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Miia Lammi

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Emotional Service Experience Toolkit For Servitization

Miia Lammi[a*]

[a]Design Centre MUOVA, VAMK University of Applied Sciences
*Corresponding author e-mail: miia.lammi@muova.fi

Abstract: Servitization, the transformation of product-oriented companies towards service-oriented business, provides a prominent competitive advantage for industrial companies. The servitization literature has mainly focused on productivity as value while overlooking especially emotional experiences. Service design offers methods for collecting user experiences yet industrial services remain marginally studied in the field. This paper describes the development of a service design toolkit for collecting internal and external service experiences in an industrial setting. A multidisciplinary theoretical background related to service experience, servitization and service design grounds the toolkit development. The toolkit was tested in two companies under servitization and in their customer companies. Three workshops acted as strategic learning situations for servitization. The paper concludes with the discussion about challenges, possibilities and the role of service experience information in servitization.

Keywords: Service experience, servitization, service design, industrial companies, method development

1. Introduction

Industrial companies seek new business opportunities from services (Gebauer, Ren, Valtakoski, & Reynoso, 2012). Profitable service business requires substantial investments (Kohtamäki, Partanen, Parida, & Wincent, 2013). The transformation from product-centric to service-led business, called servitization challenges the foundations of industrial companies, especially in customer relationships and value creation (Baines & Lightfoot, 2013). The present servitization literature has focused on product-related services and on economical and functional aspects of value (Baines, Lightfoot, & Smart, 2013), while overlooking emotional experiences in value creation. On the other hand, the extent service experience research has mainly focused on b-to-c context (Helkkula, 2011; Klaus & Maklan, 2012; Ponsignon, Klaus, & Maull, 2015). In addition, service design research has entered to industrial b-to-b context only recently (Miettinen, 2017). Therefore there is need for further research on experience-oriented service design in servitization.

Understanding users and their experiences are highlighted in service design (Miettinen, 2009; Stickdorn et al., 2010). However, Teixeira et al. (2012) have pointed out the lack of a systematized

and holistic representation of customer experience in order to guide service design. This paper describes the development and testing of a service design toolkit, *Isee*, which gathers service experiences for industrial service business development. The collaborative toolkit links emotional experiences to functional elements of service moments and depicts service journeys of long lasting industrial processes.

The toolkit development follows a constructive research approach (CRA) for solving practically relevant problems through constructions (models, plans, solutions) (Kasanen, Lukka, Siitonen, 1993). In this paper, the challenges were discovered in two machinery-manufacturing companies. Based on CRA, a comprehensive theoretical background is needed for creating holistic understanding of the problem area (ibid.). In this research the challenges are grounded in servitization, service design and service experience research. In CRA, a simple, usable and relevant solution is constructed usually in a heuristic way and demonstrations are used for evaluating, how the solution solves practical challenges. The scope of applicability in a business is examined through testing. (ibid.) In this research, the research organisation constructed the *Isee* toolkit and evaluated its applicability in three workshops, which acted as learning situations for servitization. The research data was gathered through multiple research methods explained along the toolkit development and testing.

As a contribution, this paper links the present literature on service experience and servitization to service design methods in a cross-disciplinary research. For service designers the paper describes a tested toolkit for collecting and modelling customer experience data related to service journeys in b-to-b companies. Industrial service business developers can use the collaborative method as a driver for creating new service business based on service experiences. The paper concludes in discussing the possibilities, challenges and the role of service experiences in servitization.

2. The context of toolkit development

Service co-design toolkit development was part of a research project studying the renewal of organisational culture through design thinking. The research project included two companies (later Company1 and Company2) interested in developing service business with design approach. The Company1 focused on developing product service systems (PSS) and the company Company2 aimed at improving user experience of the products and services. Two customer companies (later Customer1 and Customer2) participated in the development. A design research organisation (later RO) supported the companies with customer-centred service design approach.

Following a CRA, practical challenges were defined with companies in order to establish pilot projects for approaching the challenges. Two key persons from Company1 and Company2 were interviewed for creating the understanding about their present state of business. The interviews were recorded (3 h), transcribed (40 pages) and analysed in order to discover possibilities for using design in tackling the challenges and business objectives. The RO produced development roadmaps for servitization (3 presentations), for framing the pilot projects and applying suitable design methods. The pilot projects were selected in collaboration with the researchers and key persons through email discussions (25 pages) and meetings (3 h 24 min, transcribed 87 pages). The company interviews, discussions and development roadmaps created the background and practical context for toolkit development.

Selected pilot projects concerned selling, installing and commissioning of production systems. Company1 was developing a digital configuration tool for negotiating with customers about production systems. The research project was integrated into an on-going development project

because the company saw benefits of design in the project. Company2 had identified the need to develop an installation and commissioning service in order to save profits and create a good first impression. Service design was seen as a suitable way to handle the issues. Table 1 describes the actors, their motivation for collaboration and the pilot projects for proceeding in servitization.

Table 1. Participating actors and their motivations related to the servitization

Actors	Description of actors	Motivations for collaboration	Pilot project
Company1	Project company: A big manufacturing company in a group producing production manufacturing systems internationally (250-500 employees)	Design competence for developing PSS	Configuration tool
Customer1	Customer of Company1: A large global company group producing manufacturing services (over 500 employees)	Use Company1's configuration tool	Configuration tool
Company2	Project company: A medium-sized manufacturing company of a group producing material handling systems internationally (20-50 employees)	Improving user experience of PSS	Service for installation and commissioning
Customer2	Customer of Company2: A large company in a food industry operating internationally (over 500 employees)	Support service development of Company2	Service for installation and commissioning
RO	A design research unit with industrial and service design competences (1-10 employees)	Study design thinking	Service design for pilot projects

The pilot projects represent typical industrial services. Industrial services are complex and long-lasting business processes requiring close collaboration with customers (Vargo & Lusch, 2008). The solution configuration is part of selling/purchase process and the installation and commissioning position in the early phases of product life-cycle services. According to the classification of Lehtonen (2014) both services can be seen as customer interface and operative services. Following the classification of Parida, Sjödin, Wincent, & Kohtamäki (2014) these services concern basic services (cost-benefit calculation, consulting and support, information, user training services) and R&D services (analysing product manufacturability and problem analysis). From product life-cycle point of view, the services include development, selling and commissioning products.

Customers were seen to have an important role in the pilot service processes. In order to answer to the need of customer-centric development of service business, the companies needed ways to understand customers and their needs at a new level (Kindström & Kowalkowski, 2014; Kinnunen & Turunen, 2012; Martinez, Bastl, Kingston, & Evans, 2010). RO emphasised customer orientation and therefore two customer companies were involved in the development of the services. Based on the interviews and roadmap discussions, Company1 needed understanding about customer experiences for framing the configuration tool and Company2 for understanding service experiences of their own personnel and customers. Because of time constraints, an effective toolkit was needed for understanding service experiences and utilizing them in service development.

3. Construction of the toolkit

Literature on service design and service experience grounded the theoretical background for developing a suitable methodological solution for service business development in project companies. Service design offers expert-driven methods for developing and visualising service needs,

concepts and prototypes (Blomkvist & Segelström, 2014; Patricio, Fisk, Cunha, & Constantine, 2011; Yuan & Hsieh, 2015) and for facilitating co-design activities with users or stakeholders (Kankainen, Vaajakallio, Kantola, & Mattelmäki, 2012; Lucero, Vaajakallio, & Dalsgaard, 2012).

Teixeira et al. (2012) have proposed a method for modelling customer experiences based on extensive customer research. However, b-to-b firms find gathering customer information in innovation activities as time consuming, costly and difficult (Griffin et al., 2013). In addition, business processes are long and complex, which complicates direct observation of industrial customers. Therefore, gathering service experiences calls for easy and quick methods. In addition, an independent use of the methods in companies would increase the applicability of the method.

The toolkit development was established on service experience research. Service experience is a circular process of a person's interaction with, reaction to and interpretation of a service (Jaakkola et al., 2015). Users create perceptions and interpretations of services based on using or imagining the service (Helkkula, 2011). Predispositions, such as previous experiences, needs, desires and skills, have an influence on the interaction with a service. Interaction arouses reactions such as learnings, intentions, emotions and feelings (Vasconcelos et al., 2015). Service experience is a cognitive, temporal and spatial occasion, because of the interplay between a context, perceptions and interpretations proceed in a time frame. In addition, service experience can be defined based on following dimensions: factual (real or imaginary), complex (dyadic or systemic relation to service providers), and locus (individual or collective) (Jaakkola et al., 2015).

Based on theoretical background, RO prepared a toolkit, Industrial Service Emotional Experience Journey (*Isee*). RO applied and developed collaborative service design methods for the toolkit based on previous experience, service design research and information needs in the pilot projects. Company1's required customer information in prototyping phase, when there were still profound discussions about framing the service solution. In the pilot project with Company2, the information was needed in the beginning of the project for framing problem and solution spaces. RO emphasised broad and vivid service experience information about business processes, effective collection and transfer of experience information, and possibility to use the toolkit in the companies independently.

The research data concerning the development of the toolkit include three presentations for instructing toolkit usage and three demonstrations of prepared toolkits. The toolkit includes tools for use situations, users, service value (investments and benefits), information, emotions, and meanings on A4 moment pads. The toolkit links emotional experiences to the service context, actions and interaction between user groups in service moments.

The pre-prepared scenario cards as outline drawings of typical interaction situations illustrate the context, touchpoints, activities, and interactions at a general level, while empty scenario cards include unexpected situations. The pre-prepared information cards depict the form of information as pictures and information content in a textual form. Value elements and user groups are written at headline level on a moment pad. The sequence of moment pads creates the service journey, which map customer, supplier and encounter processes to identify co-creation opportunities (Payne, Storbacka, & Frow, 2008). Table 2 explains the tools of the *Isee* toolkit and extant research on the service design methods.

Table 2. The tools in the Isee toolkit

Name of a tool	Design methods in the literature	Modifications of methods for the toolkit	Purpose of the tool in a toolkit
Scenario cards	Visual storyboards by designers for depicting interactions and actions (Blomkvist & Segelström, 2014), textual dream scenario by users (Kankainen et al., 2012), activities and functional experiences (Patricio et al., 2011)	Pre-prepared outline drawings about context, touchpoints, actions and interactions	Create a storyboard with suitable amount of details
Emotion cards	Negative/positive emotions (Patricio, Fisk, & Cunha, 2008), metaphors in service development (Helkkula & Pihlström, 2010)	Metaphorical photo cards and open text fields for meanings	Express emotional experiences
Value fields	Balance between perceived costs (time, effort, risks) and benefits (Lindic & Silva, 2011; Zeithaml, 1988)	Open text fields for benefits and investments	Describe expected and experienced value creation
User fields	Personas as fictitious, concrete representations of users, unconvincing without user data (Pruitt & Adlin, 2010)	Open text field as outline drawings of user groups	Describe participating service users and their roles
Information cards & fields	Card sorting for constructing information elements into a natural structure (Garrett, 2011)	Open text fields for information content and cards for the information form	Describe the relevant information
Moment pads	Actual activities constitute a customer journey (Zomerdijk & Voss, 2010),	A4 form with fields for text and pictures	Collects elements for a service journey

The emotion cards were created for collecting emotional experiences related to service moments. The cards consist of 23 metaphorical photos with nature topic illustrating basic emotions: 11 positive, 11 negative and one neutral (modified from Desmet & Pohlmeyer, 2013). Metaphors were used for collecting information because they are natural instruments for people to describe their emotions (Plutchik, 2001). Three designers evaluated 30 emotion cards and 15 photos were changed to more abstract and nature-featured because the interpretations were connected to the content of the images instead of emotions. The emotion cards offer a range of emotional representations, and the meanings of emotions and interpretations are captured in textual form.

4. Testing the toolkit

The toolkit was tested in three workshops organised with companies. The first test was part of a collaborative workshop between Company1 and Customer1. The second test included in an internal workshop with Company2 and the third test in a workshop with Customer2. The toolkit was constructed for the first workshop (test 1). Small modification were made to the moment pads in Tests 2 and 3 for usability reasons (Kasanen, E., Lukka, K. Siitonen, 1993). In addition, information as a separate topic was excluded from test 2 and 3, because activities were assumed to offer enough information in the beginning of the pilot project. The workshops differed in the program and number of test persons, which were chosen together with the RO and companies. The physical setting was companies' meeting rooms. The figure 1 describes the moment pads used in testing.

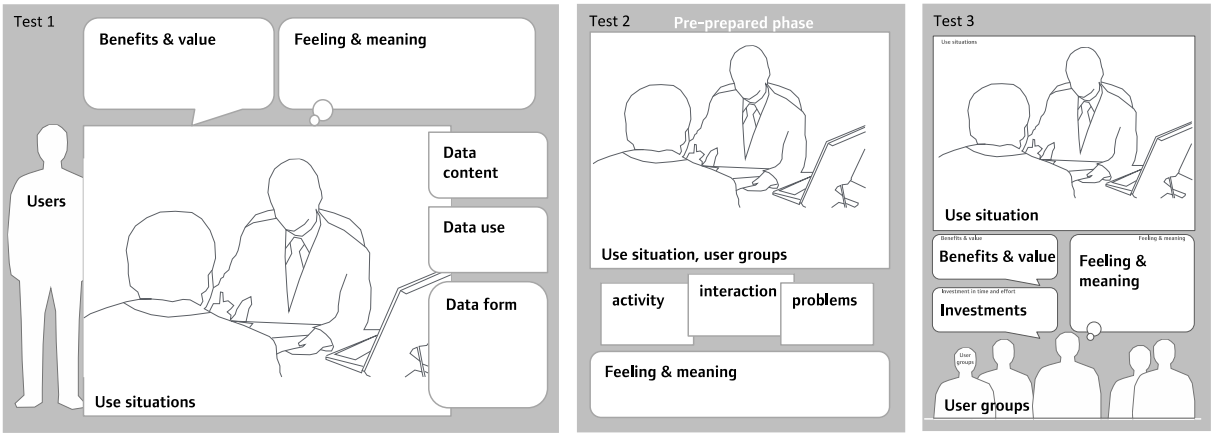

Figure 1. Three moment pads with elements

The research data related to toolkit testing includes fulfilled service moment pads and the discussions during the tests, which were recorded (4 h 58 min) and transcribed (72 pages). Following the constructive research approach (Kasanen, E., Lukka, K. Siitonen, 1993), the applicability of the toolkit was evaluated based on the usability and usefulness. The tests lasted from 29 minutes to 1 h 6 minutes.

The roles of the RO and the participants varied in different workshop settings (see table 3). In WS1, design researchers facilitated the toolkit testing and an operations manager of Customer2 used the toolkit. Four participants of Company1's development team observed and commented the discussion. In WS2, three service providers and one operations manager from the Company2 participated in the workshop. One researcher facilitated the workshop program, while three researchers acted as creative secretaries in small group activities and moderated group discussion (Kankainen et al., 2012). In WS3, two researchers acted as moderators and creative secretaries helping four managers of Customer2 with questions, instructions and writing.

Table 3. Three workshops related to servitization in two project companies

Date	Time	Workshop	Roles in workshops	Activities in toolkit testing
27.4. 2015	3 h 3 min	WS1: Collaboration workshop with Company1 and Customer1	1 moderator: project manager of the Company1; 2 toolkit facilitators (Design researchers); 1 user (operation manager in Customer1); Audience (1 sales manager in Company1, 3 external researchers)	Toolkit facilitators instructed, asked, fulfilled the moment pads; User explained, chose cards; Others commented
9.10. 2015	1h 21 min	WS2: Internal workshop in Company1	1 moderator (design researcher), 3 creative secretaries (design researchers), 4 users (3 service providers, 1 operations manager in Company1)	Moderator facilitated discussion; Creative secretaries asked, fulfilled pads; Users chose cards and explained; Group discussed of results, generated ideas
11.5. 2016	1 h 34 min	WS3: Customer workshop in Customer2	2 moderators (design researchers), 4 users (managers in a customer company)	Moderators asked and fulfilled moment pads, users chose cards, explained as a group

Test 1 started with researcher's presentation of the toolkit. The operations manager chose, described, and sequenced scenario cards and explained user groups and value elements. Then he chose suitable information cards and described the content of information related to each service

moment. Lastly, he chose emotion cards and explained their meanings. The Test 2 used a pre-defined service journey created by company managers. The participants chose scenario cards and explained activities, interactions and user groups, which researchers wrote on service pads. The whole group discussed about problems and solutions. In the end, each participant chose emotion cards and meanings were discussed together. In test 3, the managers chose and described the service moments in the lead of a main participant, while two researchers asked questions and fulfilled the text fields. The group described the user groups, specified actions and explained their experiences. In the end, the group chose one or two emotion cards to service moments and discussed their meanings. Table 4 explains the workshop flow and test parts, which are presented as grey areas.

Table 4. The flow of workshops and testing the toolkit highlighted

WS1 (Test 1, 32 min)	**WS2 (Test 2, 29 min)**	**WS3 (Test 3, 66 min)**
Project manager explains the aim and program of the meeting, introduces project background and participants	Moderator explains project; Group discusses about service	User group introduces their unit and role as a customer
Operation manager of Customer2 explains the case, needs and wishes, user groups; Development team of Company1 asks questions	Group describe spontaneous service experiences	Moderator opens moment pads, chooses the main participant, and opens discussion
Researcher presents the prototype; Operation manager comments; Development group discusses about requirements	Moderator describe pre-prepared service moments	Group describes moments and actions and chooses scenario cards; Moderators asked and fulfilled the texts
Coffee break; Informal discussion about quoting	Group describe moments, discusses experiences	User describes their process model
Designer presents interface visualizations; Discussion of usage of interface	Moderator instructs the first phase: scenarios, users, results	Group continues describing service moments; Moderators ask and write
Project manager grounds the task; One facilitator presents the toolkit	Users choose scenario cards, describe activities and users, results/ expected results; Secretaries ask and write	Group describe actions and user groups, add and organizes moments, express experiences; Moderators ask and write
Customer describes and organizes moments, chooses scenario cards, describes users, challenges; Facilitators ask, ideates, verifies, writes; Moderator and Participant comment	Group discusses about problems and possible solutions	Group chooses emotion cards and discussing feelings and meanings related to the moments; Moderators ask and writes down answers
Facilitator starts with emotion cards; Customer explains, chooses cards and describes meanings; Moderator comments; Facilitators proposes, asks, writes and glues cards	Moderator instructs emotion cards; Users choose cards, discuss about meanings related to the cards	Group evaluates the toolkit
Facilitator starts with information topic; Customer explains, chooses, verifies; Facilitators ask, propose, write	Group evaluate the toolkit	
Group discusses the topic and evaluates the toolkit		

After the workshops, the participants evaluated the toolkit according to effective and affective outcomes, and participant involvement (Wardale, 2013). According to the evaluation, participants of Test 1 and 3 were satisfied with the results, while the feedback from the test 2 was neutral: “Yes we could use it, and do some things differently as well”. The participants felt being heard, while one

participant in the Test 3 added: “If you then understand at least half of it”, which implies the amount and complexity of information collected. The results were achieved as planned, although the way of working was new, as one participant expressed “No, we have never worked with photos of flowers. (laugh) (Researcher: How weird was it to choose photos?) No, it was easy to find.”

CRA emphasises that solutions need to be simple, usable and relevant. Therefore the toolkit was also evaluated based on audio recordings according to the following usability criteria: learnability, efficiency, satisfaction, and prevention of errors (Nielsen, 1993). The positive or negative comments were extracted from the tests. The usability analysis shows, that the moment cards were easy to learn, effective and even prevented errors. An error related to length of the service journey was avoided in Test 1. Facilitator asked: "Does it end here?" The manager answered, "Yes… Well it does not end because it requires board meeting…" All participants expressed satisfaction with the final results. The results are in line with previous research on effectiveness of service journey methods (Segelström & Holmlid, 2011).

The emotion cards were easy to learn, an efficient and satisfactory way to express tacit knowledge, which confirms the previous research on metaphors (Helkkula & Pihlström, 2010; Plutchik, 2001). Only one person in Test 2 hesitated with emotion cards: "I don't understand how these photos can relate to that work at all. (Laugh)", "You surely did a difficult task", but concluded afterwards: "The photos were easy." The meanings of the metaphorical photos showed the importance in preventing misunderstandings, because the meanings of emotion cards varied in all tests.

Based on usability analysis, the user groups were described easily but only at a headline level. The information cards and text fields in the Test 1 required some elaboration because the information was related to desired state requiring ideation. The value fields were left empty as the investments and benefits were described through the descriptions about scenario and emotion cards. Humour was used in all workshops, which reflects an intensive way of working (Kankainen et al., 2012).

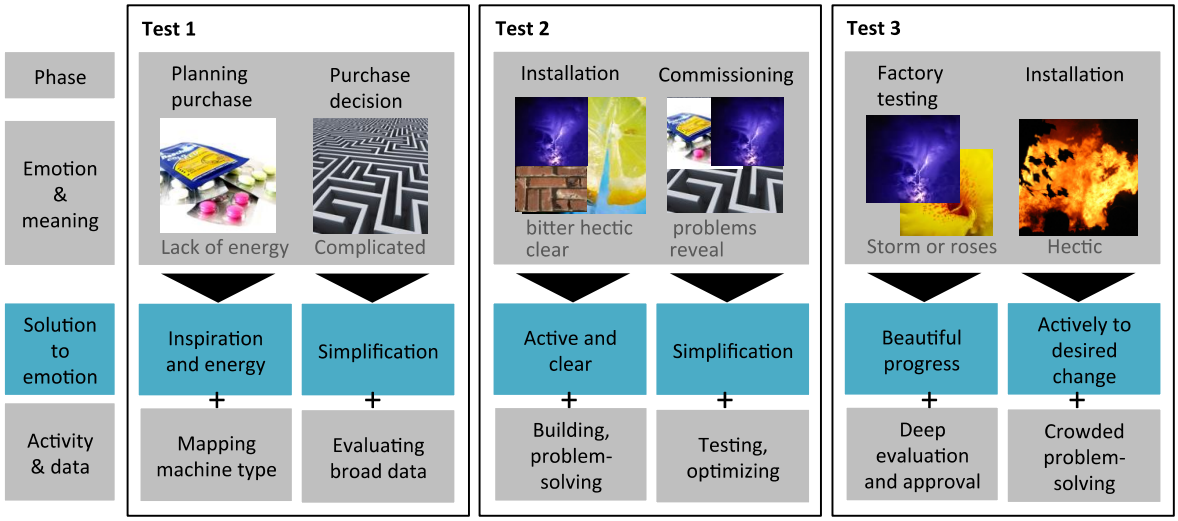

Figure 2. The analysed results of the toolkit. Photos: Foter.com

Following a CRA, the relevance of the toolkit was analysed based on its ability to discover new service business. Therefore an example of analyses is presented in Figure 2. The results of the toolkit were collected, analysed and presented to Company1 and Company2. The first row in Figure 2 describes the service moments, the second the chosen emotional experience cards, and the third the meanings

attached to the chosen cards. The fourth row shows the solutions to the emotional experiences interpreted by the RO. The last row explains the activities and information gathered with the toolkit.

The analysed results can be used as drivers for service business development, which links emotional experiences to functional aspects of service moments during the long service process. For example, the first service moment in Test 1, planning a purchase, starts a long and laborious process, which creates exhausted feelings. The service could provide inspirational and energetic ways for mapping different machine types. This kind of interpretations of the service experiences can be used for developing service solutions in a holistic way to support success of the customers.

5. Conclusions

The paper presented development and testing of a service design toolkit, Isee, for the industrial service business development. The Isee toolkit revealed emotional experiences connected to the functional elements of industrial service journeys. In servitization literature, the understanding of customers' business processes is highlighted as a critical competence (Baines & Lightfoot, 2013). When establishing profitable service business, industrial companies need to manage the complexity of value creation including service experiences (Storbacka, Windahl, Nenonen, & Salonen, 2013).

The toolkit was tested in three workshops with medium-sized and big industrial manufacturing company and their customers. The companies lacked prior experiences of service design as well as methods for collecting service experiences. Based on previous research, b-to-b firms find it ineffective and difficult to gather customer information for innovation activities (Griffin et al., 2013). The workshops acted as learning situations for adopting collaborative service design methods for servitization. The toolkit tests showed the ability to collect internal and external service experiences effectively without extensive user research.

The study on the development of a simple toolkit extends service design research, which has emphasised extensive qualitative user and customer research for discovering new service ideas. It also connects extent service experience research to service design and servitization. The study presents a constructive research approach for studying design methods in a structured way. The approach combines theoretical knowledge and applicability of a method to relevant business challenges, which can be assumed to support the adoption of the method in enterprises. For practitioners, the study proposes a toolkit for collecting and transferring the information about service experiences when they develop services in a b-to-b setting. The toolkit was tested in the lead of external moderators. Further research is needed to understand how industrial companies could utilize service design methods systematically and independently in their servitization efforts.

Servitization requires drastic changes in the mind-sets, structures and processes of companies (Baines & Lightfoot, 2013). In order to adopt service design and service experience in servitization, the companies need to have capable and motivated development staff for facilitating collaborative service design activities or they need strategic design partners. According to Baines and Lightfoot (2014) service personnel need to be flexible and resilient, service and relationship-oriented in order to succeed in industrial service business. The toolkit could be used for educating service personnel in order to meet the requirements of servitization.

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About the Author:

Miia Lammi has studied service design for 10 years and applied it to value creation, business transformation and ecosystem renewal. Her research interests focus on the adoption of service design methods in business transformation.

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