Received 1 September 2019
Revised 25 March 2020
19 September 2020
19 February 2021
27 May 2021
Accepted 4 June 2021

ActS – Service design based on human activity sets

Johanna Gummerus
Marketing/CERS Centre for Relationship Marketing and Service Management, Hanken School of Economics, Helsinki, Finland and CTF Service Research Center, Karlstad University, Karlstad, Sweden
Jacob Mickelsson
Faculty of Social Sciences, Business and Economics, Åbo Akademi University, Åbo, Finland
Jakob Trischler
CTF Service Research Center, Karlstads Universitet, Karlstad, Sweden
Tuomas Härkönen
Kallan and Co, Helsinki, Finland, and
Christian Grönroos
Marketing/CERS Centre for Relationship Marketing and Service Management, Hanken School of Economics, Helsinki, Finland

Abstract

Purpose – This paper aims to develop and apply a service design method that allows for stronger recognition and integration of human activities into the front-end stages of the service design process.
Design/methodology/approach – Following a discussion of different service design perspectives and activity theory, the paper develops a method called activity-set mapping (ActS). ActS is applied to an exploratory service design project to demonstrate its use.
Findings – Three broad perspectives on service design are suggested: (1) the dyadic interaction, (2) the systemic interaction and (3) the customer activity perspectives. The ActS method draws on the latter perspective and focuses on the study of human activity sets. The application of ActS shows that the method can help identify and visualize sets of activities.
Research limitations/implications – The ActS method opens new avenues for service design by zooming in on the micro level and capturing the set of activities linked to a desired goal achievement. However, the method is limited to activities reported by research participants and may exclude unconscious activities. Further research is needed to validate and refine the method.
Practical implications – The ActS method will help service designers explore activities in which humans engage to achieve a desired goal/end state.
Originality/value – The concept of "human activity set" is new to service research and opens analytical opportunities for service design. The ActS method contributes a visualization tool for identifying activity sets and uncovering the benefits, sacrifices and frequency of activities.

Keywords Human activities, Service design, Activity set mapping, Activity theory
Paper type Research paper

The authors wish to thank the Pockethunt team and CEO Joakim Honkasalo for their participation in and contribution to this research project. The support and advise of Associate Editor Dominik Mahr and the anonymous reviewers were invaluable during the revision process.

Journal of Service Management
Vol. 32 No. 6, 2021
pp. 28-54
Emerald Publishing Limited
1757-5818
DOI 10.1108/JOSM-09-2019-0275

Introduction

Service design plays "a key role in fostering service innovation" (Joly *et al.*, 2019, p. 681) by taking a multidisciplinary approach that focuses on bringing "new service ideas to life" (Teixeira *et al.*, 2019, p. 577). This is done by applying design methods and tools to develop service offerings that users or customers [1] find valuable (Blomkvist and Segelström, 2014; Yu and Sangiorgi, 2018). Service design has also been shown to be useful for service transformation toward human centricity through its participatory approach (Holmlid, 2009; Sangiorgi and Clark, 2004) in areas such as health care (Patrício *et al.*, 2020; Vink *et al.*, 2019), which highlights its impetus for change.

Traditionally, the focus of service design in service research has been on the service encounter (Bitner *et al.*, 2008) or on so-called "moments of truth" (Carlzon, 1987) where the customer interacts with the firm during the service process (Sangiorgi and Clark, 2004). The introduction of a systemic perspective to service research by service science (Maglio and Spohrer, 2008) and service-dominant logic (Vargo and Lusch, 2008, 2016) has led to two opposite developments that have shifted the focus away from interactions. The first development entails studies on service systems consisting of multiple actors (Patrício *et al.*, 2020; Pinho *et al.*, 2014; Tax *et al.*, 2013) and zooms out to the macro level to understand the institutional work that is required for the realization of lasting change through service design (Vink *et al.*, 2019, 2021). The second development entails studies that focus on the micro level to not only capture user interactions linked to a specific service offering, but capture relevant activities in which an individual engages to achieve a personal goal and derive value (Mickelsson, 2013; Wyer and Xu, 2010).

Within this latter stream that this study belongs to, service design views humans as active agents (Meroni and Sangiorgi, 2011) who engage in activities to achieve goals (Mickelsson, 2013). Current attempts to understand individuals' activities tend to view humans through their role as customers or users, and consequently set their focus on understanding customers' interactions with firms (e.g. Voorhees *et al.*, 2017). However, this focus limits the analytic scope because it may overlook less easily observable activities [2] in which individuals engage to achieve goals (Mickelsson, 2013). Extant interaction-focused methods include blueprints (Shostack, 1984) for mapping process flows during firm–customer interactions, behaviour mapping (Larson *et al.*, 2005) for exploring spatial and temporal behaviour *in situ*, and journeys (Diana *et al.*, 2009) for creating representations of user interactions and activities before, during and after service use (Segelström and Holmlid, 2011). In this paper, we set out to develop a method that allows exploring and visualizing activities regardless of whether they occur in interactions between firms and customers or are done by humans on their own. To identify a solid ground to build upon and to position our method, we also explore the main developments in service design, as found in the service research literature. Specifically, our aim in this study is to develop and apply a service design method that allows for stronger recognition and integration of human activities into the front-end stages of the service design process. These stages include exploration and ideation, which are critical for laying the foundation on which a new service offering is built (Stickdorn and Schneider, 2010).

This paper makes three contributions to the service design field. First, it discusses three different service design perspectives – namely, the dyadic interaction perspective, the systemic interaction perspective and the customer activity perspective. Distinguishing between these perspectives is theoretically and practically important because they act as lenses that guide service design efforts (i.e. focus on interaction in dyads, on interaction in systems or on human activity) and the subsequent development of related methods. Second, the paper advances the customer activity perspective on service design by introducing the concept of *human activity sets*, following the idea of activity being a "doing", initiated by the goal or motive of fulfilling a need (Leontyev, 1979). Since activities occur in interlinked sets, tied together by the overarching goal that a person wishes to achieve, we use the term

"activity set". Moreover, we prefer the term "human" rather than "user" or "customer" to free service designers from a focus on specific user/customer segment. Third, by applying human activities as the unit of observation and human activity sets as the unit of analysis, the paper introduces a new method for exploring and visualizing activity sets labelled "Activity Set Mapping" (ActS) and outlines steps for its use. While earlier service design research has developed many methods for studying customer–firm interactions, there is paucity of methods and visualizations that would capture the sets of activities related to overarching goals that people themselves want to achieve. The study applies ActS to an exploratory service design project to demonstrate the operationalization of this method.

The remainder of this paper is structured as follows. After a brief discussion of different service design perspectives, including their respective units of analysis, the focus turns to establishing the theoretical foundations for the concept of human activity sets and, subsequently, the development of the ActS method. The ActS method is then applied to an exploratory service design project to redesign a recruitment app. The paper concludes by discussing implications for service design theory and practice.

Three perspectives on service design

Service design is a constantly evolving field and of interest to researchers. For example, Ramirez and Mannervik (2008) discuss how service design has evolved from a focus on objects (interface design) to moments of truth (interaction design) and, most recently, to value-creating systems (system design), thereby identifying different areas that service design may focus on. Hereby, the authors show how service design is enriched by its focus on different perspectives on design. A further advancement is made by Meroni and Sangiorgi (2011), who introduce the term "design for service". Manzini, in his foreword to their book, describes it as design of activity platforms that enable interactions, in contrast to the older view of designing services. A similar conclusion is reached by Kimbell (2011), who proposes that the focus of service design has shifted from designing services as outputs to designing for service – that is, creating "new kinds of value relation between diverse actors" (p. 41). These studies suggest that the service design process can generally be characterized as collecting and translating different types of insights into designed objects, processes and/or systems (Wetter-Edman *et al.*, 2014). Moving beyond this focus are Vink *et al.* (2021) who have introduced service ecosystem design as a lens and approach that recognizes the institutional arrangements influencing design efforts within multi-actor service systems. We interpret these developments as a gradual development towards a systemic design perspective in service research. Nevertheless, these developments do not represent a simple trajectory towards one dominant perspective; in fact, as Patrício *et al.* (2011) point out, service design occurs on different levels: designing the service concept, designing the service (interaction) encounter and designing the service system.

In this section, we classify the main developments in service design as found in the service research literature in terms of three perspectives. Each perspective differs in its scope for exploration and representation of collected information. We label these as (1) the dyadic interaction perspective, (2) systemic interaction perspective and (3) customer activity perspective. We argue that while the first two perspectives have been widely integrated in service design research, the third perspective is less established in the service literature. Below, we describe how the three perspectives differ in their approaches to and analyses of service and provide examples of related service design methods.

The dyadic interaction perspective

In its early stages, service design considered services as a specific product category that a firm produces and delivers to the customer (Kingman-Brundage *et al.*, 1995; Shostack, 1984). Fundamental to this perspective, therefore, are the four IHIP characteristics of intangibility,

heterogeneity, inseparability and perishability (Zeithaml *et al.*, 1985) and the interaction concept of "mutual or reciprocal action" where two or more parties have an effect upon one another through contact (Grönroos, 2011, p. 289). While the latter presents the focus of service design, the IHIP characteristics translate into specific requirements for "designing services that deliver" (Shostack, 1984, p. 133). Related design questions include how customer participation affects service delivery, how tasks required to deliver a service offering can be (re)allocated between customers and firms and where to draw the line of visibility between frontline and backstage operations (what customers can and cannot observe).

Service design methods that reflect the dyadic interaction perspective have mostly drawn inspiration from the fields of human–computer interaction design (Sangiorgi, 2009), operations research (Forlizzi, 2010) and industrial design (Holmlid, 2009). For example, the service blueprint model originally visualized organizations' internal structures as supporting customers' flow of actions throughout the service process (Bitner *et al.*, 2008; Shostack, 1984). Experience clue management focuses on clues, processes and interactions to create memorable experiences for the customer (Berry *et al.*, 2002). In a similar way, touchpoint design aims to explore opportunities for and create new interaction points with customers (Clatworthy, 2011). Collectively, these methods assist firms in planning smooth service operation (Goldstein *et al.*, 2002), ensure reliable service quality (Gummesson, 1990), improve customer experience (Berry *et al.*, 2002) and identify interactions that are critical to customer satisfaction and relationship building (Bitner *et al.*, 1990; Grönroos, 1990).

The systemic interaction perspective

The research streams of service science (Maglio and Spohrer, 2008) and service-dominant logic (Vargo and Lusch, 2008, 2016) have contributed to the adoption of a systemic lens on service in service design. Service design scholars have noted that customers do not co-create value by interacting with a single firm, but that value is co-created by many actors in a system (Edvardsson *et al.*, 2011; Patrício *et al.*, 2011; Ramirez and Mannervik, 2008). It follows that service design methods that focus on firm-led dyadic exchanges are too narrowly conceptualized to generate a full understanding of value co-creation. Instead, a systemic interaction perspective is required to zoom out from the dyadic stance and capture the entire value constellation, including the different interactions between actors (and/or artefacts and technologies) (for literature reviews, see Aarikka-Stenroos and Ritala, 2017; Beuren *et al.*, 2013). This entails that design questions focus on how to facilitate systemic value co-creation and involve all relevant actors in the design process (Trischler *et al.*, 2018a; Vink *et al.*, 2021).

Service design methods that reflect the systemic perspective include multilevel service design (Patrício *et al.*, 2011), customer experience modelling (Teixeira *et al.*, 2012), service delivery network (Tax *et al.*, 2013), storybraids (Holmlid, 2018) and actor network mapping (Čaić *et al.*, 2019). These methods offer different ways to map the complex system of actors and technologies (and the links between them) involved in enabling a service. More recently, inspired by the service ecosystem concept (Vargo and Lusch, 2016), service design methods have also included the institutional arrangements that guide value co-creation between actors (Vink *et al.*, 2019, 2021).

The customer activity perspective

The customer activity perspective builds on the long-standing idea in design theory that the successful design of objects and systems is based on supporting users' activities (Bedny and Karwowski, 2006; Béguin and Rabardel, 2000; Gay and Hembrooke, 2004; Nardi, 1996). Indeed, Norman (2005, p. 19) suggests that design failure stems from "a shallow understanding of the needs of the activities that are to be supported". Thus, the customer activity perspective on service design differs from the first two perspectives by primarily

focusing on what the focal actors try to achieve, studying their activities. This is in line with recent service marketing literature on customer experience (Becker and Jaakkola, 2020) and customer-dominant logic (Heinonen *et al.*, 2010; Mickelsson, 2013), which suggests that customer value is best understood by zooming in on the customer's lifeworld and exploring the activities in which customers engage to achieve their goals. This allows to overcome the limitation of service design focusing on what a particular service offering or system can do for the user (inside-out perspective), rather than what the user is doing (outside-in perspective) (Holmlid, 2009).

Service design literature has presented a multitude of approaches for zooming in on the micro level, especially within the tradition of human-centred design (Giacomin, 2014). However, these works are often limited by the lack of a clearly defined central behavioural unit of observation that would guide the process of identifying and analyzing focal activities. Examples of approaches falling under this category are "jobs to be done" (Christiansen *et al.*, 2016) and contextmapping (Visser *et al.*, 2005), which lack clear frameworks for behaviour. There are, however, two frameworks for analyzing user activity for design purposes, namely, (1) situated action models and (2) activity theory (AT) (c.f. Nardi, 1996). Both come with their own well-defined conceptual models and units of analysis and have the shared aim of understanding goal-directed action in a specific context (Nardi, 1996).

However, situated action and AT contextualize action in different ways. Situated action models focus on understanding how individuals carry out actions as shaped by real-life contexts (Suchman, 2007) and emphasize "acting-in-setting" (Nardi, 1996, p. 36). Based on Nardi (1996) and Suchman (2007), situated action can, thus, be characterized as a person's moment-by-moment acting in a specific setting. AT, in turn, focuses on understanding how such situated actions contribute to an overarching activity (Engeström, 1987; Leontyev, 1979) and emphasizes the cognitive context of action. In AT, activities entail people's own ideas about behaviours that they believe will take them towards a desired end state if enacted (Nardi, 1996). Both situated action and AT have been used in service design: Van der Bilj-Brouwer's (2017) "needs and aspirations" model is rooted in situated action and studies how events during real-life situations frame goal-directed action. Maffei and Sangiorgi's (2006) "activity design" is in turn rooted in AT and focuses on how to design a service based on the actions that combine into an overall unified activity, such as installing a washing machine in one's home. Taking a customer activity perspective helps firms develop services that support user activities, enable positive experiences and thus facilitate the emergence of experienced value.

Table 1 summarizes the three service design perspectives and provides an exemplary overview of related literature and methods. It is, however, difficult to set clear boundaries for service design methods due to their cross-fertilization. For example, Morelli (2002) advances the blueprint technique by making it applicable in a systemic context, specifically for mapping complex product–service systems. Similarly, while customer journey maps are often used to visualize a customer's journey and touchpoints in interaction with a single service provider, studies show that the method can also be used to capture multi-actor constellations, including touchpoints that occur in the customer's social context (Trischler *et al.*, 2018b). Another example is distributed cognition, which combines a systemic multi-actor approach with a focus on situated goal-directed action (Nardi, 1996). Still, the three perspectives serve to direct the designer's attention towards specific events or insights during the exploration stage and subsequently set the boundaries for what to include in external representations (Blomkvist and Segelström, 2014). The customer activity perspective directs the service designer's attention towards activities linked to a desired goal achievement. Yet, we also note that its application is limited to activities taking place in relation to single events or settings. Against this backdrop, we, in this paper, expand the activity perspective by going beyond events to capture sets of many activities. To do so, we

Perspective	Service design studies	Related concepts	Examples of methods	Focus and qualities of methods
The dyadic interaction perspective				
Service is a design category that can be specified in advance, produced by the firm and delivered to the customer	Shostack (1982) Bitner (1992) Berry *et al.* (2002) Goldstein *et al.* (2002) Bitner *et al.* (2008) Clatworthy (2011) Lemon and Verhoef (2016)	Interaction IHIP characteristics Service concept Service encounter Service delivery system	Blueprints Flowcharts Experience clue management Touchpoints Critical incident technique Customer journey maps	Focus: Customer–firm interactions Qualities: Visualizing the service delivery system for smooth service operation and reliable service quality; managing the customer–firm interactions for improved customer experiences; identifying interactions that are critical to customer satisfaction
The systemic interaction perspective				
It is not possible to design services as outputs because value is created during use and contextually contingent. Customers co-create value by combining resources from multiple sources, thus requiring a systemic approach. Institutions govern value co-creation activities	Patrício *et al.* (2011) Teixeira *et al.* (2012) Tax *et al.* (2013) Pinho *et al.* (2014) Wetter-Edman *et al.* (2014) Holmlid (2018) Trischler *et al.* (2018a, b) Čaić *et al.* (2019) Vink *et al.* (2019)	Service science Service-dominant logic Design for service Service ecosystems	Co-design Multi-level service design Customer experience modelling Service delivery network Storybraids Actor network mapping	Focus: System of actors and technologies (and the links between them) that are involved in enabling a service Qualities: Mapping the service system, journey and touchpoints that underpin the customer's value creation process within and beyond the firm's control; understanding future use situations for service innovation; coordinating the multi-actor and level constellation for enabling new ways of creating value
The customer activity perspective				
A service is seen as an input into a customer's activity. Value and experiences emerge within customer activities, requiring an understanding of how service can support customer goals	Visser *et al.* (2005) Christiansen *et al.* (2016) Maffei and Sangiorgi (2006) Van der Bilj-Brouwer (2017)	Customer-dominant logic Customer experience AT Situated action	Contextmapping Jobs to be done Activity system maps Needs and aspirations-modelling	Focus: One actor (customer or user) with a focus on exploring the activities in which they engage to achieve a desired goal or end state Qualities: Exploring the goals, experiences and potential conflicts among users of the service in a situated and wider context of action; immersing into the real-world context of service use and gathering rich contextual and situated data on user experiences

Table 1. Overview of perspectives on service design and examples of related methods

next examine and integrate relevant literature in AT, which serves as a theoretical starting point because of its focus on the concept of goal-directed activity.

Developing an activity set-based approach to service design

Service scholars have argued that customers carry out valuable activities beyond interactions/encounters that contribute to the customer's overall goals and value creation (Grönroos and Voima, 2013; Heinonen *et al.*, 2010; Mickelsson, 2013). Such activities may take

place independently from the focal firm or network of firms (see, e.g. Chen and Nugent, 2019; Mickelsson, 2013). Thus, the exploration of activities may afford service designers insight into the whole set of activities that people perform.

AT (Engeström, 1987; Leontyev, 1979) describes *activity* as the central unit of analysis and characterizes it as an intentional sequence of behaviours directed at achieving specific outcomes (Nardi, 1996) [3]. Activities are adaptable to various times and places and thus not necessarily limited to a specific context. For example, the activity of eating a sandwich can be carried out almost anywhere and at any time. Consequently, Engeström (1999, p. 20) describes human activity as "endlessly multifaceted, mobile and rich in variations of content and form" and encourages that studies on activities embrace new methods. Moreover, activities are recurrent and cyclic, which means that the person carrying them out can learn from repetition (Engeström, 1999). Finally, AT researchers have suggested that a person's many separate activities may be interlinked (Gay and Hembrooke, 2004). Following these insights, we envision a concept and method that can capture a user's recurrent activities, which are relevant to an overarching goal or life theme, but not limited by pre-defined interactions with actors, objects or places. We label this concept "human activity set" and outline its premises below as the basis for our proposed ActS method.

Activities as non-situated and abstract

In line with AT (Leontyev, 1979; Nardi, 1996), we characterize activities as objects occupying a conceptual space between *goals and motives* on the one hand, and *situated action* on the other hand. In so doing, we can understand activities as arising from, and driven by, human goals and motives and upon initiation becoming embedded in a specific context:

(1) *Goals and motives:* "What do I want to achieve and why?"

(2) *Activities*: "What can I do to achieve this?"

(3) *Situated action*: "What happens when I initiate an activity in a particular context?"

Accordingly, human activities can be described as finite units of behaviour made up of goal-directed sequences of actions carried out by one person (Leontyev, 1979; Mickelsson, 2013). Thus, activities can be seen as people's abstract ideas about what they can do, shaping their actions. It has been argued that humans choose their course of action according to their understanding of what activities are possible (Ajzen, 1991; Bratman, 1987). In line with research on the *perceived set of available activities* (Chapin, 1968; Han and Gershoff, 2019), we argue that individuals understand activities as a set of options they perceive to have towards achieving an overarching goal. People are known to define activities as units of behaviour and then use them to understand and plan tasks and routines that they carry out in everyday life (Ajzen, 1991; Vallacher and Wegner, 2012). We propose that an activity set-based approach to service design integrates a person's abstract understanding of what they can and cannot do. This accounts for how a particular activity can be carried out in various times, places and contexts (Mickelsson, 2014), meaning that we present activities as *abstract* and *non-situated*, which distinguishes our approach from other applications of AT to service design, where the focus is on situated activities tied to service encounters (e.g. Maffei and Sangiorgi, 2006).

Activities as distinct, synchronic and non-linear sets

Another distinguishing feature of our proposed approach lies in understanding behaviour as sets of distinct activities that are linked to each other by means of motives, goals, life themes or other cognitive structures (Mickelsson, 2013; Sawhney, 2006). Baumgartner *et al.* (2008) suggest that several activities may be required to reach a specific goal, which means that

people can maintain sets consisting of many activities. For example, an individual's work towards the high-level goal of better physical fitness may include several recurrent activities, such as eating a healthy lunch, going for a run or listening to a health podcast. These activities can, but do not need to, happen in conjunction with each other (or in any predefined order). Thus, rather than assuming that activities link up to form diachronic or linear sequences, as is depicted, e.g. in the service blueprint and customer journey map, we propose that an activity set-based approach to service design is *synchronic* and *non-linear,* and thus not focusing on temporality or pre-determined sequences of activities (Diana *et al.*, 2009). This helps widen the scope beyond single linear processes. In addition, since activities are linked to each other through a goal or motive, we propose that a specific motive or goal, rather than interactions, should be the starting point for exploring human activity sets.

Activities as value-laden objects

Customer value has long been recognized as a central goal in marketing (Woodruff, 1997). Indeed, activities have been characterized as inherently value creating in themselves (Holt, 1995). This is because activities aim at attaining goals and desired outcomes (Leontyev, 1979). Goal attainment, in turn, is the basis for perceived value (Woodruff, 1997). Perceived value has been conceptualized in various ways, e.g. in terms of benefit or value dimensions (Holbrook, 2006), such as utilitarian/hedonic (Smith and Colgate, 2007), or as combinations of benefits and sacrifices (Zeithaml, 1988; Woodall, 2003). Yet, perceived value is generally considered in relation to a product (Zeithaml, 1988) or service use (e.g. Gummerus and Pihlström, 2011) rather than in relation to activities, although some studies argue that the perceived value of activities is associated with the intention of carrying out an activity (Harland *et al.*, 1999; Mickelsson, 2017). Building on this argument, we propose that perceived value can be linked to human activities. Specifically, in line with Woodruff (1997), we propose that the value of an individual activity consists of the experienced benefits and sacrifices associated with carrying out the activity. Woodruff (1997) further argues that value can also be understood at the overarching goal level. As Andreassen *et al.* (2016) point out, goal attainment may lead to overall value or well-being for the individual. In our approach, motives and goals only serve as the starting point for identifying a set of activities. Thus, we highlight the perceived value of individual activities in a set, rather than the value of the overarching goal that unifies them.

To summarize the premises of our proposed concept of a human activity set, we suggest that human behaviour can be analyzed in terms of interrelated sets of distinct activities that are tied together by underlying goals or motives. Gaining insight into such sets is important because they can provide service designers with information that may help them create, expand or redesign a service offering. Specifically, by focusing on people's perceptions of possible activities and their associated perceived value, designers may identify opportunities for designing a service that can eliminate or enable activities in an identified set to support customer value. Next, we translate the human activity set concept to a service design method – namely, the ActS method. Below, we describe how we developed, applied and evaluated ActS in an exploratory service design project.

Development of the activity-set mapping method

In line with our proposed activity set-based approach, we aimed to develop a method that would capture the activity sets and treat activities as non-situated, abstract, value-laden objects beyond the constraints of service use or interaction. As described in more detail below, the process of developing the ActS method followed four phases: (1) conceptual method development; (2) initial method development; (3) a pilot research project, including

creating visualizations of the collected information and generating service design ideas; and (4) evaluation of the ActS method. The four phases correspond to the stages in design science research (DSR) of problem definition, solution design and evaluation (Offermann *et al.*, 2009). The pilot research project allowed us to test and modify the initial method, resulting in an iterative method development process. DSR – an established methodology in the information systems field – supports service design research by offering a step-by-step guide to the development of new methods and models (Teixeira *et al.*, 2019).

Setting conceptual method criteria for activity-set mapping

The first phase, conceptual method development, began with a reflexive discussion on the criteria that the ActS method needs to fulfil. To do this, we drew on the theoretical discussion, resulting in six criteria. The first two criteria are specific to service design, whereas the other four focus on the requirements for an activity set-based method. First, following the service design tradition, which describes service design as human-centric (Blomkvist *et al.*, 2010), participatory (Holmlid, 2009; Meroni and Sangiorgi, 2011) and emancipatory (Holmlid, 2009), we strived for a method that would involve relevant stakeholders in the design process and facilitate their value creation. This leads to the need to include the participants in the design process and empower them by acknowledging their role as being experts in their own activities (Criterion 1: Participatory).

Second, in line with calls for practical value in service design (Junginger and Sangiorgi, 2009) and its transformative capability (Joly *et al.*, 2019), we endeavoured to make the ActS method easy for practitioners to apply and modify and enable uplifting changes in the service system. These criteria are to be accounted for throughout the method development, piloting and evaluation (Criterion 2: Useful).

Third, we aimed for a method that would allow for identifying human activity sets supporting the achievement of a specific goal or life theme. To this end, the goal/theme needs to be set clearly to allow the workshop participants to recall activities and to be relevant in terms of the design problem setting or process. The ActS method focuses on capturing individuals' sets of potential and non-situated activities rather than descriptions of their situated actions and operations pertaining to interactions with the social or material world (cf. Leontyev, 1979; Suchman, 2007) (Criterion 3: Capturing human activity sets).

The fourth criterion was the need to find a way to assign value to the different identified activities within the set of activities (Criterion 4: Value reflecting). The fifth criterion was to create an archetype of participants' activity sets (Holmlid and Blomkvist, 2014) to provide a foundation for service innovation and design. The ActS method, thus, should provide some form of representation or input that can be used to identify spaces for potential new business concepts as well as input for the design of a new service (Blomkvist and Segelström, 2014) (Criterion 5: Archetype). Sixth, and finally, to be useful for service design, the identified activities needed to be assessed in relation to a focal service offering or service system. At this stage, the service designer needs to decide which activities they can support in an efficient way and what the service system could look like. For this, an explorative/generative visualization approach intended for designers was deemed suitable (Li *et al.*, 2016) (Criterion 6: Link to service).

Initial method development

Against the six criteria above, whilst creating the ActS method, we drew upon a previously suggested but underdeveloped visualization technique called "activityscape mapping" (Mickelsson, 2014). This technique, in line with Payne *et al.* (2008, p. 86), assumes that people create value in "a series of activities performed by the customer to achieve a particular goal",

rendering it useful for the present study. The technique further fulfils Criteria 3 and 4 above because it identifies activities related to a goal as defined by the individual (Criterion 3) and mapping the value by inspecting underlying benefits/sacrifices (Criterion 4). However, a drawback of the activityscape technique is that it has no instructions for data collection nor guidance for how to use it as part of a service design project. Moreover, activityscapes are respondent-specific maps, which may render them cumbersome to use as the developers need to compare multiple maps with different activity sets and limit the method's usefulness (Criterion 2). Although respondent-specific information can be helpful (e.g. Wetter-Edman *et al.*, 2014), we suggest that aggregated maps summarizing information across respondents would render the method more useable. Therefore, although we rooted the ActS method in the presented human activity set concept and applied activityscape maps to illustrate identified activity sets, we also modified our method to work in a collaborative workshop format.

To simplify the complex concept of perceived value (Holbrook, 2006), and fulfil Criterion 4, we linked activities with their associated benefits and sacrifices (Woodruff, 1997), with the assumption that the more benefits and fewer sacrifices are involved, the higher the value. Benefit is defined as a combination of utilitarian and hedonic value, in line with evidence of these two distinct components of attitudes (Batra and Ahtola, 1991). Moreover, these two dimensions have been found relevant in product design (Chitturi *et al.*, 2008) and user experience design (Häkkilä *et al.*, 2016). To capture utilitarian value, we operationalized it as centrality/importance (Evrard and Aurier, 1996), corresponding to the question, "How important is this activity?" Hedonic value was operationalized as enjoyment (Babin *et al.*, 1994) corresponding to the question "How fun is this activity?", following the conceptualization of fun as "the enjoyment that an experience offers and the resulting feelings of pleasure it evokes" (Klinger in Collier and Barnes, 2015, p. 989). In line with Cronin *et al.* (1997), sacrifice was defined as the amount of time, energy or money required to perform an activity.

A decision was made to exclude other potential dimensions of value (e.g. social, epistemic or contextual value, see Sheth *et al.*, 1991) for two reasons: (1) these additional dimensions are typically viewed as consumption-related values and (2) the purpose was to get an overview of how the identified activities relate to each other in terms of the hedonic/utilitarian benefits and sacrifices, not to gain in-depth insight into the details of value formation. Choices such as this shape the outcomes of the method use and should be carefully discussed within the service research team prior to data collection. As the data collection method, we propose collaborative workshops to involve participants and acknowledge them as active agents in service design (Trischler *et al.*, 2018a). Having outlined the initial method development, we continue by describing the pilot study (Phase 2) during which visualizations of the collected information were created and service design ideas were generated. The resulting ActS method is presented in Table 2.

Exploratory pilot study – testing the method

The pilot study took the form of a directed observational study. A directed observational study is an interactive research approach that provides the investigator with real-world data from which concepts can be formed and propositions and theory can be probed (Gummesson, 2001, 2007). Similar to DSR, as a systematic way to create and evaluate service design models and methods (Teixeira *et al.*, 2019), we used this approach to apply and evaluate the ActS method in a real-world context (Offermann *et al.*, 2009). The application of the ActS method in the pilot study is found in Appendix.

The context of the pilot study was a service design case aimed at designing a new recruitment app connecting recruiters and potential job seekers. The case company, a small technology-oriented start-up, wanted to develop a new type of app to replace the old one.

Table 2.
Phases and stepwise application of ActS

Step	Goals	Criterion	Outcome	Key informants	Means	Data collection tools
Conceptual criteria development phase (preface)						
(1) Setting overall criteria for method development and/or use	To ensure that the overall design process is relevant	N/A	List of criteria: (1) Participatory (2) Useful (3) Capturing human activity sets (4) Value reflecting (5) Archetype (6) Link to service	Service design team	Reflective discussions	Field notes
Initial method development/planning phase (preparing for the method use)						
(2) Defining the activity goal/theme	To ensure that the activity goal or theme is relevant and understandable	Criterion 3	Starting point for data collection: Guiding theme/goal to be studied	Service design team	Reflective discussions	Field notes
(3) Defining an appropriate data collection method and design of data collection	To ensure the method is human-centric, emancipatory and useful	Criteria 1–4	Base: Activityscape mapping (Mickelsson, 2014) method choice: Collaborative workshop (Kujala, 2003)	Service design team	Reflective discussions, internal planning workshops	Field notes
(4) Preparing the techniques for data collection	To ensure proper data collection To ensure the representativeness of participants	Criteria 1, 2	Process plan (questions, tasks, lists of materials) Defining useful participants	Service design team	Internal planning workshop invitations to participate	Field notes
Data collection phase (use of the method to generate data)						
(5) Identifying relevant activities within the activity set and their perceived value	To create activity sets (reflecting fun, sacrifice, frequency, importance)	Criteria 2, 4, 5	Actionable activity map(s) with identified activities, key questions for primary customers, service design ideas	Individuals/potential users	Co-creative activity identification workshop	Maps Sticky notes Ratings Protocols Pencils, markers

(*continued*)

Table 2.

Step	Goals	Criterion	Outcome	Key informants	Means	Data collection tools
(6) Gathering service design ideas from workshop participants	To assist the designers in recognizing service design ideas	Criteria 1, 2, 6	Lists of service development ideas	Individuals/potential users	Workshop task	Sticky notes Flipchart Pens, coloured markers, pencils
Exploration and ideation phase (use of the generated data)						
(7) Creating visualizations/ archetype of activity sets (Holmlid and Blomvist, 2014)	To create a foundation for service innovation and design	Criteria 3, 4, 5	Identified general patterns in the activity maps	Service design team and firm members	Map synthesis Map analysis case company map analysis	Sketches Sticky notes Maps Markers, pencils
(8) Gathering alternative (other) stakeholder activity maps	To identify activity maps for other stakeholder groups	Criteria 2, 4, 6	Identified preferences for development of the service from a multi-stakeholder view	Service design team and stakeholders; potential to widen to service system design	Stakeholder interviews and map creation	Sticky notes Maps Pencils Markers
(9) Key question generation by case company	To create input that can be used to identify spaces for potential new business concepts as well as input for the design	Criteria 2, 6	Shared wider meanings for service ideation	Service design team, other employees	Development of key questions from other stakeholder groups and potential answers to them	Transcripts
(10) Ideation based on activities and key questions as well as competitor offerings	To create actionable service design solutions	Criteria 2, 6	Service concept ideas	Lead investigator, service design team	Case company workshop	Field notes Photographs

The design task was to determine a human-centric design for the new recruitment app based on a redefined service concept. The pilot research project was restricted to the phases of ideation, visualization and generating ideas, i.e. the front-end of the service design process (Stickdorn and Schneider, 2010). Reporting on the prototyping and implementation stages of the new version of the mobile app is not included for two main reasons. First, ActS is designed to be primarily employed during the front-end stages, and second, discussing the technological solutions would lengthen the paper unnecessarily.

For the pilot, and in line with the criteria set for the ActS method, the goal/theme was defined as career development, i.e. "which activity set do potential job seekers carry out in relation to career development?" Hence, the activity set was defined to consist of those activities that the participants undertook guided by the goal of career development broadly or applying for jobs more specifically. The appropriate respondent group was defined as business students, who are likely to be actively building their careers. One of the study's authors, who was employed at the case company, acted as the head of service design and collected the data for this project. In addition, two executive members – the founder/CEO and development manager – participated in the piloting, which added insight into the use and usability of the workshop results.

Collaborative exploration and ideation. The pilot started with a participatory workshop (3 h in length) with 60 participants that was arranged in conjunction with a conference for business students. The workshop began with a brief introductory presentation including a short overview of the case company, followed by a brief on the service design process and instructions for drawing activity maps. Then, participants were apprised of the design task: to identify the human activity set related to career development by considering which activities they engage in to develop their career. To complete this task, participants were allocated into eight groups (7–8 participants per group).

First, in line with creative techniques suggested by Stickdorn *et al.* (2018), participants were given large blank sheets of paper, sticky notes and markers to create activity maps based on the theme of career development. To capture the relevant activity sets, participants were asked to list within a timeframe of 15 min all activities that they recognized themselves doing as part of their career development. It was emphasized that an activity refers to recurring behaviour to avoid maps becoming cluttered and including coincidental activities. All listed activities were collected on sticky notes.

Second, to emphasize the human-centric perspective, participants were instructed to draw a character representing themselves in the centre of the provided sheet of paper and then place the documented activities within the set around this character. In line with the activityscape technique (Mickelsson, 2014), the positioning of the sticky notes was to signal the level of sacrifice needed to perform the activity (the farther away from the character, the greater the sacrifice). Five minutes were given to complete this task.

Third, participants were asked to draw lines from the character to the sticky notes to indicate the frequency of the activities, illustrated by the relative thickness of the line. The thicker the line, the more frequently participants performed the activity. After this, participants were instructed to draw circles at the ends of the lines to signify the importance of the activities (utilitarian benefit). The bigger the circle, the more important the activity was. Here, it was emphasized that importance is a subjective measure relating to career development. Finally, participants were asked to draw smiling or frowning faces in the circles to illustrate the pleasure associated with each activity (hedonic benefit). Participants were given 15 min to complete this third step. Figure 1 shows an example of a resulting map.

As an outcome of the first part of the workshop, all eight groups created a map illustrating the human activity set consisting of activities that job seekers perform within the theme of career development. Examples of activities were general career development activities, such

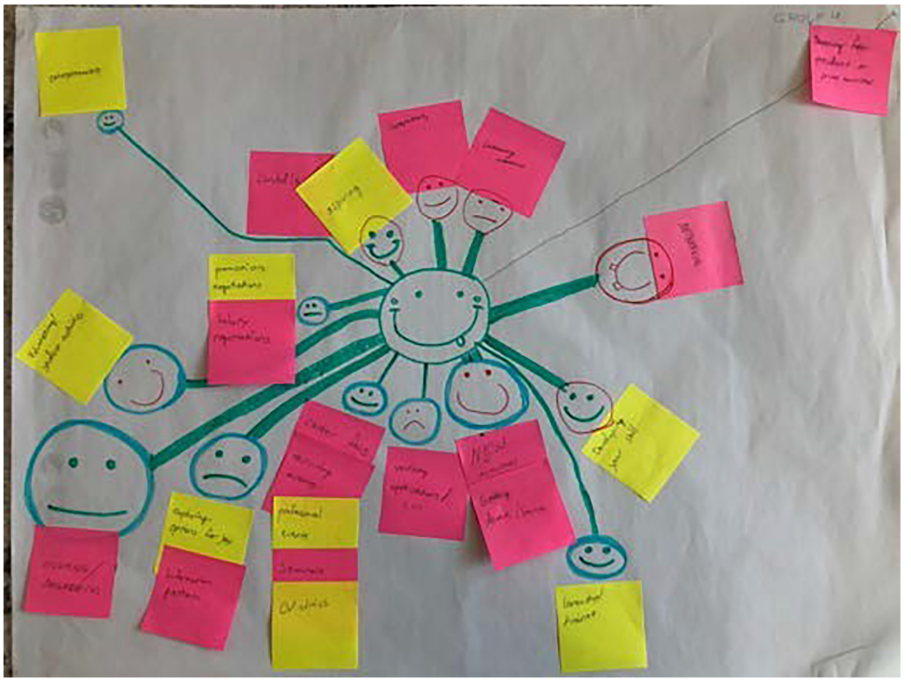

Figure 1.
Example of a hand-drawn activity map

as "exploring interesting companies" and "networking", and more specific ones, such as "constructing and updating CV", "salary negotiations" and "doing job interviews".

The second part of the workshop focused on the ideation of new service concepts. Specifically, to gain preliminary insights into how the activity maps could be transformed into new service concepts, in line with collaborative design (Trischler *et al.*, 2018a), the groups were asked to produce service ideas to support their activities. For this task, no specific instructions were given, but tools including flipchart pads, pens, coloured markers, stickers and pencils were provided. The groups were also asked to create a short protocol document describing how they had worked within their group to develop their idea. After 45 min, each group presented their activity map and service concepts to the other participants and members of the case company. The material was then collected and taken to the case company for analysis, refinement and service conceptualization.

Development of the visualization technique. After the workshop, the design team returned to the case company to spend two days analyzing and refining the collected activity maps and ideas for new service concepts. A key challenge that the team faced was transforming the eight user-generated activity maps into one comprehensive archetypal activity set map, including the different activities and dimensions (pleasure/hedonic benefit, importance/utilitarian benefit, sacrifice, frequency). To do this, the team modified the activity map into a two-dimensional quadrant bubble graph, with the *y*-axis representing the level of sacrifice and the *x*-axis the level of pleasure for each activity (Figure 2). In this map, all relevant activities were denoted with a circle. The importance (utilitarian value) of an activity was indicated by the size of the circle. In addition, the frequency of activities was illustrated by the thickness of the circle's circumference.

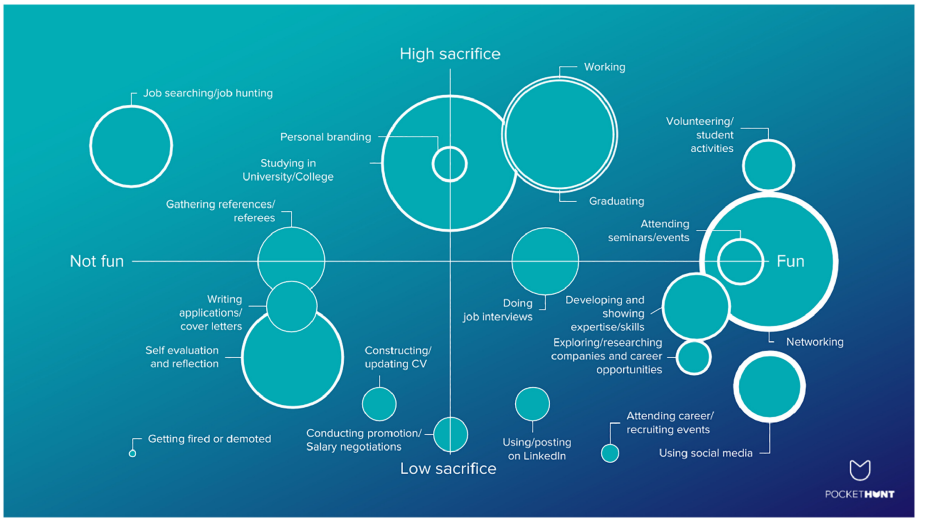

Figure 2.
Job seeker ActS map

The updated map model was then applied in the next phase of the project. Since the new service would need to cater to the needs of both job seekers and recruiters, an additional workshop was conducted with a recruitment professional. Using sticky notes, the recruiter was asked to list all relevant and recurring activities during the recruitment process, which were then placed on a whiteboard according to the updated mapping logic as a quadrant graph map (Figure 3).

Ideation based on the activity-set mapping map. The quadrant graph map turned out to be a useful improvement because the activities could now be clustered into four categories and give directions for the service design. Figure 2 thereby presents a new way to visualize the

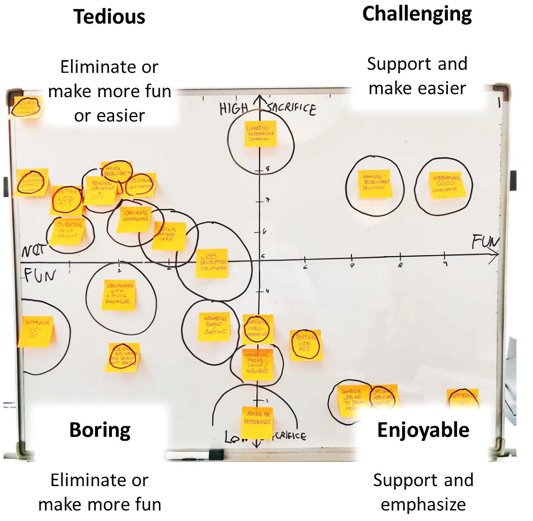

Figure 3.
Recruitment professional's ActS map with quadrant labels

value of activities within a set of activity, potentially useful for service designers, because they offer an easy way to visualize how the value of the activity set can be increased by supporting or eliminating activities. Consider, for example, an activity perceived as pleasurable but high in sacrifice, labelled "Challenging" in Figure 3. If a new service can make such activities less costly in terms of financial expenses, time or energy (moving them to the lower right quadrant, "Enjoyable"), the user might perceive the service as valuable and desirable. By contrast, activities that are not pleasurable and high in sacrifice (labelled "Tedious") are necessary, but such people do not wish to engage in them. If a service can eliminate the need for these activities or modify the pleasure/sacrifice perceptions, the service will benefit the user. Finally, activities that are low in both sacrifice and pleasure ("Boring") should either be eliminated or made more pleasurable. Among job seekers, the activities of "networking", "exploring interesting companies/career opportunities" and "developing skills/expertise" were identified as activities that could feasibly be supported by a new service, while "job hunting" and "writing applications" were activities that could either be eliminated or made easier for prospective users.

Conceptualization. To conceptualize the generated ideas, the design team formulated two questions, one for each stakeholder group. The first question was based on the job seekers' map (Figure 2) and asked, "How can one support networking and skills-based job hunting?" Based on the recruiter's activity map (Figure 3), the second question was defined as "How can one get in contact with only good candidates with minimal work?" To address these questions, the team initiated the service conceptualization process by individually brainstorming ideas of ways to achieve these goals followed by a team discussion on ideas that address both questions and thereby stakeholder needs. Based on this discussion, the team sketched out possible new service concepts, which they reflected against competing services and general user preferences whilst using mobile apps and recruiter needs. The final value proposition chosen for the redesigned app was one making career development pleasurable, easy and fast by supporting activities, such as networking and social media profiling, ability to connect with recruiters, spotting hidden jobs and showing one's skills easily.

Method evaluation

The pilot case indicates the usefulness of the ActS method for service design. According to Peffers *et al.* (2012), using a real-world case is a valid way of evaluating new methods. To further substantiate the evaluation, we reflected on Criterion 2 – i.e. practical usefulness and the ability to lead to transformative, uplifting changes in the service system. To find whether the method fulfilled this criterion, we conducted an open, unstructured group interview with two service design team members (founder/CEO and development manager). Overall, both agreed that ActS gave a good overview of the problems a job seeker is facing, and the activity sets they engage in to develop their career, which provides a basis and structure for the ideation process. As the development manager reflected, "it has provided some concreteness as a tool. . . that it is not just nothing but shooting ideas from here and there, and then they will be just floating around, and nothing will ever happen to them". The method was also perceived to be useful for identifying activities that job applicants enjoy, creating a shortcut to actionable ideas: "It highlights the details well, and what impressed me is the fact that it made it very clear what things are generally considered fun and then how one can solve problems through those activities. It immediately started pushing ideas for what to do and what to change" (Founder/CEO).

However, the team also identified some limitations of the method, particularly the depth of the generated insights. The team members felt that the method did not answer *why* some activities have distinct properties (e.g. being pleasurable or involving considerable sacrifice).

Designers might be prone to relying on their own assumptions rather than users' interpretations of the underlying reasons: "In our situation, when the topic is fairly familiar, we start to quickly identify why something is a problem. For example, job search and why it is boring and slow, why it will take so long, etc. . . . but is that really the reason?" (Founder/CEO).

Overall, the team concluded that the method was useful because of its ability to dive into job seekers' activities and also uncover the whole activity set, i.e. those activities that are important for the individual as means to achieve a goal, regardless of whether they are included in extant recruiting services or the focal service. Since these activities were not included in the respective company's service offering, they provided new opportunities for service design.

Discussion

This paper makes three contributions to the service research literature. First, it presents three perspectives on service design based on the underlying focus and qualities: (1) the dyadic interaction perspective, (2) the systemic interaction perspective and (3) the customer activity perspective. Recognition of these perspectives offers an analytical framework for understanding the background and assumptions made in the service design research literature. These three perspectives co-exist and offer complementary starting points for conceptualizing service design in service research. The first two perspectives are derived from the service design field, which has moved from customer–firm interactions to include interactions in systems of actors and technologies (e.g. Kimbell, 2011; Ramirez and Mannervik, 2008). The third perspective combines the areas of design for human activity (Maffei and Sangiorgi, 2006), AT (Leontyev, 1979; Nardi, 1996) and customer AT (Mickelsson, 2013, 2014) that all focus on human activity. An increased understanding of the three perspectives may help researchers understand the development of the field and encourage managers leverage service design for innovation. The study contributes to the customer activity perspective by exploring how human activities can serve as a distinct analytical lens for service design. This starting point opens new opportunities for service design, enabling service designers to set their analytical scope beyond situated interactions or service systems.

This leads to the second contribution: introducing the concept of human activity sets to service design. We conceptualized human activity sets as a collection of distinct human activities bound together by their contribution to the achievement of a desired goal/end state. The concept of human activity sets provides a means for delimiting the analysis to a restricted set of phenomena beyond interaction that can then be used for service design. In line with Normann (2001, p. 101), who suggests that services expand "the scope of what the customer can do", our proposed concept characterizes services as factors that enable activities ("I'm going to improve my CV with the help of the tips received from this service") or eliminate them ("I do not need to draft my CV from a scratch thanks to the template provided by the service"). Understanding people's sets of activities may, thus, provide service designers with a new or different lens for analyzing the basis for service or system design.

Third, this paper contributes a service design method (ActS) that focuses on capturing and visualizing human activity sets. The ActS method is designed to facilitate the involvement of humans/users/customers as codesigners, which is key to service success (Trischler *et al.*, 2018a). ActS allows codesign participants to map out how they reach their goals by several recurring activities and assigns value to the activities in relation to each other within the activity set. Incorporating many separate activities across services (and beyond) broadens the scope from other goal-focused design methods. For example, it continues the ideological work of the jobs-to-be-done approach (Christensen *et al.*, 2016), which has emphasized the opportunities of designing innovations based on understanding customer jobs. Further, ActS

builds on the activity maps proposed by Mickelsson (2014), creating a scalable version of them, along with the visualization tools that illustrate the value of activities within the activity set, in relation to each other, facilitating service designers' decision-making. This visualization method can be used to combine the human activity set with other stakeholders' activity sets to evaluate which activities are relevant and most promising from the service designers' perspective.

ActS also expands on methods for understanding customer–firm interactions, such as customer journey maps (Diana *et al.*, 2009), which map stereotypical sequences of customer–firm interactions, and task analysis (Annett, 2003; Saffer, 2010), which focuses on how users engage with a single technological system (e.g. a software). By mapping goal-directed sets of activities, the ActS method also expands on other goal-focused approaches, such as the means-end chains approach (Gutman, 1982), which explores how service use and service attributes (rather than customer activities) lead to goal achievement (Laukkanen and Lauronen, 2005). Moreover, by focusing on non-situated, abstract activities ActS can be distinguished from context-focused approaches. For example, contextmapping explores "all factors that influence service use" (Visser *et al.*, 2005, p. 121), which encourages service designers to gather rich contextual and situated data on user experiences with, e.g. ethnography (e.g. Segelström *et al.*, 2009). However, such a holistic viewpoint can prove work-intensive and difficult to delimit, as there is no one central analytical unit. By contrast, ActS uses the activity as the central unit of observation and explores how separate interrelated activities can be understood as sets. It, thus, contributes a service design method that incorporates many customer activities related to goal achievement in general, over time and across contexts and situations.

Managerial implications

ActS provides a hands-on method for investigating human activities by means of a ten-step process (Table 2 and Appendix) that practitioners can use in service design to explore and visualize human activity sets. ActS is especially suitable for revealing the activity sets that people link to achieving a goal (e.g. career development, as shown in the present study), a person's area of interest (e.g. sports, as discussed by Mickelsson, 2017) or life theme (e.g. leading a good life). ActS may also be suited for uncovering eventually harmful or redundant activities people engage in to achieve goals. Focusing on a goal or theme frees participants from the constraints of extant service offerings or systems. Further, the ActS method allows service designers to understand, e.g. how activities that are enabled through a service interface are connected and relate to a set of other activities. This provides opportunities for introducing new elements into a service offering by either enabling or eliminating activities. Alternatively, the ActS method can be used in situations where there is no pre-existing formalized service on the market. In such cases, the method invites service designers to ideate new service concepts that can cover strategically selected parts of the identified human activity set. Since ActS visualizes insights in the form of a bubble graph map (Figure 2), the results are presented in a familiar format for service designers, as maps are widely used in their domain (Li *et al.*, 2016; Segelström and Holmlid, 2009; Stickdorn *et al.*, 2018).

Moreover, ActS provides a quick and straightforward alternative for studying human activity compared to, e.g. ethnographic methodology. What also helps is that the method includes a visualization technique that can be used to represent information collected during the process. However, it should be noted that the method, similarly to other participatory approaches, relies on the active contribution of non-designers such as users, customers, citizens and at times even vulnerable consumer groups. A criterion for the effective operationalization of the ActS method involves, therefore, the careful preparation and

facilitation of the process to enable participants to effectively and equally contribute as "experts of their experiences" (see, e.g. Trischler *et al.*, 2018a, 2019).

Limitations and future research

We conclude our paper with a call for research to further investigate the link between human activity and service design as well as to develop additional activity-related methods in support of successful design. The main limitation of this paper is that it only provides an initial exemplar of how the ActS method can be applied. We believe ActS offers a starting point for future modifications to be combined with other methods capturing, e.g. contextual or system-related information, such as tools used in support of activities. The ActS method can also be shaped in different ways to meet varying design needs, e.g. to capture valences other than benefits and sacrifices, such as perceptions of risks or levels of control that have been found relevant for user satisfaction (Collier and Barnes, 2015). In fact, an additional shortcoming of the ActS method is its narrow scope of the selected value concept. The method does not reveal *why* activities are perceived as fun or tedious; consequently, future developments of the ActS method in particular and activity-related methods in general should consider these issues. Moreover, it captures the experienced value of performing a single activity within a set of activities but takes for granted that there is overall value of achieving the goal through completing a whole set of activities. Other development opportunities include expanding the ActS method with context and system-level information as well as studying the resources required for task achievement, as this may help designers understand the premises of activities. As a method for visualization, we wish to emphasize that ActS can and should be developed further. Finally, we call for more research that explores how the concept of human activity sets can be applied in novel ways to provide input for the service design process.

Notes

1. In the service research literature, the term for the focal beneficiary of service outcomes is usually "customer", whereas service design uses the term "user". We use the two terms interchangeably throughout the article.
2. We argue that user/customer activity is related to but distinguishable from human activity. Whereas the former relates to activities undertaken within the role of a user/customer in relation to a service (offering), the latter entails all activities in which humans engage but that can be grouped under goal pursuit.
3. Note that AT's focus on activity as goal-directed, conscious work differentiates it from theories of social practice (e.g. Turner, 2007; Warde, 2005), which, in contrast, tend to focus on the symbolic and socially shared meanings of people's reproduced and reflected behaviours.

References

Aarikka-Stenroos, L. and Ritala, P. (2017), "Network management in the era of ecosystems: systematic review and management framework", *Industrial Marketing Management*, Vol. 67, pp. 23-36.

Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Andreassen, T.W., Kristensson, P., Lervik-Olsen, L., Parasuraman, A., McColl-Kennedy, J.R., Edvardsson, B. and Colurcio, M. (2016), "Linking service design to value creation and service research", *Journal of Service Management*, Vol. 27 No. 1, pp. 21-29.

Annett, J. (2003), "Hierarchical task analysis", in Hollnagel, E. (Ed.), *Handbook of Cognitive Task Design*, Lawrence Erlbaum Assoc., pp. 17-35.

Babin, B.J., Darden, W.R. and Griffin, M. (1994), "Work and/or fun: measuring hedonic and utilitarian shopping value", *Journal of Consumer Research*, Vol. 20 No. 4, pp. 644-656.

Batra, R. and Ahtola, O.T. (1991), "Measuring the hedonic and utilitarian sources of consumer attitudes", *Marketing Letters*, Vol. 2 No. 2, pp. 159-170.

Baumgartner, H., Pieters, R., Haugtvedt, C., Herr, P. and Kardes, F. (2008), "Goal-directed consumer behavior", *Handbook of Consumer Psychology*, pp. 367-392.

Béguin, P. and Rabardel, P. (2000), "Designing for instrument-mediated activity", *Scandinavian Journal of Information Systems*, Vol. 12, pp. 173-190.

Becker, L. and Jaakkola, E. (2020), "Customer experience: fundamental premises and implications for research", *Journal of the Academy of Marketing Science*, Vol. 48, pp. 630-648.

Bedny, G. and Karwowski, W. (2006), *A Systemic-Structural Theory of Activity: Applications to Human Performance and Work Design*, CRC Press, Boca Raton, FL.

Berry, L.L., Carbone, L.P. and Haeckel, S.H. (2002), "Managing the total customer experience", *MIT Sloan Management Review*, Vol. 43 No. 3, pp. 85-89.

Beuren, F.H., Ferreira, M.G. and Miguel, P.A. (2013), "Product-service systems: a literature review on integrated products and services", *Journal of Cleaner Production*, Vol. 47, pp. 222-231.

Bitner, M.J. (1992), "Servicescapes: the impact of physical surroundings on customers and employees", *Journal of Marketing*, Vol. 56 No. 2, pp. 57-71.

Bitner, M.J., Booms, B.H. and Tetreault, M.S. (1990), "The service encounter: diagnosing favorable and unfavorable incidents", *Journal of Marketing*, Vol. 54 No. 1, pp. 71-84.

Bitner, M.J., Ostrom, A.L. and Morgan, F.N. (2008), "Service Blueprinting: a practical technique for service innovation", *California Management Review*, Vol. 50 No. 3, pp. 66-94.

Blomkvist, J. and Segelström, F. (2014), "Benefits of external representations in service design: a distributed cognition perspective", *The Design Journal*, Vol. 17 No. 3, pp. 331-346.

Blomkvist, J., Holmlid, S. and Segelström, F. (2010), "Service design research: yesterday, today and tomorrow", in Stickdorn, M. and Schneider, J. (Eds), *This is Service Design Thinking: Basics-Tools-Cases*, BIS Publishers, pp. 308-315.

Bratman, M. (1987), *Intention, Plans, and Practical Reason*, Harvard University Press, Cambridge, MA.

Čaić, M., Holmlid, S., Mahr, D. and Odekerken-Schröder, G. (2019), "Beneficiaries' view of actor networks: service resonance for pluralistic actor networks", *International Journal of Design*, Vol. 13 No. 3, pp. 69-88.

Carlzon, J. (1987), *Moments of Truth*, Harper Business, New York.

Chapin, F.S. Jr (1968), "Activity systems and urban structure: a working schema", *Journal of the American Institute of Planners*, Vol. 34 No. 1, pp. 11-18.

Chen, L. and Nugent, C.D. (2019), *Human Activity Recognition and Behaviour Analysis for Cyber-Physical Systems in Smart Environments*, Springer, New York.

Chitturi, R., Raghunathan, R. and Mahajan, V. (2008), "Delight by design: the role of hedonic versus utilitarian benefits", *Journal of Marketing*, Vol. 72 No. 3, pp. 48-63.

Christensen, C.M., Hall, T., Dillon, K. and Duncan, D.S. (2016), "Know your customers' jobs to be done", *Harvard Business Review*, Vol. 94 No. 9, pp. 54-62.

Clatworthy, S. (2011), "Service innovation through touch-points: development of an innovation toolkit for the first stages of new service development", *International Journal of Design*, Vol. 5 No. 2, pp. 15-28.

Collier, J.E. and Barnes, D.C. (2015), "Self-service delight: exploring the hedonic aspects of self-service", *Journal of Business Research*, Vol. 68 No. 5, pp. 986-993.

Cronin, J.J., Brady, M.K., Brand, R.R., Hightower, R. and Shemwell, D.J. (1997), "A cross-sectional test of the effect and conceptualization of service value", *Journal of Services Marketing*, Vol. 11 No. 6, pp. 375-391.

Diana, C., Pacenti, E. and Tassi, R. (2009), "Visualtiles: communication tools for (service) design", *Proceedings of the 1st Nordic Conference on Service Design and Service Innovation*, Oslo, Norway, 24-26 November 2009.

Edvardsson, B., Ng, G., Min, C.Z., Firth, R. and Yi, D. (2011), "Does service-dominant design result in a better service system?", *Journal of Service Management*, Vol. 22 No. 4, pp. 540-556.

Engeström, Y. (1987), *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research*, Cambridge University Press, Cambridge.

Engeström, Y. (1999), "Activity theory and individual and social transformation", in Engeström, Y., Miettinen, R. and Punamäki, R.-L. (Eds), *Perspectives on Activity Theory: Learning in Doing: Social, Cognitive and Computational Perspectives*, Cambridge University Press, pp. 19-39.

Evrard, Y. and Aurier, P. (1996), "Identification and validation of the components of the person-object relationship", *Journal of Business Research*, Vol. 37 No. 2, pp. 127-134.

Forlizzi, J. (2010), "All look same? A comparison of experience design and service design", *Interactions*, Vol. 17 No. 5, pp. 60-62.

Gay, G. and Hembrooke, H. (2004), *Activity-centered Design: An Ecological Approach to Designing Smart Tools and Useable Systems*, MIT Press, Cambridge, MA.

Giacomin, J. (2014), "What is human centred design?", *The Design Journal*, Vol. 17 No. 4, pp. 606-623.

Goldstein, S.M., Johnston, R., Duffy, J. and Rao, J. (2002), "The service concept: the missing link in service design research?", *Journal of Operations Management*, Vol. 20 No. 2, pp. 121-134.

Grönroos, C. (1990), *Service Management and Marketing: Managing the Moment of Truth in Service Competition*, Lexington Books, Lexington, KY.

Grönroos, C. (2011), "Value co-creation in service logic: a critical analysis", *Marketing Theory*, Vol. 11 No. 3, pp. 279-301.

Grönroos, C. and Voima, P. (2013), "Critical service logic: making sense of value creation and co-creation", *Journal of the Academy of Marketing Science*, Vol. 41 No. 2, pp. 133-150.

Gummerus, J. and Pihlström, M. (2011), "Context and mobile services' value-in-use", *Journal of Retailing and Consumer Services*, Vol. 18 No. 6, pp. 521-533.

Gummesson, E. (1990), "Service design", *The TQM Magazine*, Vol. 2 No. 2, pp. 97-101.

Gummesson, E. (2001), "Are current research approaches in marketing leading us astray?", *Marketing Theory*, Vol. 1 No. 1, pp. 27-48.

Gummesson, E. (2007), "Access to reality: observations on observational methods", *Qualitative Market Research*, Vol. 10 No. 2, pp. 130-134.

Gutman, J. (1982), "A means-end chain model based on consumer categorization processes", *Journal of Marketing*, Vol. 46 No. 2, pp. 60-72.

Häkkilä, J., Alhonsuo, M., Virtanen, L., Rantakari, J., Colley, A. and Koivumäki, T. (2016), "Mydata approach for personal health–a service design case for young athletes", *2016 49th Hawaii International Conference on System Sciences (HICSS)*, IEEE.

Han, E. and Gershoff, A.D. (2019), "Lots to do or lots of ways to do it? The role of mood and mind-set on goal motivation", *Journal of Consumer Psychology*, Vol. 29 No. 2, pp. 187-206.

Harland, P., Staats, H. and Wilke, H.A. (1999), "Explaining proenvironmental intention and behavior by personal norms and the Theory of Planned Behavior", *Journal of Applied Social Psychology*, Vol. 29 No. 12, pp. 2505-2528.

Heinonen, K., Strandvik, T., Mickelsson, K.-J., Edvardsson, B., Sundström, E. and Anderson, P. (2010), "A customer-dominant logic of service", *Journal of Service Management*, Vol. 21 No. 4, pp. 531-548.

Holbrook, M.B. (2006), "Rosepekiceciveci versus CCV", in Lusch, R.F. and Vargo, S.L. (Eds), *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions*, M.E. Sharpe, pp. 208-221.

Holmlid, S. (2009), "Participative, co-operative, emancipatory: from participatory design to dervice design", *Proceedings of the 1st Nordic Conference on Service Design and Service Innovation*, Oslo, Norway, 24-26 November 2009.

Holmlid, S. (2018), "Storybraids: material exploration of a service system visualization technique", *Proceedings of 5th Participatory Innovation Conference*, Eskilstuna, Sweden, 11-13 January 2018.

Holmlid, S. and Blomkvist, J. (2014), "Service Archetypes: a methodological consideration", *Proceedings of the 4th ServDes Service Design and Service Innovation Conference*, Lancaster, United Kingdom, 9-11 April 2014.

Holt, D.B. (1995), "How consumers consume: a typology of consumption practices", *Journal of Consumer Research*, Vol. 22 No. 1, pp. 1-16.

Joly, M.P., Teixeira, J.G., Patrício, L. and Sangiorgi, D. (2019), "Leveraging service design as a multidisciplinary approach to service innovation", *Journal of Service Management*, Vol. 30 No. 6, pp. 681-715.

Junginger, S. and Sangiorgi, D. (2009), "Service design and organisational change. Bridging the gap between rigour and relevance", *Proceedings of the International Association of Societies of Design Research Conference*, Seoul, Korea, 18-22 October.

Kimbell, L. (2011), "Designing for service as one way of designing services", *International Journal of Design*, Vol. 5 No. 2, pp. 41-52.

Kingman-Brundage, J., George, W.R. and Bowen, D.E. (1995), "Service logic: achieving service system integration", *International Journal of Service Industry Management*, Vol. 6 No. 4, pp. 20-39.

Kujala, S. (2003), "User involvement: A review of the benefits and challenges", *Behaviour and Information Technology*, Vol. 22 No. 1, pp. 1-16.

Larson, J.S., Bradlow, E.T. and Fader, P.S. (2005), "An exploratory look at supermarket shopping paths", *International Journal of Research in Marketing*, Vol. 22 No. 4, pp. 395-414.

Laukkanen, T. and Lauronen, J. (2005), "Consumer value creation in mobile banking services", *International Journal of Mobile Communications*, Vol. 3 No. 4, pp. 325-338.

Lemon, K.N. and Verhoef, P.C. (2016), "Understanding customer experience throughout the customer journey", *Journal of Marketing*, Vol. 80 No. 6, pp. 69-96.

Leontyev, A.N. (1979), "The problem of activity in psychology", in Wertsch, J.V. (Ed.), *The Concept of Activity in Soviet Psychology*, M.E. Sharpe, pp. 37-71.

Li, K., Tiwari, A., Alcock, J. and Bermell-Garcia, P. (2016), "Categorisation of visualisation methods to support the design of Human-Computer Interaction Systems", *Applied Ergonomics*, Vol. 55, pp. 85-107.

Maffei, S. and Sangiorgi, D. (2006), "From communication design to activity design", *Designing Effective Communications: Creating Contexts for Clarity and Meaning*, Allworth Press.

Maglio, P.P. and Spohrer, J. (2008), "Fundamentals of service science", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 18-20.

Meroni, A. and Sangiorgi, D. (2011), *Design for Services*, Gower Publishing, Surrey.

Mickelsson, K.J. (2013), "Customer activity in service", *Journal of Service Management*, Vol. 24 No. 5, pp. 534-552.

Mickelsson, K.J. (2014), "Activityscape mapping: consumer activity systems as service context", *Customer Activity: A Perspective on Service Use*, Hanken School of Economics, Helsinki.

Mickelsson, K.J. (2017), "Running is my boyfriend: consumers' relationships with activities", *Journal of Services Marketing*, Vol. 31 No. 1, pp. 24-33.

Morelli, N. (2002), "Designing product/service systems: a methodological exploration", *Design Issues*, Vol. 18 No. 3, pp. 3-17.

Nardi, B.A. (1996), *Activity Theory and Human–Computer Interaction: Context and Consciousness*, MIT Press, Cambridge, MA.

Norman, D.A. (2005), "Human-centered design considered harmful", *Interactions*, Vol. 12 No. 4, pp. 14-19.

Normann, R. (2001), *Reframing Business: When the Map Changes the Landscape*, Wiley and Sons, Chichester.

Offermann, P., Levina, O., Schönherr, M. and Bub, U. (2009), "Outline of a design science research process", *Proceedings of the 4th International Conference on Design Science Research in Information Systems and Technology*, Philadelphia, Pennsylvania, USA, May 7-8, 2009.

Patrício, L., Fisk, R.P., Falcão e Cunha, J. and Constantine, L. (2011), "Multilevel service design: from customer value constellation to service experience blueprinting", *Journal of Service Research*, Vol. 14 No. 2, pp. 180-200.

Patrício, L., Sangiorgi, D., Mahr, D., Čaić, M., Kalantari, S. and Sundar, S. (2020), "Leveraging service design for healthcare transformation: toward people-centered, integrated, and technology-enabled healthcare systems", *Journal of Service Management*, Vol. 31 No. 5, pp. 889-909.

Payne, A.F., Storbacka, K. and Frow, P. (2008), "Managing the co-creation of value", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 83-96.

Peffers, K., Rothenberger, M., Tuunanen, T. and Vaezi, R. (2012), "Design science research evaluation", in Peffers, K., Rothenberger, M. and Kuechler, B. (Eds), *International Conference on Design Science Research in Information Systems*, Las Vegas, USA, 14-15 May 2012.

Pinho, N., Beirão, G., Patrício, L. and Fisk, R. (2014), "Understanding value co-creation in complex services with many actors", *Journal of Service Management*, Vol. 25 No. 4, pp. 470-493.

Ramirez, R. and Mannervik, U. (2008), "Designing value-creating systems", in Kimbell, L. and Seidel, V.P. (Eds), *Designing for Services - Multidisciplinary Perspectives*, Said Business School, pp. 35-38.

Saffer, D. (2010), *Designing for Interaction: Creating Innovative Applications and Devices*, New Riders, Berkeley.

Sangiorgi, D. (2009), "Building a framework for service design research", *Proceedings of the 8th European Academy of Design Conference*, Aberdeen, Scotland, 1-3 April 2009.

Sangiorgi, D. and Clark, B. (2004), "Toward a participatory design approach to service design", *Proceedings of the 8th Participatory Design Conference*, Toronto, Canada, 27-31 July 2004.

Sawhney, M. (2006), "Going beyond the product: defining, designing, and delivering customer solutions", in Lusch, R.F. and Vargo, S.L. (Eds), *The Service-Dominant Logic of Marketing: Dialog, Debate and Directions*, M.E. Sharpe, pp. 365-380.

Segelström, F. and Holmlid, S. (2009), "Visualizations as tools for research: service Designers on visualizations", *Nordes*, No. 3, available at: https://archive.nordes.org/index.php/n13/article/view/53).

Segelström, F. and Holmlid, S. (2011), "Service design visualisations meet service theory: strengths, weaknesses and perspectives", *Proceedings of Art and Science of Service*, San Jose, California, 8-10 June 2011.

Segelström, F., Raijmakers, B. and Holmlid, S. (2009), "Thinking and doing ethnography in service design", *Proceedings of the International Association of Societies of Design Research Conference*, Seoul, Korea, 18-22 October.

Sheth, J.N., Newman, B.I. and Gross, B.L. (1991), "Why we buy what we buy: a theory of consumption values", *Journal of Business Research*, Vol. 22 No. 2, pp. 159-170.

Shostack, G.L. (1982), "How to design a service", *European Journal of Marketing*, Vol. 16 No. 1, pp. 49-63.

Shostack, L.G. (1984), "Designing services that deliver", *Harvard Business Review*, Vol. 62 No. 1, pp. 133-139.

Smith, J.B. and Colgate, M. (2007), "Customer value creation: a practical framework", *Journal of Marketing Theory and Practice*, Vol. 15 No. 1, pp. 7-23.

Stickdorn, M. and Schneider, J. (2010), *This Is Service Design Thinking*, BIS Publishers, Amsterdam.

Stickdorn, M., Hormess, M., Lawrence, A. and Schneider, J. (2018), *This is Service Design Doing*, O'Reilly Media, Sebastopol, CA.

Suchman, L.A. (2007), *Human-machine Reconfigurations: Plans and Situated Actions*, Cambridge University Press, Cambridge.

Tax, S.S., McCutcheon, D. and Wilkinson, I.F. (2013), "The service delivery network (SDN) - a customer-centric perspective of the customer journey", *Journal of Service Research*, Vol. 16 No. 4, pp. 454-470.

Teixeira, J.G., Patrício, L., Nunes, N.J., Nobrega, L., Fisk, R.P. and Constantine, L. (2012), "Customer experience modeling: from customer experience to service design", *Journal of Service Management*, Vol. 23 No. 3, pp. 362-376.

Teixeira, J.G., Patrício, L. and Tuunanen, T. (2019), "Advancing service design research with design science research", *Journal of Service Management*, Vol. 30 No. 5, pp. 577-592.

Trischler, J., Pervan, S.J., Kelly, S.J. and Scott, D.R. (2018a), "The value of codesign: the effect of customer involvement in service design teams", *Journal of Service Research*, Vol. 21 No. 1, pp. 75-100.

Trischler, J., Zehrer, A. and Westman, J. (2018b), "A designerly way of analyzing the customer experience", *Journal of Services Marketing*, Vol. 32 No. 7, pp. 805-819.

Trischler, J., Dietrich, T. and Rundle-Thiele, S. (2019), "Co-design: from expert-to user-driven ideas in public service design", *Public Management Review*, Vol. 21 No. 11, pp. 1595-1619.

Turner, S. (2007), "Practice then and now", *Human Affairs*, Vol. 17 No. 2, pp. 111-125.

Vallacher, R. and Wegner, D. (2012), "Action identification theory", in van Lange, P., Kruglanski, A. and Higgins, E.T. (Eds), *Handbook of Theories of Social Psychology: Volume 1*, Sage, London, pp. 327-348.

Van der Bijl-Brouwer, M. (2017), "Designing for social infrastructures in complex service systems: a human-centered and social systems perspective on service design", *She Ji: The Journal of Design, Economics, and Innovation*, Vol. 3 No. 3, pp. 183-197.

Vargo, S.L. and Lusch, R.F. (2008), "Service-dominant logic: continuing the evolution", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 1-10.

Vargo, S.L. and Lusch, R.F. (2016), "Institutions and axioms: an extension and update of service-dominant logic", *Journal of the Academy of Marketing Science*, Vol. 44 No. 1, pp. 5-23.

Vink, J., Edvardsson, B., Wetter-Edman, K. and Tronvoll, B. (2019), "Reshaping mental models – enabling innovation through service design", *Journal of Service Management*, Vol. 30 No. 1, pp. 75-104.

Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B. and Wetter-Edman, K. (2021), "Service ecosystem design: propositions, process model, and future research agenda", *Journal of Service Research*, Vol. 24 No. 2, pp. 168-186.

Visser, F.S., Stappers, P.J., Van der Lugt, R. and Sanders, E.B. (2005), "Contextmapping: experiences from practice", *CoDesign*, Vol. 1 No. 2, pp. 119-149.

Voorhees, C.M., Fombelle, P.W., Gregoire, Y., Bone, S., Gustafsson, A., Sousa, R. and Walkowiak, T. (2017), "Service encounters, experiences and the customer journey: defining the field and a call to expand our lens", *Journal of Business Research*, Vol. 79, pp. 269-280.

Warde, A. (2005), "Consumption and theories of practice", *Journal of Consumer Culture*, Vol. 5 No. 2, pp. 131-153.

Wetter-Edman, K., Sangiorgi, D., Edvardsson, B., Holmlid, S., Grönroos, C. and Mattelmäki, T. (2014), "Design for value co-creation: exploring synergies between design for service and service logic", *Service Science*, Vol. 6 No. 2, pp. 106-121.

Woodall, T. (2003), "Conceptualising 'value for the customer': an attributional, structural and dispositional analysis", *Academy of Marketing Science Review*, Vol. 12 No. 1, pp. 1-42.

Woodruff, R.B. (1997), "Customer value: the next source for competitive advantage", *Journal of the Academy of Marketing Science*, Vol. 25 No. 2, pp. 139-153.

Wyer, R.S. Jr and Xu, A.J. (2010), "The role of behavioral mind-sets in goal-directed activity: conceptual underpinnings and empirical evidence", *Journal of Consumer Psychology*, Vol. 20 No. 2, pp. 107-125.

Yu, E. and Sangiorgi, D. (2018), "Service design as an approach to implement the value cocreation perspective in new service development", *Journal of Service Research*, Vol. 21 No. 1, pp. 40-58.

Zeithaml, V. (1988), "Consumer perceptions of price, quality and value: a means–end model and synthesis of evidence", *Journal of Marketing*, Vol. 52 July, pp. 2-22.

Zeithaml, V., Parasuraman, A. and Berry, L.L. (1985), "Problems and strategies in services marketing", *Journal of Marketing*, Vol. 49 No. 2, pp. 33-46.

Further reading

Helkkula, A., Kelleher, C. and Pihlström, M. (2012), "Characterizing value as an experience: implications for service researchers and managers", *Journal of Service Research*, Vol. 15 No. 1, pp. 59-75.

Holmlid, S. and Evenson, S. (2008), "Bringing service design to service sciences, management and engineering", in Hefley, B. and Murphy, W. (Eds), *Service Science, Management and Engineering Education for the 21st Century*, Springer, pp. 341-345.

Schifferstein, H.N. and Sleeswijk Visser, F. (2013), "Designing for user experiences in specific contexts: contributions from contextmapping", *Advanced Design Methods for Successful Innovation*, Design United, pp. 78-93.

Vargo, S.L. and Lusch, R.F. (2004), "Evolving to a new dominant logic for marketing", *Journal of Marketing*, Vol. 68 No. 1, pp. 1-17.

Appendix

Step	Goals	Means	Outcome	Key informants	Data collection tools
Planning phase					
(1) Defining the activity goal/theme	Identification of relevant goal to guide data collection	Reflective discussions	Defined goal of "understanding which activity sets stakeholders engage in in career development"	Service design team	Field notes
(2) Defining an appropriate data collection method and design of data collection	To ensure the method is human-centric, emancipatory and useful	Reflective discussions, internal planning workshops	A human-centric, participatory method: Collaborative workshop (Kujala, 2003)	Service design team	Field notes
(3) Preparing the method (workshop) design	To ensure proper insight/data collection	Internal planning workshop	Process plan, including questions, tasks, lists of materials	Service design team	Field notes
(4) Identifying and inviting participants	To ensure the representativeness of participants	Invitations to participate	Defining useful participants	Service design team	Field notes
Data collection phase					
(5) Identifying relevant activities within the activity set and their perceived value	Identification of relevant activities within the human activity set To create activity maps (reflecting pleasure, sacrifice, frequency, importance)	Co-creative activity identification workshop/3 h	Actionable activity map(s) with identified activity sets (Figure 1) key questions for primary customers, service design ideas	60 users (business students) assigned to 8 groups	Background information instructions to participants Maps Sticky notes Ratings Protocols Pencils, markers
(6) Gathering service design ideas from workshop participants	To assist the designers in recognizing service design ideas	Workshop task	Lists of service development ideas	See above	Sticky notes Flipchart Pens, coloured markers, pencils

(*continued*)

Table A1. Data collection steps of ActS employed in the pilot study

Step	Goals	Means	Outcome	Key informants	Data collection tools
Exploration and ideation phase					
(7) Creating visualizations/ archetype of participants' activity sets (Holmlid and Blomvist, 2014)	To create a foundation for service innovation and design	Map synthesis Map analysis case company map analysis	Identified general patterns in the activity maps	Service design team and firm members	Sketches Sticky notes Maps Markers, pencils
(8) Gathering alternative (other) stakeholder activity maps	To identify activity maps for other stakeholder groups	Stakeholder interviews and map creation	Identified preferences for development of the service from a multi-stakeholder view	Service design team and stakeholders; potential to widen to service system design	Sticky notes Maps Pencils Markers
(9) Key question generation by case company	To create input that can be used to identify spaces for potential new business concepts as well as input for the design	Development of key questions from other stakeholder groups and potential answers to them	Shared wider meanings for service ideation	Service design team, other employees	Transcripts
(10) Ideation based on activities and key questions as well as competitor offerings	To create actionable service design solutions	Case company workshop	Service concept ideas	Lead investigator, service design team	Field notes Photographs

Table A1.

Corresponding author
Johanna Gummerus can be contacted at: johanna.gummerus@hanken.fi