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Designing and Implementing Overarching Servitization Strategies in B2B Manufacturing Industry

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ABSTRACT

Purpose: This paper explores how a B2B technology-driven industrial manufacturer of capital goods can organise a service exploration process to create value for customers and end-users downstream of its value supply chain.

Design/Methodology/Approach: We employed the action research (AR) methodology to design and implement interventions, build new knowledge on strategic exploration and organise a design process for designing service value propositions in a B2B domain.

Findings: Based on the design roadmapping approach, we designed an intervention framework of a strategic service exploration process that addresses the needs and behaviour of customers and end-users in their future living context.

Originality/Value: This paper contributes new knowledge about organising end-user-focused product-service design capabilities and applying strategic design methods to innovate product-service value propositions in the B2B manufacturing industry.

KEYWORDS: Overarching Servitization, Service Design, Strategic Design, Roadmapping, Service Innovation

1. INTRODUCTION

Engaging with customers and addressing end-users' values have become increasingly challenging within servitization strategies (Adrodegari, 2021; Bakir et al., 2021; Bluemink et al., 2021). Wise and Baumgartner (1999) argue that manufacturing companies adopt servitization strategies because it allows them to rise above their traditional role as a supplier of products that provides only a one-off value transaction when the product is sold. They can generate sustainable revenue streams by descending downstream of their value chain and offering services and customer experiences that add value throughout the product life cycle. Going downstream the value chain and creating loyal customers who generate revenue streams during the life cycle of products is now commonplace in business-to-consumer (B2C) practice (Cruz et al., 2022; Wise & Baumgartner, 1999). For instance, in the smartphone example, although the product is purchased once, the associated services create most of the value during the smartphone life cycle. In addition, the monetised value stream of services created around the physical product exceeds the transaction value of the smartphone many times over. With service contracts based on subscription business models, smartphone users are committed to the provider of product-related services for more extended periods. The smartphone has degenerated into a means of providing services. In some subscription models, it is offered at cost, or even less, to entice consumers to take out a long-term service contract.

These practices are still in their infancy in the business-to-business (B2B) domain. While it is expected that B2B manufacturers usually have strong relationships with their customers within their business domain and therefore focus on and provide services linked to their products, they usually do not have direct connections with the customers' customers, the end-users (Lievens & Blažević, 2021). This paper addresses the research question: *"How can technology-driven B2B industrial manufacturers organise designing product-service value propositions for end-users"?* We explore how B2B companies can design a servitization strategy for product-service value propositions further downstream the value chain to capture value from end-users. It reports on an ongoing longitudinal action research project in a B2B industrial manufacturer. The focal company is a technology-driven industrial manufacturer of

capital goods for smart internal logistics. The company launched its servitization strategy to expand its product portfolio with value propositions for services combined with products that address its customers' and their end-users' new and perhaps yet latent needs. This paper contributes new knowledge on designing and implementing interventions and business models for customer and end-user-centric service innovation related to B2B manufacturers' core products and services. It demonstrates how servitization strategies can be designed and implemented to build sustainable business relationships with the customer, the customer-of-the-customer and business partners that provide complementary capabilities by creating triadic relationships where values are exchanged between the three involved actors and thus go beyond a one-to-one manufacturer-customer relation. We coined this as *'overarching servitization'* (Bluemink et al., 2020).

In this paper, we first report on the theoretical background of our research. We then report on the research set-up and the data we collected. Subsequently, we share our data analysis and the insights derived from it. Finally, we conclude the paper with theoretical and practical contributions and a reflective conclusion.

2. THEORETICAL BACKGROUND

Servitization is a valuable strategy for B2B manufacturers to expand their product portfolio with connected services. Kohtamäki et al. (2018) defined servitization as *"a transition process from selling products to selling product-service systems"*. Neely (2008) defined servitization as *"the innovation of organisations' capabilities and processes to better create mutual value through a shift from selling products to selling product-service systems"*. Embedded in both definitions is a direct relationship with customers and their needs. After all, the company will have to interact with its customers to get to know those customer needs. Hence, a servitization process fostering product-service innovation implies intensive engagement with customers and their needs. Jovanovic et al. (2021) explored how companies are using data platform technologies to facilitate customer engagement and interaction and govern differentiated services tailored to different types of customers and end users.

Technology-intensive manufacturers in the capital goods industry show a growing interest in servitization strategies to generate revenue streams from services. According to previous studies, manufacturers following a servitization strategy could significantly increase their revenues and profitability (Baines et al., 2010; Burton et al., 2017; Visnjic Kastalli & Van Looy, 2013). Jovanovic (2016) and Neely (2008) discuss the *'Power-by-the-Hour'* value proposition of Rolls Royce as a successful servitization example in B2B industry. Visnjic et al. (2017) describe the Rolls Royce case as an example where service design in the B2B domain may have played a vital role in transitioning to a service business model.

Other studies in the design stream argued that a design-driven approach is a helpful strategy for creating customer-centric product-service value propositions (Dong, 2015; R. Price & Kleinsmann, 2018). Research by Price et al. (2019), triggered by earlier research initiatives by Dong (Dong, 2015), showed that design-driven service innovation leads to successful outcomes. The field of industrial design has evolved from pure product design and engineering into designing product-service value propositions and innovation strategies. Hence, industrial designers are increasingly employed in strategic design processes to develop product-service strategies within the organisational context (Calabretta et al., 2017). *Design Roadmapping* is one such strategic design process for designing a servitization strategy because it brings together and integrates five essential strategic design activities into a strategic and tactical roadmap that help the company ideate and implement ideas for product-service value propositions: (1) creative trend research, (2) empathising with end-users, (3) future visioning, (4) value proposition ideation and (5) idea mapping (Simonse, 2018; Simonse et al., 2015). Canales Durón et al. (2019) add three more strategic design skills: (1) modelling value exchange relationships, (2) orchestrating service co-creation, and (3) transforming organisational networks.

Overall, at the interplay of servitization and strategic design literature, we observed a knowledge gap in the role service design could play in creating *overarching servitization* strategies to engage end-users in a sustainable future B2B service business and capture value from them.

3. RESEARCH STRATEGY AND METHODOLOGY

To answer our research question, we followed the action research (AR) methodology described by Coghlan (2019) to build knowledge about designing and implementing a strategic design process for developing the servitization strategy for the customer. According to Coghlan (2019), AR focuses on research '*in action*' rather than '*about action*'. *'In action'* implies that new knowledge evolves while executing successive intervention cycles. AR is a scientific approach to studying the solution of an organisational issue together with the people directly experiencing the issue; AR is, therefore, a participatory approach.

Coghlan's (2019) AR methodology follows four steps: constructing, planning action, taking action and evaluating action. They are preceded by a preliminary step describing the purpose and context of the AR intervention. We deliberately chose an AR approach to investigate an *ongoing* servitization strategy design process *in* the client's organisation while employees participate in the research. For data collecting during the AR project, we used surveys among workshop participants, semi-structured interviews, group discussions, field notes, and workshop steps visualised in online digital boards. This paper describes the results of the client company's third action research cycle (ARC 3) within as part of a longitudinal action research program (consisting of four AR cycles).

4. FINDINGS

4.1. Preliminary Step of ARC 3

Coghlan's preliminary step is an activity that precedes each ARC and in which we define the purpose and context of the ARC. The purpose of the client company's ARC 3 is to contribute to answering the research question, *"How can technology-driven B2B industrial manufacturers design product-service value propositions for end-users"?* Furthermore, more specifically, how can the company design value propositions to establish business relationships with customers-of-the-customer in an *overarching* sense, as we discovered in the Rolls Royce case (Bluemink et al., 2020).

ARC 3 took place in the context of a longitudinal *servitization* study in the client company, a B2B industrial manufacturer of baggage handling systems. Previous interventions (ARC 1 and ARC 2) have led to key insights that we used as a starting point in constructing the interventions for ARC 3. We have divided the key insights into end-user insights and the client company's future strategy.

1) End-user-related insights:

- Creating interventions beyond the technology-focused innovation context can lead to end-user-focused product-service value propositions.
- Shifting the technical feasibility focus to end-user value focus fosters new service solution directions.
- Mixed teams of designers, in addition to engineers, foster end-user-driven product-service solutions.

2) Future strategy-related insights:

- Involving novice strategic designers generates a more future-oriented perspective on the B2B industry's context.
- Future visioning capabilities are drivers for ideating servitization strategies.
- Developing digital platform knowledge is a driver for transitioning to servitization strategies.
- Using strategic design roadmapping fosters overarching servitization strategies through future visioning of product-service solutions "from the end-users' point of view".
- Going beyond the company's current organised innovation processes, even if novice strategic designers do not have in-depth knowledge of the technology that goes with the company's manufacturing processes and mechanical products.

4.2. Constructing and Planning ARC 3 – *The Long Now*

In this section, we constructed and planned ARC 3 based on our preliminary ARCs and the design roadmapping process. We defined five strategic service exploration workshops preceded by a kick-off workshop (see Figure 1)

Figure 1 – The Long Now Workshop Overview of ARC3

Because ARC 3's strategic interventions are long-term (the year 2035), we have named the workshop series *"The Long Now",* suggesting that we explore and envision the end-user's context (future travelling in Europe) to make it tangible today into the *'now'*.

Planning:

- Aim of ARC 3: to explore and envision the traveller's context (future travelling in Europe) and make it tangible by creating a strategic design roadmap for service value propositions.
- Participants: 16 employees with different backgrounds and experiences to foster cross-fertilisation of knowledge and expertise. Participants will be divided into two teams, A and B.
- Facilitation team: the UX design manager, an experienced service designer and an action researcher.
- Intervention type: 6 online workshop sessions.
- Tools: MS Teams™ communication tool and Miro™ digital whiteboards to facilitate the activities during the workshops.
- Workshop location: online meetings in MS Teams™.
- Timing: 6 workshops averaging 2 hours each at three-week intervals, starting in the second quarter of 2021. (1/4, 20/4, 10/5, 32/5, 21/6 and 15/7)

4.3. Taking Action

Kick-Off Workshop

During the kick-off, we introduced the scope of the strategic design workshop series and explained the design roadmapping method of Simonse (2018) we used as the basis for designing the successive workshops. We learned from ARC 1 and ARC 2 that there is much knowledge about technology and market developments in the various departments but that the rigid departmental structure is often a barrier to sharing knowledge in the organisation. For the workshops, we, therefore, selected employees from various departments and disciplines and brought them together as if detached from the siloed department structure. Although they are colleagues, they did not know each other very well. Therefore, the aim of the kick-off was to introduce participants to each other by an ice-breaker game, explain the workshop programme to create a shared understanding of what to expect and introduce them to the strategic design roadmapping method of Simonse (2018).

The participants expected the strategic workshops to be about baggage handling systems because, after all, those are the core products of the company's business unit. However, we deliberately adopted an *overarching* perspective to encourage participants from the end-user perspective, the

traveller as a customer of the aviation business. To explore strategic directions and scenarios, we, therefore, chose *"Travelling in Europe"* as a scope, taking the perspective of future travellers. The scope was not limited to the current business scope of the company as a provider of capital goods in the aviation business only. It included different (even future) travelling/transport modalities (high-speed trains, autonomous cars, hyperloop, drones). We argued that the company should not limit itself to its current business context when looking into the future context and exploring new service business opportunities.

Workshop 1 – Creative Trend research

In the creative trend research workshop, we examined trends and developments to create a future perspective for the company. In doing so, we looked for new directions to create value for travellers. The main goal of this workshop was to discover which trends are relevant for the company and can be important drivers for future service innovation. As performing trend analysis is a design skill and should take too much time in this workshop, two experienced designers prepared the trend research before the workshop. In the workshop, we use the results as a basis for discussion with participants. We encouraged them to discover trend clusters, patterns and user values that drive the future user context and put them on a timeline that strategically fit the company values. The result of exploring and interpreting trends was a basis for visualising what the future of travel might look like.

Workshop 2 – Empathizing with future end-users

The *design roadmapping* method by Simonse (2018) focuses on creating a future vision based on uncovered valuer drivers of the future end-user. It requires a deep understanding of his behaviour and needs in his future life world and calls for developing a clear and shared vision of the desired customer experience. B2B companies generally have little affinity with this, so too in the case company as it focuses primarily on business customers such as airports and airlines. To ensure that the end-user perspective is embedded in the service innovation process, we need to empathise with travellers and understand what drives them. Whereas Workshop 1 focused on discovering trends that fit the company's innovation strategy, this workshop focused on finding value drivers for future travellers. The next step in empathising with future travellers is to discuss *future personas.* Creating future personas would take too much time for non-designer participants during the workshop, so two experienced designers will prepare them before the workshop.

Workshop 3 – Envisioning the future context

This workshop aimed to explore what this desired future is and what value Vanderlande could bring to this future. We developed a future vision that captured the value aspirations that travellers have in the context of future travelling in Europe and translated it into a desired future for the company. The company's future vision was visualised and articulated in a future vision statement, expressing a desired future. We asked participants to create a newspaper for 2035 based on the relevant trends by writing articles on the issues that will be current then, accompanied by pictures they could find on the internet. The newspaper gave an impression of what the world could look like and by what values travellers are driven in that future world context. As a future vision simultaneously is a call to action for innovating value propositions that address the values of end-users in the future context, we proposed the following format for formulating the future vision statement: ***We*** *[the company]* ***want to****…[verb]+[an unmet need, desire]* ***for…*** *[a specific persona or target group]* ***in…*** *[the context)* ***by*** *[verb]+[the object: a mechanism, service, product, experience, value].*

Workshop 4 – Ideating value propositions horizon 3

In the brainstorming workshop, we asked participants to develop ideas and scenarios that are valuable in the future world of life for travellers. To do so, they used the outcomes of Workshop 3 as inspiration. Participants were asked to think far ahead. They used the brainwriting technique in several rounds where teams of four each came up with an idea in two minutes, and each participant in the next round iterated on it for one minute and added new ideas. Eventually, ideas for value propositions for services

emerged and were discussed, clustered and placed on the third horizon of the roadmap because they are far in the future and cannot be realised today because the necessary technology, knowledge, resources or partnerships are not yet available to do so. The value of the ideating phase was that participants from cross-functional departments discussed ideas from different perspectives, enhancing the richness of the conceived future value propositions.

Workshop 5 – Roadmapping & connecting the dots

Workshop 5 consolidated the results from the previous workshops into a three-horizon strategic roadmap. Participants placed the trends, value drivers and future value propositions on a far Horizon 3 extending to 2035. The next activity involved back-casting the envisaged value propositions. Participants discussed and explored with each other what intermediate steps needed to be executed (in Horizons 1 and 2, preceding the long-term Horizon 3) to develop the service value propositions of Horizon 3. The creation by the participants of a long-term roadmap ensures that everyone has the same notion of where the company is heading; a strategic roadmap thus puts every participant on the same page. It serves as a boundary object to substantiate, communicate and discuss the ideated service value propositions and monitor the progress of the associated execution plans in the organisation. Figure 2 shows the structure and content (without details) of the company's strategic design roadmap as the result of ARC 3. It includes three future service value propositions for services in the third horizon. The four swimming lanes *Market, Service Solutions, Technology* and *Ecosystem* describe, in relation to each other, the activities required to realise the intended service value propositions.

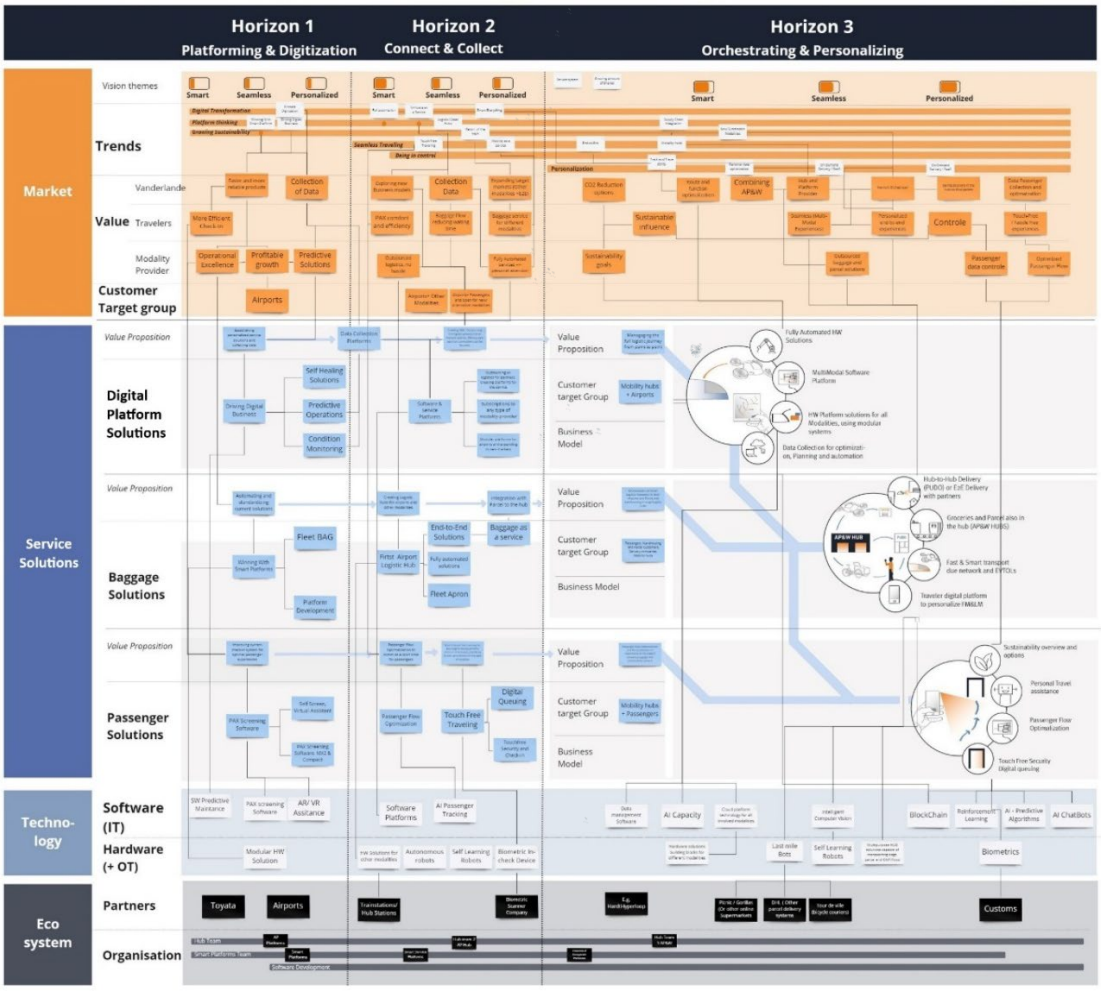

Figure 2 - Strategic Design Roadmap - The Long Now

5. EVALUATING OF RESULTS OF ARC 3

In the five The Long Now workshops, we designed and described three new value propositions around baggage transport in a rough concept form. Interestingly, the three service value propositions devised during ARC 3 went much further than the workshop participants could have imagined beforehand. Without realising it, they came up with *'overarching'* service concepts. One of the solutions involves a *Baggage-as-a-Service* where the company generates service revenues from the customers-of-the-customer by providing a portfolio of door-to-door services to travellers. At the same time, the company supplies baggage *pick-up & drop-off units* (PUDOs) to airport, railway and hyperloop stations for handling baggage in the periphery of these mobility hubs and separated from passenger flows. Manufacturing industries in a B2B market setting usually strongly focus on their direct customers' needs, following a linear value supply chain, as shown in
Figure *3*. The manufacturer (M) delivers a product-service to its customer (C). This customer (C) then delivers the product-service to an end-user (E). The blue arrows represent the value transactions between the actors of this linear value supply chain.

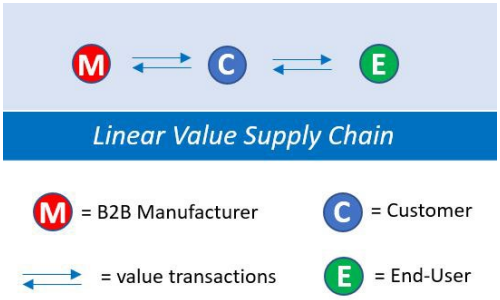

Figure 3 - Linear Value Supply Chain

Considering the three service value propositions of ARC 3 according to a linear value chain of Figure *3*, they no longer fit this linear concept. We explain this using the *Baggage-as-a-Service* value proposition referring to our prior research (Bluemink et al., 2020) in which we proposed a design approach based on what we coined *'overarching servitization'*. Selling PUDOs to mobility hubs for baggage handling generates a one-off revenue stream (product-related transactional business). We argue that the case company (M) designs and supplies PUDOs with related services mobility hubs (C). At the same time, the case company builds a business relationship with the end-user (E), the traveller, by designing and providing a door-to-door *Baggage-as-a-Service* value proposition. In this theoretical consideration, all three actors (M, C & E) exchange values with each other in a triadic value supply network; the manufacturer (M) is serving the needs of the mobility hubs (C) as well as the travellers (E). Figure 4 shows that its value supply chain has transformed from a linear supply chain into a triadic value supply network.

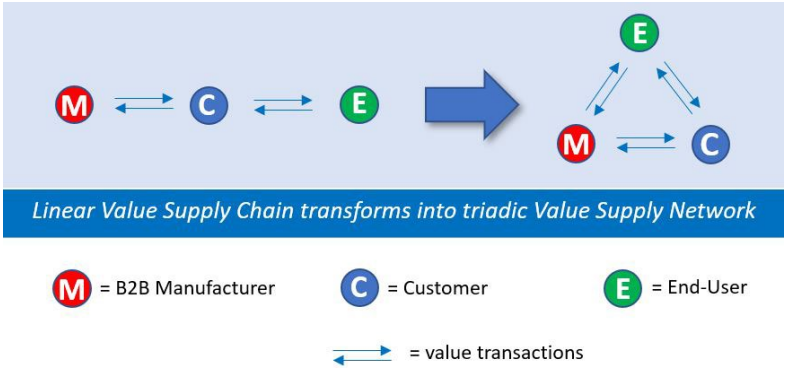

Figure 4 – a Linear Value Supply Chain transforms into a Triadic Value Supply Network

Here, the company supplies mobility hubs and creates a product-service ecosystem serving a value network from which three actors exchange value around a *Baggage-as-a-Service* value proposition. We call this overarching servitization; the company *overarches* its direct customer (the mobility hubs) and captures value from its direct customer (C) as well as from the customer's customers (E).

6. CONCLUSION AND INSIGHTS

In the preliminary step of ARC 3, we gathered end-user-centric and forward-looking insights that enabled a servitization strategy to design service value propositions. The company's current innovation processes mainly focus on physical products for a short-term horizon. Moreover, we concluded that the value creation process focused on capturing value from the *direct* B2B customer rather than the customer's customers (end-users) further downstream in the value chain. We, therefore, designed and implemented workshop interventions that focused on delivering value to end users and addressing unmet needs and desires in their future living environment. The successive workshops of ARC 3 fostered end-user-centred design capabilities and the company's servitization journey by applying the strategic design roadmapping of Simonse (2018) to create a *'design and implementation framework'* for *overarching* servitization strategies. With this framework, consisting of sequential workshop interventions, the case company designed a long-term servitization strategy manifested in future vision statements, a three-horizon roadmap for navigating the identified product-service value propositions and future business scenarios.

7. THEORETICAL AND PRACTICAL CONTRIBUTIONS

With our research, we contribute to the knowledge of B2B manufacturing industry practitioners on designing and implementing *overarching* servitization strategies. We developed a framework for strategic design interventions that B2B industrial companies can use to develop and implement an *overarching* servitization strategy.

Moreover, our framework fosters *end-user perspective* and *future thinking* capabilities in the B2B manufacturing industry by using *design thinking, service design*, and *strategic design methods* like *design roadmapping* to innovate product-service value propositions and formulate a sustainable servitization strategy.

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