Valtakoski (2017), the initial search for a new product-oriented value proposition was exploitative in the sense that it was in the vicinity of the existing business model and sought to utilise existing capabilities. However, later in the process, the company was more explorative in seeking a value proposition that surpassed existing knowledge and capabilities. According to Valtakoski (2017), a balance between exploitation and exploration is needed to ensure success in both the short and long terms.

The case also gave us insights into the role of HCD in managing BMI and new value proposition design at an established company, thus answering the call for more research on managerial issues in the context of service dilution. In particular, HCD provided a way for the company to manage learning and to surpass the pure exploitation of its existing capabilities. HCD served as a micro-level learning mechanism in the conceptualisation of a new product-oriented value proposition within service dilution. This finding is the main contribution of this paper and complements the insights provided by Valtakoski (2017), who discusses learning and creation in relation to servitization/deservitization outcomes. As a complement to the three main knowledge processes suggested by Valtakoski (2017) – learning-by-doing, learning from a partner and knowledge leakage – we suggest a fourth learning process: learning-by-design.

HCD was used to codify knowledge on customer needs in the form of commonly understood codes. This knowledge was subsequently embedded in independent artefacts or concepts that helped the company advance in the service dilution process. Arguably, therefore, learning by design has the potential to be an alternative learning process and an engine for exploration during the service dilution process.

The case also revealed that many of the challenges of servitization found in previous research (e.g. Vladimiroiva, 2012) also characterised the service dilution journey of the case company. The challenges identified in the case dealt with organisational, financial, customer relationship, supply chain and market servitization issues.

While the case provided an empirical example in the broader context of deservitization, adding body to the otherwise relatively scarce empirical research (Valtakoski, 2017), as well as outlining learning-by-design as an additional learning process, the study does present limitations. The design intervention was limited to value proposition design in the service dilution process. More specifically, HCD assisted the case company with the generation of a new product concept and, relatedly, a new value proposition. However, HCD and the tools employed were involved neither in the strategic decision of undertaking the service dilution process nor in the product development and market launch. Therefore, avenues for further research could be to examine all the phases of the deservitization journey and how HCD can influence decision-making processes. Furthermore, it would be interesting to study how manufacturers develop the knowledge required for servitization/deservitization in terms of implementation projects, partners and other organisations. Another direction could be to explore how changes in the capabilities and knowledge base of the firm affect new value propositions and their corresponding success.

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