

Methods Supporting a Shared Servitization Framework



Deflorin Patricia, Havelka Anina, Campos Adrian, and Wäfler Toni

Abstract The transformation process from a product-oriented company to a service-oriented company is known as servitization. The following research focuses on how a shared understanding of servitization can be enhanced through the application of business model design methods and discusses the role of co-creation in this process. The continuous adaptation of the business model is crucial to move from the exploration phase to the engagement phase in the servitization process and to overcome the tipping points between these two phases through a common understanding and conviction. The research at hands ads to literature as it discusses how a business model analysis, and the applied methods support the development of a shared understanding.

Keywords Servitization · Business model · Shared framework

1 Introduction

Equipment manufacturers no longer only provide products to their customers but many offer additional services or even so called “smart” services. Smart services, such as predictive maintenance offerings, are based on digital technologies i.e. sensors, actuators, which enable data gathering, its analysis and interpretation. Collecting data through these smart services can help the customer to optimize efficiency and effectiveness in the usage of the machines (Gebauer et al., 2017). However, many of these companies struggle to change their business from a product-oriented to a service-oriented business (Baines et al., 2017; Martinez et al., 2017).

There is a common understanding that different value perceptions and unclear value-capture approaches are likely to lead to failure, resulting in a digital paradox where companies struggle to achieve expected revenue growth (Gebauer et al., 2020;

D. Patricia (✉) · H. Anina

Swiss Institute for Entrepreneurship, University of Applied Science of the Grisons, Chur, Switzerland

e-mail: patricia.deflorin@fhgr.ch

C. Adrian · W. Toni

FHNW School of Applied Psychology, University of Applied Science and Arts Northwestern Switzerland, Olten, Switzerland

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

S. West et al. (eds.), *Smart Services Summit*, Progress in IS,

https://doi.org/10.1007/978-3-030-97042-0_16

159

Sjödin et al. 2020a). Obstacles are (a) the right sequence of phases for changing the business logic, (b) barriers in management cognition, and (c) companies not being able to modify the key business models components (Gebauer et al., 2020). To overcome the obstacles and to lower the digital paradox, a shared servitization framework with a clear business model understanding and clear market positioning, fully shared and elaborated servitization objectives and targeted users are central (Polova & Thomas, 2020). The research at hand highlights the role of a shared servitization framework within the servitization process. In doing so, we discuss methods which support companies in concretising a new business model and with this how to achieve a shared servitization framework.

1.1 Servitization

Servitization is a topic of growing importance (Baines et al., 2020; Zhang & Banerji, 2017). Servitization does not refer to the offering itself but to the change process related to transform a firm from being a product-focused company to a service and customer-oriented company (Martinez et al., 2017). This process is neither smooth nor unidirectional and needs a wide array of changes in organizational capabilities, structures, offerings and processes (Kohtamäki et al., 2019; Martinez et al., 2017).

Baines et al. (2020) introduce the servitization progression model consisting of four macro-stages: (1) exploration, (2) engagement, (3) expansion and (4) exploitation. The first step, exploration, is about understanding the market and how the new (advanced) service concept can play a role in the growth. Engagement seeks about the evaluation of the concept until the potential is accepted internally and externally (i.e., with pilot customers, management support). The progression of servitization is dependent on tipping points that could hinder the passage to the next stage (Baines et al., 2020): “The tipping points are triggered when the case for support is sufficiently strong, whether in terms of personal conviction or organisational permission, so that consent is achieved to move on to the following transformation stage.” Companies switch from exploration to engagement only when senior management are confident that a viable business opportunity exists. A shared framework, such as the business model analysis, may be important to trigger the tipping point.

1.2 Business Models as a Shared Framework

Each member of a group has assumptions, or frames, that drives him or her in his and her action (Hey et al., 2007). According to Schön (1994) frames can be defined as underlying structures of beliefs, perception and appreciation. The prior creation of documents alone does not guarantee that all members will later have a shared frame; rather, each member’s frame does evolve with the project progression. In research, “frameworks” are used to structure and to provide guidance for researcher. Using

this guidance, the researcher can check whether the results are confirmed by the framework or derive discrepancies (Imenda, 2014). So, a framework can be defined as a structure or a guidance for ideas and rules which are used to make decisions.

Therefore, a business model can be understood as a shared framework in which the ideas and basic concepts of the future service are made visible to everyone, negotiated, and discussed. A one-off definition of the business model is not sufficient, as the basic idea changes as the idea progresses. Therefore, the business model must be adapted regularly. We follow the understanding of Palo et al. (2019), Kowalkowski et al. (2017), Mason and Spring (2011) in their view as servitization as a process in which business models are transformed. Business models can frame and organize action in the servitization process (Palo et al., 2019). Additionally, the business model can also be a management tool for creating a shared understanding between individuals and groups to share what the firm does or might do (Mason & Springer, 2011).

A business model enfolds different dimensions describing which (1) technology, (2) market offering and (3) network architecture/value chain is needed to implement the new offering. With respect to databased services, Deflorin et al. (2017) add the dimension (4) connectivity. Connectivity is the central starting point for any databased service i.e. predictive maintenance as it allows the data gathering and its transfer. It describes which investments are needed to get access to the data. In addition, they explicitly highlight (5) revenue mechanism as another key dimension as this discussion is needed to understand how revenues are generated and where costs occur.

1.3 Co-creation

Today, value is often created through co-creation from internal and external sources (e.g. universities, research institutes, individuals) (Lee et al., 2012). According to Sjödin et al. (2020b), traditional innovation processes should be replaced by agile co-creation processes, which are characterized by creating value between provider and customer in multiple iteration, linked with quick feedback loops and rapid changes. Taking this potential of co-creation into account, methods to concretize the dimensions of the business model, and to generate the shared understanding, should overcome the firm boundaries and apply a co-creation approach with customers and/or suppliers.

To summarize, servitization is the transformation of a company from being a pure product provider to being a service provider. Common frameworks can be defined as a set of beliefs or assumptions shared by several individuals that can be considered as a guideline. A business model represents such a framework. We analyse how, based on co-creation, a business model can be concretized to achieve a shared understanding on the business idea and with this to trigger the tipping point between exploration and engagement phase.

2 Methodology

This study follows a mixed-method approach, combining qualitative multi-case study with action research (Coughlan & Coughlan, 2002). For this purpose, a theoretical sampling was chosen by analysing two industrial companies. The chosen companies are currently implementing predictive maintenance as a new service. Their servitization process started in February 2019 and is still ongoing. Company A is a supplier to manufacturing companies with 200 employees in Switzerland and its head office is in the Netherlands. Company B is a medium sized Swiss machine producer which is part of an international company with its headquarters in Germany.

The companies have successfully completed the exploration phase and are cooperating with pilot customers (engagement phase). Both companies have an interdisciplinary project team consisting of employees from product development, sales, services, marketing and controlling.

Within-case analysis was based on detailed workshop results (transcripts, flipcharts, templates, poster sessions etc.) stemming from 13 group meetings as well as eight semi-structured interviews with company representatives. The discussion of the business models according to Deflorin et al. (2017) was the starting point of the analysis. The eight methods (see Table 1) to concretize the business model analysis were applied with support of the research team who was responsible to document the data as well as to reflect the achievement. The interviews covered the identification of the practices based on the Functional Resonance Analysis Method (FRAM) (Hollnagel, 2017). The business model dimensions were continuously adapted based on the additional insights gained, leading to the final decision to proceed or not to proceed. Each meeting was accompanied by at least three researchers who documented the results and information provided. The information gathered was presented to the company representatives to generate as much objectivity as possible.

3 Case Study Results: Methods for a Shared Framework

Table 1 summarises the methods, the business model dimensions are detailed with its advantages, and disadvantages as well as the derived impact on enabling a shared framework. In addition, the co-creation is summarised i.e., customer (CCC) or supplier (SCC) co-creation. Brackets indicate optional involvement of customer or suppliers.

Table 1 Applied methods and descriptions

Pro (P)	Contra (C)	Shared frame	CCC/SCC
<p>(1) Shadowing (value offering) Shadowings or observations are used to gain more insights to the customers’ work. With the “shadowing” method, the observer follows the customer like a “shadow”, while the customer does his or her work as usual. It supports the concretization of the value proposition relevant for the customer</p>			
P: Observation in natural environment	C: Time consuming	<ul style="list-style-type: none"> • Development of a joint customer understanding (Mr. Maintenance) • Provides an example which every team member can refer to 	CCC
<p>(2) Interview (challenges and needs, value offering, pricing) The interview is suitable for areas of application in which possible knowledge is missing, i.e., concretisation of value proposition, pricing. The interviewer can respond flexibly, individually, and in-depth to the answers of the interviewee</p>			
P: In-depth discussions about challenges and needs; possibilities of “digging deeper”	C: customer wishes may not be mirrored in willingness to pay	<ul style="list-style-type: none"> • Multiple interviews provide the justification for decisions of relevance of the value proposition 	CCC
<p>(3) Quantitative Survey (value offering, pricing) Quantitative surveys provide access to a broader set of responses with respect to challenges, value proposition and pricing. Prior qualitative findings are made measurable and can be confirmed or rejected</p>			
P: Larger sample provides a better understanding	C: Openness of interviewees to answer questions (i.e., pricing) rather low; access to a larger sample challenging	<ul style="list-style-type: none"> • Insights of customer needs from a larger sample supports decision making • Understanding of correlations (i.e., shifts, inhouse maintenance, ...) • Insights for pricing decisions 	CCC
<p>(4) Service Theatre (value offering, value chain, connectivity) Within a service theatre the processes for providing a service are played (i.e. on-boarding, sales talk). This allows deriving of argumentation, reviewing processes and required documentation. It provides insight for value propositions, internal processes and customer interactions, revenue mechanism and connectivity (how to gain access to customer data)</p>			

(continued)

Table 1 (continued)

Pro (P)	Contra (C)	Shared frame	CCC/SCC
P: Preparation of sales argumentation; interaction with customers strengthens story line; preparation of sales documentation and prototype; reveals argumentation gaps in the sales pitch	C: Time intensive; customer willingness to participate in service theater	<ul style="list-style-type: none"> • Development of a common wording to “sell” the value proposition • Shared understanding of shortcomings of the value proposition • Insights into cost/benefit-analysis and price settings • Insights into the connectivity requirements and associated risks 	CCC

(5) Prototyping (value offering)

Development of an initial or preliminary version of the service, e.g., a dashboard that visualize the relevant indicators for measuring the state of a machine. The prototype can be combined with the service theatre

P: Service content (i.e., dashboard) becomes “touchable”; enables direct customer feedback	C: Derivation of future output (i.e., of Dashboard) difficult	<ul style="list-style-type: none"> • Prototype (i.e., dashboard) makes service “visible” and enables understanding of service content • Enables precise customer feedback 	CCC
--	---	---	-----

(6) FRAM (value chain)

The Functional Resonance Analysis Method (FRAM) is a methodology to analyse and describe the nature of daily labour activities. Holistic capture of the cooperation to fulfil a task

P: Not only processes but knowledge is analysed	C: Experience with methodology is needed; result is not intuitive	<ul style="list-style-type: none"> • Visualisation of processes and needed knowledge enables an understanding of relevant processes and interactions • Understanding of necessary changes in collaboration • Highlights the challenges of knowledge transfer to fulfil the required tasks 	–
---	---	--	---

(7) Service Blueprint and Customer Journey (value chain, I4.0 enabler, connectivity)

The service blueprint and the customer journey show the changes in the process in connection with the customer regarding the customer touchpoints and the technology used. In addition, the service blueprint shows where (new) collaboration is needed internally and who is involved in the process with the new offering

(continued)

Table 1 (continued)

Pro (P)	Contra (C)	Shared frame	CCC/SCC
P: Enables insights into technology, processes and customer interaction; provides a customer centric perspective	C: Needs to be sharpened with additional insights from customer and internal or external partners	<ul style="list-style-type: none"> • Visualisation of processes, interactions and technologies strengthens understanding of business model • Enables the inclusion of employees from different functions to strengthens understanding of business model content 	(SCC, CCC)
<p>(8) Technology and Skills Roadmap (I4.0 enabler, connectivity) Mapping of relevant technologies and skills to fulfil value proposition. Determination of the technologies needed for data gathering, storage, transfer, analysis, and visualisation</p>			
P: Enables understanding of relevant technologies as it is discussed from a data gathering perspective	C: Interviewees need knowledge of technologies	<ul style="list-style-type: none"> • Provides a common understanding about needed investments in technologies and skills as well as dependencies between them • Allows integrating technology suppliers to get a better understanding 	(SCC)

4 Discussion and Conclusion

The presented research results indicate that a shared servitization framework supports companies within their servitization process or more precisely to overcome the tipping point between exploration and engagement. The concretisation of the business model dimensions (value proposition, value chain, revenue mechanism, technologies/capabilities and connectivity) enabled the respective management to get an understanding of the market potential as well as the related investments to achieve the change (i.e. in technology). The results support Kohtamäki et al. (2019) and Martinez et al. (2017), stating that the process is neither smooth nor straightforward.

The methods applied may support companies in their struggle to overcome the digital paradox as it reduces barriers in management cognition and supports companies in the modification of the key business model components (Gebauer et al., 2020). A particularly central result is that the integration of customers and suppliers during the concretization phase of the idea by means of the applied methods promotes the development of a common understanding within the companies involved, here provider, supplier and customer. First, the involvement of customers leads to stories of needs and challenges, which support the development of sound and evidence-based value propositions. This is preventing companies from taking an approach which is

only the justification of internal believes and is not suitable for their markets. Additionally, the service is tested with the customer prior to launch, which can save the company time and money as they receive feedback from the customer early in the process. Second, the involvement of suppliers within the exploration phase allows an initial understanding of the technological changes needed as well as its possibilities. The cases reveal that involving suppliers supports the development of a shared servitization framework, as the technologies are often new to the respective companies and difficult to understand how to implement them in their operations. To summarise, the decision to move on to the engagement phase or not, was, within both companies, easy as the project team and top management had a good understanding of the business model content and the investments needed (i.e., technology, skills, processes and collaboration). Thus, the research at hand adds to literature as it discusses how a business model analysis, and the applied methods support the development of a shared understanding and with this, support the servitization process.

5 Recommendation

From a managerial perspective, the analysis shows that to understand the changes related to servitization, a good understanding of the business model is needed. There are different methods that can be applied to improve the shared understanding. The methods are based on customer- and supplier-co-creation. Although co-creation is widely applied within the engagement phase, the exploration phase profits as well.

Often, the business model is only discussed at the beginning of an idea and is not further developed during the course of the project. The idea of a service is constantly evolving as new information is gathered, e.g., by applying the methods above, so the business model should also be continuously adapted to the latest state of knowledge.

A successful servitization needs the reduction of the digital paradox. Although the methods may be time-consuming, the research suggests that the potential to support the development of a shared servitization framework leads to bigger benefits.

The methods support each other and can be applied jointly or separately. Each method enables to build up a better understanding of the business model and with this strengthens the likelihood of a successful transformation in the servitization process and a smoother implementation of the service.

References

- Baines, T., Ziaee Bigdeli, A., Bustinza, O. F., Shi, V. G., Baldwin, J., & Ridgway, K. (2017). Servitization: Revisiting the state-of-the-art and research priorities. *IJOPM*, 37(2), 256–278. <https://doi.org/10.1108/IJOPM-06-2015-0312>
- Baines, T., Ziaee Bigdeli, A., Sousa, R., & Schroeder, A. (2020). Framing the servitization transformation process: A model to understand and facilitate the servitization journey. *International Journal of Production Economics*, 221, 107463. <https://doi.org/10.1016/j.ijpe.2019.07.036>

- Coughlan, P., & Coughlan, D. (2002). Action research for operations management. *IJOPM*.
- Deflorin, P., Scherrer-Rathje, M., Ziltener, A. (Hg.) (2017). Business model innovation: unravelling the potential of technologies enabling digital transformation. 24th Annual EurOMA Conference, Edinburgh, UK, 1–5 July 2017: European Operations Management Association.
- Gebauer, H., Arzt, A., Kohtamäki, M., Lamprecht, C., Parida, V., Witell, L., & Wortmann, F. (2020). How to convert digital offerings into revenue enhancement—Conceptualizing business model dynamics through explorative case studies. *Industrial Marketing Management*, *91*, 429–441. <https://doi.org/10.1016/j.indmarman.2020.10.006>
- Gebauer, H., Saul, C. J., Haldimann, M., & Gustafsson, A. (2017). Organizational capabilities for pay-per-use services in product-oriented companies. *International Journal of Production Economics*, *192*, 157–168. <https://doi.org/10.1016/j.ijpe.2016.12.007>
- Hey, H. Jonathan, G., Joyce, C. K., & Beckman, S. L. (2007). Framing innovation: negotiating shared frames during early design phases. *Journal of Design Research*, *6*(Nos. 1–2).
- Hollnagel, E. (2017). *FRAM: The functional resonance analysis method: modelling complex socio-technical systems*. CRC Press.
- Imenda, S. (2014). Is there a conceptual difference between theoretical and conceptual frameworks? *Journal of Social Sciences*, *38*(2), 185–195. <https://doi.org/10.1080/09718923.2014.11893249>
- Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., & Baines, T. (2019). Digital servitization business models in ecosystems: A theory of the firm. *Journal of Business Research*, *104*, 380–392. <https://doi.org/10.1016/j.jbusres.2019.06.027>
- Kowalkowski, C., Gebauer, H., Kamp, B., & Parry, G. (2017). Servitization and deservitization: Overview, concepts, and definitions. *Industrial Marketing Management*, *60*, 4–10. <https://doi.org/10.1016/j.indmarman.2016.12.007>
- Lee, S. M., Olson, D. L., Trimi, S. (2012). Co-innovation: Convergonomics, collaboration, and co-creation for organizational values. *Management Decision*, *50*(5), 817–831. <https://doi.org/10.1108/00251741211227528>
- Martinez, V., Neely, A., Velu, C., Leinster-Evans, S., & Bisessar, D. (2017). Exploring the journey to services. *International Journal of Production Economics*, *192*, 66–80. <https://doi.org/10.1016/j.ijpe.2016.12.030>
- Mason, K., Spring, M (2011). The sites and practices of business models. *Industrial Marketing Management* *40*(6), 1032–1041.
- Palo, T., Åkesson, M., & Löfberg, N. (2019). Servitization as business model contestation: A practice approach. *Journal of Business Research*, *104*, 486–496. <https://doi.org/10.1016/j.jbusres.2018.10.037>
- Polova, O., & Thomas, C. (2020). How to perform collaborative servitization innovation projects: The role of servitization maturity. *Industrial Marketing Management*, *90*, 231–251. <https://doi.org/10.1016/j.indmarman.2020.06.005>
- Schön, D. A. (1994). *Frame reflection*. Basic Books.
- Sjödin, D., Parida, V., Jovanovic, M., & Visnjic, I. (2020a). Value creation and value capture alignment in business model innovation: A process view on outcome-based business models. *Journal of Product Innovation Management*, *37*(2), 158–183. <https://doi.org/10.1111/jpim.12516>
- Sjödin, D., Parida, V., Kohtamäki, M., & Wincen, J. (2020b). An agile co-creation process for digital servitization: A micro-service innovation approach. *Journal of Business Research*, *112*, 478–491. <https://doi.org/10.1016/j.jbusres.2020.01.009>
- Zhang, W., & Banerji, S. (2017). Challenges of servitization: A systematic literature review. *Industrial Marketing Management*, *65*, 217–227. <https://doi.org/10.1016/j.indmarman.2017.06.003>

Patricia Deflorin is a Professor at the University of Applied Sciences of the Grisons, Switzerland, and Privatdozentin at the University of Zurich, Switzerland. She is the Research Director at the Swiss Institute for Entrepreneurship SIFE, and her research activities enfold encompass the management of digital transformation, service innovation, and supply chain management.

Her research has been published in leading operations management journals such as the *Production and Operations Management*, *International Journal of Operations and Production Management*, *International Journal of Production Economics*, *International Journal of Manufacturing Technology and Management*, and *Business Horizons*.

Anina Havelka is a Research Assistant at the University of Applied Sciences of the Grisons, Switzerland. She works at the Swiss Institute for Entrepreneurship SIFE, and researches the opportunities and challenges of digital transformation. She focuses on the development processes of data-based services and on service innovations in the field of robotics.

Adrian Campos is a Research Assistant at the University of Applied Sciences and Arts Northwestern Switzerland (FHNW), School of Applied Psychology (APS). He is especially active in applied research projects in work and organizational psychology. The focus of his work is on the optimization of socio-technical systems and the search for solutions for the joint optimization of humans, technology, and organization. In particular, the main focus of his research is the question of how humans, technology, and organization are integrated into a functioning socio-technical network in order to exploit the full potential of digital technologies. is the main focus of his research.

Toni Wäfler is a Professor at the University of Applied Sciences and Arts Northwestern Switzerland (FHNW), School of Applied Psychology (APS), where he established the Institute “Humans in Complex Systems (MikS)”. The Institute conducts research projects in the domain of human factors, sociotechnical system design, occupational health, safety, and security. In 1998 Toni Wäfler was also co-founder of iafoB GmbH (www.iafoB.ch) a private consulting company in Zurich, Switzerland, where he still is a senior consultant. As a consultant, his main topics include organizational and job design in highly automated work systems,; with a main focus on system safety as well as on process efficiency and reliability.