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Abstract

Service-dominant logic (SDL) provides a well-established lens for understanding services as value co-creation processes. However, also value co-destruction can occur in service processes, but the literature on value co-destruction remains scattered and more studies are called for. We address this research gap with a classification of users' subjective reasoning for value co-destructive experiences while playing the augmented reality (AR) mobile game Pokémon GO. We conduct laddering interviews with Pokémon GO players to uncover their value co-destruction experiences. Employing clustering analysis, we investigate users' reasoning for value co-destruction experiences, and argue that value co-destruction may occur due to seven types of reasoning: value contradiction, unmet expectations, technical challenges, personal or social norm conflict, effect of constant mobile use, absence or loss of resources, and insufficient perceived value. The study contributes to research and practice with new insights to the unfavorable side of value co-creation and users' co-destructive service experiences.

Keywords: Service-dominant logic, Value co-creation, Value co-destruction, Augmented reality, Pokémon GO.

Introduction

When designing and providing services, it is important to understand how value is created for users. Service-dominant logic (SDL) has come to the fore as a well-established lens for understanding service interactions between providers and customers as value co-creation processes. SDL has been adopted in various domains, such as Marketing, Management and Information Systems (IS). In SDL, value is regarded to be co-created in service use by two or more actors integrating resources, such as time and skills, aiming to increase well-being for themselves and one another. However, the SDL literature has tended to overlook one aspect of services. Not all service occurrences are co-creative (Echeverri and Skålén 2011; Plé and Chumpitaz Cáceres 2010). In fact, Plé and Chumpitaz Cáceres (2010) suggest that value co-destruction can occur. We apply their definition of value co-destruction as accidental or intentional resource misuse leading to the decreased well-being of at least one of the actors involved. This concept has been applied in domains such as Marketing, Tourism, Banking, and Information Systems

(e.g., Echeverri and Skålén 2011; Neuhofer 2016; Worthington and Durkin 2012; Vartiainen and Tuunanen 2016), supporting the idea that both value co-creation and co-destruction can occur. However, research on value co-destruction and it's underlying processes is still scarce (Lintula et al. 2017). In order to understand co-creation of value for different service actors, we also need to understand how value can be co-destroyed in their resource integration processes. Therefore, we investigate actors' negative service experiences aiming to reveal underlying reasons to value co-destruction from the service user perspective. Hence, our study responds to the call for more investigations into the emerging concept of value co-destruction (Kuppelwieser and Finsterwalder 2016; Lintula et al. 2017; Plé 2017).

We focus on why value co-destruction occurs in augmented reality (AR) mobile games. AR mobile games offer novel opportunities for value co-creation (and co-destruction) because they fuse the game's virtual world with the surrounding physical environment in one interface, thus providing players with new ways of exploring their physical surroundings (Serino et al. 2016). For instance, Pokémon GO, a particularly well-known AR mobile game, integrates geographical space data to a virtual environment complemented with social playing (Clark and Clark 2016; Tateno et al. 2016). Players utilize a mobile platform to catch AR characters that appear to be reflected in their physical surroundings. Recent studies have indicated that Pokémon GO players increase their physical and psychological well-being by playing the game (e.g., Althoff et al. 2016; Baranowski 2016; Joseph and Armstrong 2016; Kari et al. 2017; Yang and Liu 2017). Drawing from SDL, such beneficial interactions between service users and providers may be regarded as value co-creation processes. For instance, users of Pokémon GO engage with the app to integrate time and other resources to co-create value, e.g., social unity and excitement for themselves. Therefore, we draw on SDL and conceptualize Pokémon GO as a service provider aiming to offer customers a variety of value propositions across the AR game platform, where players globally integrate resources to co-create value.

Extant literature shows Pokémon GO provides potential for value co-creation at various levels. However, value co-destruction may occur simultaneously with value co-creation (Vartiainen and Tuunanen 2016). According to SDL, resource integration is an integral activity in value co-creation, thus, Plé and Chumpitaz-Caceres (2010) argue accidental or intentional misuse of resources may lead to value co-destruction. Pokémon GO players have also been reported to engage in negative interactions leading to traffic accidents and assaults (Ayers et al. 2016; Raj et al. 2016). As most of the previous research has focused on the positive impacts of Pokémon GO, we want to study the perceived negative effects and experiences associated with playing the game. To our knowledge, value co-destruction as a process has not been previously studied in the context of AR mobile games. We aim to address this gap in the literature by answering the research question (RQ) *Why does value co-destruction occur in AR mobile games?* Our goal is to gain an in-depth understanding of the value co-destruction phenomenon by investigating and explaining users' value co-destruction experiences in the AR mobile game Pokémon GO. In order to investigate value co-destruction in this context, we focus on users' experiences regarding occurrences where attempted beneficial resource integration and value co-creation turns to value co-destruction.

We adopt a qualitative approach and collect interview data from Pokémon GO players using the laddering interview technique (Reynolds and Gutman 1988; Peffers et al. 2003). This technique emulates informants' mental models, providing tools to analyze and understand the reasoning behind co-destroyed values. In total, 43 laddering interviews were conducted with Pokémon GO players in Finland. We assess the interview data to depict emerging constructs to explain reasoning for value co-destructive occurrences. For this purpose, we utilize Ward's method (Aldenderfer and Blashfield 1984) for classifying the coded laddering chains into hierarchical clusters. This analysis method provides us with clusters of constructs, each representing different reasons for perceived value co-destruction. As a result, we aim at establishing an analytical framework for users' reasoning for value co-destruction in AR mobile games. Our findings contribute to the literature by explaining reasons for experienced value co-destruction processes in AR mobile games from user perspective, thus, going beyond the rather optimistic SDL literature that has focused mainly on the positive side of service interactions. More specifically, our research constitutes a pioneering value co-destruction study in the AR mobile games context. Our study aims to inform scholars and service providers who utilize emerging technologies, such as AR and virtual reality, that are beginning to take over traditional service domains. Gaining insights about value co-destruction in services mediated by new technologies is particularly important because blending the physical and virtual worlds may bring about more complex value co-destruction consequences compared to those triggered by fully virtual services in closed settings.

Value Co-creation and the SDL framework

Understanding how the value of a product or a service is formed is a focal challenge for service design and provision as companies strive to accommodate changing customer needs and capitalize on continuous technological developments. Value has traditionally been described as an outcome of a trade-off, where benefits are pursued by sacrificing resources (Zeithaml 1988). In contrast, Prahalad and Ramaswamy (2002, 2004a) suggest that interactive customer–producer involvement leads to cooperatively created value unique to the customer. They further argue that customers should be regarded as co-creators of experience or value and that customer–provider interaction should be regarded as the key to value co-creation (Prahalad and Ramaswamy 2002, 2004a). Soon thereafter, Vargo and Lusch (2004) introduced the SDL framework, suggesting that companies should start focusing on services rather than products.

The emergence of SDL (Vargo and Lusch 2004, 2008) and customers co-creating value together with the service provider (Grönroos and Voima 2013) has since shaped the way services are designed and value is proposed to customers. In SDL, the concept of service refers to the action, where an entity aims to benefit itself or others by co-creating value (Vargo and Lusch, 2004). Vargo, Maglio and Akaka (2008) state that value is "an improvement in system well-being" which can be measured as a system's ability to fit in its environment. We apply this definition in the current study. Furthermore, we regard value as tangible or intangible and as stated by Vargo and Lusch (2008), "always uniquely and phenomenologically determined by the beneficiary." Moreover, SDL regards that companies are merely offering and delivering value propositions, which customers may use as they see fit to co-create actual perceived value-in-use (Lusch and Vargo 2006a). As the provider offers value propositions to the customer, the establishing of connections and relationships between the involved service systems is enabled (Vargo et al. 2008).

Value co-creation is a key function in SDL and is regarded as an interactive process of parties co-creating value by integrating their own and utilizing each other's resources. It is seen as a service-for-service exchange between involved parties, connected to each other by value propositions (Vargo et al. 2008). The underlying goal in a service process is for the involved entities to co-create value by applying resources through particular interactive functions (Vargo et al. 2008). In service provision, the resources used are divided into a) *operant resources*, which are tangible and substantial resources being acted upon by b) *operand resources*, such as knowledge and skills (Lusch and Vargo 2006b).

SDL regards value co-creation as the underlying function for all services, steering activities from design and production through service use and experience. Vargo and Lusch (2004) state that all economies are service economies; therefore, SDL can be applied in all functions between actors. Accordingly, the concept of value co-creation is adopted and applied in various disciplines. For instance, in IS research, it has been employed in explaining and designing IS and technology-enabled services and innovations (e.g., in Kohler et al. 2011; Lusch and Nambisan 2015; Tuunanen et al. 2010). The SDL and value co-creation offer a novel perspective over value derived through the user's resource integration and the service experience. Tuunanen et al. (2010) state that value co-creation in the use of consumer IS can be enhanced by facilitating the interplay of system value propositions and user value drivers. They showcase how system offerings are complemented by value drivers of the user, and how value co-creation occurs as an interplay between these two entities in the context of IS use (Tuunanen et al. 2010).

The Emerging Concept of Value Co-destruction

However, service encounters may lead to negative value (Grönroos 2008). SDL takes a rather optimistic approach to customers interacting with providers over service encounters, but not all interactions have desired or positive outcomes (Prahalad and Ramaswamy 2004b). Accordingly, literature about services with negative or conflicting outcomes and the concept of value co-destruction are emerging in interdisciplinary domains (e.g., Echeverri and Skålén 2011; Plé and Chumpitaz Cáceres 2010; Vartiainen and Tuunanen 2016). Plé and Chumpitaz Cáceres (2010) state that because value can be co-created it is logical that the interaction process between parties may also result in value co-destruction. Echeverri and Skålén (2011) argue that value co-creation in SDL is an unrealistic conception and that interactive value formation not only occurs as value co-creation but also as co-destruction. Also earlier studies have implied there could be a negative side of value co-creation. For example, Prahalad and Ramaswamy (2004b) suggest that not all interactions between firms and customers end up being perceived positively by the

customer. Other studies have found that value imbalances between customers and providers can occur, as well as devaluation processes potentially resulting in value diminishment (Woodruff and Flint 2006).

Some scholars have recognized that value co-destruction can occur (e.g., Neuhofer 2016; Smith 2013; Vartiainen and Tuunanen 2016; Worthington and Durkin 2012) and have negative outcomes, such as increased costs, customer loss, negative word-of-mouth, and customer dissatisfaction (Smith 2013). However, we currently lack sufficient understanding of value co-destruction at different levels, that is, individuals, community, and society (Kuppelwieser and Finsterwalder 2016). In the IS literature, signs of value co-destruction can be found, for instance, in organizational studies relating to theft, sabotage, and deception in IS projects (Rost and Glass 2009, 2011) and technology misuse (D'Arcy et al. 2014). However, literature on opportunistic or deviant behavior or technology misuse does not address the need to understand risks related to involving users in services as resource integrators and co-creators of value.

The SDL (Vargo and Lusch 2004) provides a lens to investigate possible value co-destruction from the point of view of generic actors in an interactive resource integration process, where the decrease in well-being is experienced subjectively and contextually. Vartiainen and Tuunanen (2016) state there is a lack of previous research discussing the negative consequences of IS design in relation to possible negative occurrences arising during the value co-creation process. They apply the contradiction theory and find that users of the technology-enabled outdoor treasure hunting game Geocaching pursuing value co-creation may simultaneously co-destroy value. Hence, value may be co-destroyed simultaneously as it is co-created for the beneficiary. Vartiainen and Tuunanen (2016) state that both poles of the found contradictions should be understood separately, which suggests that value co-creation and co-destruction are not merely the flip sides of one phenomenon but indeed distinct yet dynamically connected. Lintula, Tuunanen, and Salo (2017) synthesize previous literature and argue that value co-destruction comprises three interrelated dimensions, orientation, resources, and perceptions, that include nine value co-destruction triggering components in three temporal positions.

Value Co-creation and Co-destruction in AR Mobile Games

After its launch on July 6 2016, it took only 13 hours for Pokémon GO to rank first as the top grossing mobile app in the US (Nelson 2017). The free downloadable Pokémon GO broke Apple's App Store record for the most downloads in a launch week. Only a few months later, the app had 550 million downloads and more than 15 million weekly players (Sonders 2016).

The app offers value propositions for users by employing AR mechanics in supplementing the real world with animated Pokémon GO characters, which players aim to catch and evolve in their value co-creation attempts. The game requires players to navigate substantial distances in real world settings to catch Pokémon characters, hatch Pokémon eggs, and take part in collaborative events, such as raids, whilst being physically active in order to play the game (Baranowski 2016). Therefore, the physical health benefits of Pokémon GO and other AR mobile games have attracted the attention of many scholars. However, studies show that physical activity is not the only positive effect of the game on players' well-being. Players' well-being has been reported to having increased in various dimensions, for example, psychological wellness, such as preventing withdrawal in youth (Tateno et al. 2016; Kato et al. 2016), cultural and historical awareness, a sense of social unity (Kari et al. 2017; Serino et al. 2016), bonding and social capital (Yang and Liu 2017), experiences of escapism (Serino et al. 2016), and overall wellness (Kari et al. 2017; Yang and Liu 2017). Such outcomes can be regarded as manifestations of co-created value. Moreover, Ruiz-Ariza et al. (2018) report that youth playing Pokémon GO score higher in selective attention, concentration, and sociability compared to non-playing youth.

However, the Pokémon GO boom started to decline soon after it started; one study shows that more than 78% of a sample of users had given up or significantly cut down playing just two months after the app launch (Liu and Ligmann-Zielinska 2017). Other studies report a decrease in players' engagement and significant dropout rates (Kawa and Katz 2016; Rodríguez-Serrano et al. 2017). Furthermore, negative implications of Pokémon GO have been reported, such as trespassing, abduction, and violence (Serino et al. 2016), as well as injuries related to accidents and assaults (Ayers et al. 2016; Raj et al. 2016). Playing experiences with negative outcomes, such as sadness, hurt, or disappointment, can be regarded as instances of value co-destruction. As co-creation of value is considered a prerequisite for the existence of many games (Prahalad and Ramaswamy 2004a), attaining an understanding of perceived value co-

destruction in game service encounters may be helpful in comprehending such negative experiences and the decline in game popularity.

AR-enabled services, such as Pokémon GO, are different from other digital enabled services due to their ability to facilitate co-creation across the virtual and physical dimensions. Therefore, we draw on SDL (Vargo and Lusch 2004; Vargo et al. 2008) and conceptualize Pokémon GO as a service provider aiming to establish connections and relationships with potential players for value co-creation by offering players value propositions over the AR game platform. Using this platform, players may globally accept the offered value propositions and actively co-create value by integrating time, knowledge, money or other resources with the provider's resources. From the players' perspective, values such as fun, physical well-being or social unity may be co-created as an outcome of this resource integration process. However, value co-destruction may occur and have severe consequences. Our study therefore aims to provide an in-depth understanding of users' value co-destruction behavior with the intention that this might inform the design of AR-enabled services in promoting value co-creation and preventing value co-destruction.

Methodology

We adopted a qualitative approach in this study and collected data by conducting interviews with Pokémon GO users. The data was coded and classified in clusters addressing the research question. This approach was beneficial as it enabled an examination of users' perceptions of co-destructive occurrences and helped us to uncover the underlying reasons for them. In this section, we describe the methodological steps of the study, from field study preparations and data collection to coding and analysis.

Field Study Preparations and Data Collection

The field study preparations began in September 2016. The study objective was to investigate and interpret reasons for value co-destructive service outcomes from AR mobile game users' perspective. We applied the laddering interview technique, which enables researchers to tap into informants' underlying thoughts about a phenomenon (Reynolds and Gutman 1988). The laddering interview technique is based on the personal construct theory (Kelly 1955), and is useful for uncovering linkages between perceived (service) attributes and outcomes (Gutman 1991) and has been found suitable for studying customer value (Modesto Veludo-de-Oliveira et al. 2006). Basing on personal constructs, the technique emulates respondents' mental models and provides tools to analyze and understand pathways of value co-destruction and the connections between co-destructive service components and co-destroyed values.

Previous literature argues that there is potential for value co-creation in Pokémon GO at different levels. Furthermore, Vartiainen and Tuunanen (2016) show that value co-destruction may occur simultaneously with value co-creation. However, to our knowledge, value co-destruction as a process and/or possible outcome are not previously studied in the context of AR mobile games and particularly, Pokémon GO. In order to investigate potential co-destruction of value in this context, our approach was to recognize deviations from users' expected value co-creation behavior. Thus, we chose to collect interview data from respondents who had both value co-creation and co-destruction experiences of using the service. We recognized such respondents by conducting a pre-survey. We recruited study participants by posting announcements in Finnish regional Pokémon GO Facebook groups. The announcements were purposefully distributed in particular Facebook groups that had a great number of active Pokémon GO players. By doing this, we aimed to ensure the recruitment of players with extensive value co-creation experience and avoid recruiting users who were no longer using the service. Volunteering participants signed in to the study by answering the pre-survey regarding their positive and negative Pokémon GO use experiences. The goal of the pre-survey was for the participants to list examples of such occurrences. Furthermore, participants were asked to give a subjective estimate of their level of playing activity and to report their age and occupation. In total, we collected 88 entries, all having implications for potential value co-creation and/or value co-destruction in Pokémon GO. The pre-survey findings supported the findings of previous studies showing that most respondents truly enjoyed the app and evidently co-created value. Nevertheless, also negative use experiences were listed by most of the participants.

Purposeful sampling (Patton 2002, p. 230) was used to select information-rich cases for the interviews. In order to interview users who most likely had both co-creative and co-destructive value experiences, the criterion for selecting informants was that there needed to be at least two examples of both positive and

negative use experiences entered by the respondent in the pre-survey. In this way, we attempted to ensure that selected informants had both value co-creative and co-destructive experiences to discuss in the laddering interviews. Most of the selected informants stated, they were enthusiastic of the game and enjoyed using it. Hence, it was evident that they were using the service (at least in part) for value co-creation purposes. This being the case, we aimed to detect value co-destruction as a phenomenon deviating from value co-creation. For example, if a respondent reported that s/he uses the app for going out and getting exercise, but experienced being mocked by his/her friends when doing so, such occurrence could manifest a co-creation attempt resulting in at least partial value co-destruction.

Exactly 50% of the 88 volunteer participants were actively playing the game in a regional city in central Finland with a population of 140,000, and the other 50% were actively playing the game in a regional city in southwestern Finland with a population of 190,000. Most selected informants could be regarded as "Pokémon GO enthusiasts" and active users of the service. In the pre-survey, informants tended to report more positive than negative game experiences, and some appeared to have an agenda to "promote" the game. Of the 88 Pokémon GO players, 48 were invited for interviews. Due to five cancellations, however, 43 of the invited participants were actually interviewed (21 from the smaller city and 22 from the larger city). The interviewed respondents were between 19 and 62 of age. Most respondents were employees or students, and more than two thirds of them were female (cf. Table 1).

Gender		Age Group		Occupation		Level of Game Activity	
Female	30	19–28	21	Employee	15	Daily	35
Male	13	29–38	14	Student	15	Weekly	4
		39–48	6	Entrepreneur	6	Occasional	2
		49–62	2	Unemployed	4	Not Active	2
				Retired	2		
				Stay-at-home parent	1		

Table 1. Informants' demographic data and level of game activity

The main focus in the interviews was on the perceived negative playing experiences, with the laddering technique proving to be an effective means determining the subjective reasons for the connection between particular game features and any negative values experienced by players. As the interview technique requires, at the beginning of each interview, the researcher presented the informant with a stimuli collection comprising a list of brief written scenarios (Peffers et al. 2003). We utilized the pre-survey and the Conceptual Framework for Value Co-destruction Process for Service Systems (Lintula et al. 2017) in designing the stimuli collection for the laddering interviews. As we wanted to discover underlying reasoning for experienced value co-destruction, the designed stimuli collection comprised scenarios with potential value co-destruction occurrences. Nine types of potential value co-destruction experiences were depicted and tabulated into a stimuli collection along with storylines extracted from the replies containing descriptions of each type of potential value co-destruction.

The interviews took place between May and September 2017. Each of the 43 informants was individually interviewed by one of the authors (41 face-to-face interviews and 2 video interviews). The interviews were voice-recorded and conducted in peaceful settings on two different university campuses in Finland. The duration of the interviews ranged between 40 and 180 minutes, averaging 60 minutes. The first 5 to 10 interview minutes were spent on introducing the research project, warmup conversation, and discussing the purpose of the interview. The stimuli collection was then introduced to the respondents. The respondents were asked to select two scenarios they had experienced as particularly negative in their own service use history. They were also told that it was possible to make up new scenarios on the spot in the case if the presented ones were not suitable. Each informant was able to select at least two scenarios from the pre-designed stimuli collection for further discussion. Subsequently, the researcher started with the first selected scenario, asking "What in this scenario was particularly negative for you?" The respondent then started to describe a particular experience that was similar to the one presented in the selected scenario. In line with established procedures for laddering interviews (Reynolds and Gutman 1988), the researcher continued, asking "And why was this negative for you?", and the informant would continue reasoning. The "why" questions would continue as long as the informant continued providing further reasoning. In the end, when no further reasoning could be provided the ultimate personal goal of the informant was typically found. At this point, this part of the interview ended, and the researcher moved on to asking questions relating to another stimulus.

The interviews were recorded in spreadsheet format as chains of attributes, consequences, and values (Peffers et al. 2003). Here, the attributes represent the trigger or initial circumstance for a negative experience, such as a system feature. Informants' reasoning statements were recorded as consequence ladders. There could be several ladders of consequences in some chains. Finally, the underlying negative reasons, which could not be reasoned with further explanations, were recorded as value ladders. Thus, laddering chains were formed, as in the following example: *The app said there's a wild Pokémon nearby* [Attribute ladder] → *I went for a walk outside to catch it* [Consequence ladder] → *It got dark and I could not see my surroundings* [Consequence ladder] → *I was frightened of strange people and wild animals* [Consequence ladder] → *I did not feel safe* [Value ladder]. Each interview branch that originated from one scenario led to several chains, and often chains were divided into sub-chains as new issues emerged. Interviewing the 43 informants resulted in gathering a total of 382 chains, with an average of 8.9 chains from each informant.

Coding and Analysis

After the data collection, the chains were mapped into a matrix where 382 rows represented the chains and 73 columns represented the individual attribute, consequence, and value ladders. Next, the 382 chains were coded one by one into attribute, consequence, and value codes (Peffers et al. 2003). To ensure that individual statements were coded consistently and with an appropriate level of specificity and a suitable level of abstraction without excess information loss, the laddering research advocates the use of two independent coders striving to reach a high degree of agreement (e.g., Klenosky, Gengler, and Mulvey 1994; Peffers et al. 2003; Reynolds and Gutman 1988). Therefore, the coding in this study was carried out in three phases by two coders, one of whom conducted all the interviews. First, both coders individually coded the attribute codes in spreadsheet format. Subsequently, the coders compared these initial attribute codes in a face-to-face meeting. The coders' initial attribute codes were tabulated in one spreadsheet, and inconsistencies were discussed with the objective of reaching a consensus and noted in the spreadsheet. All differences were reconciled by consensus, and conclusive attribute codes were transcribed in the column next to the two initial codes. Thereafter, coding rounds were conducted in a similar manner for the consequence ladders and the value ladders.

Once the coders had coded and reached a consensus on all codes for all chains, 156 codes remained. All chains were coded to the extent that was allowed by the data. Some chains could not be coded with all three codes, as there was no attribute and/or consequence and/or value code emerging from the chain in question. However, the majority of chains (92%) were coded with all three codes. The initial agreement level between the two coders was 83% for attribute codes, 89% for consequence codes, and 87% for value codes. Finally, a third researcher with vast experience in the laddering interview technique analyzed the final codes. The conclusion was that the coding differences were insubstantial, and the final codes were consistent and representative. Altogether, the coding process took six weeks, resulting in 156 codes. 53 attribute codes represented the triggering system features or circumstances, 63 consequence codes represented the reasons for negative perceptions, and 40 value codes represented failed personal goals or negative values.

The coded chains allowed us to investigate the respondents' personal constructs, i.e., beliefs and mental models resulting from their individual observations and interpretations of events (Kelly 1955). In the analysis, we utilized constructs, which comprehended the attribute, consequence and value codes derived in the previous phase (Tuunanen and Peffers 2018). Consequently, we constructed a binary matrix database and employed a hierarchical clustering analysis to analyze the data. To aggregate the value co-destructive chains into clusters of minimum variance, we employed Ward's method (Aldenderfer and Blashfield 1984, pp. 43–44). In order to answer our research question, we based our analysis on the 63 constructs derived from the consequence codes, which provided us with an understanding of users' underlying reasons for value co-destruction in Pokémon GO. After testing different clustering solutions, a seven-cluster solution was selected, as it depicted thematically coherent clusters. We then selected the most emphatic constructs from each cluster based on the frequency of their occurrence in the data as exemplars for reporting. In clusters 1 and 4, five exemplar constructs were included, as these constructs had an identical number of occurrences.

Findings

In the hierarchical clustering analysis, the 63 constructs were classified into seven emerging clusters: 1. Value Contradiction (25 constructs); 2. Unmet Expectations (5 constructs); 3. Technical Challenges (3 constructs); 4. Personal or Social Norm Conflict (12 constructs); 5. Effect of Constant Mobile Use (3 constructs); 6. Absence or Loss of Resources (11 constructs); and 7. Insufficient Perceived Value (4 constructs). Each cluster explicates a different approach to understanding users' experienced value co-destruction in the AR mobile game Pokémon GO. Altogether, 25 most emphatic constructs were depicted by the greatest relative number of occurrences within clusters. Table 2 presents the emerging clusters and their descriptions, the most emphatic constructs, and examples of study participants' reasons for potential value co-destruction. Next, we discuss the clusters individually and give examples of each cluster.

Cluster Name	Cluster Description	Most Emphatic Constructs (Occurrences in Data)	Example Reasoning of Value Destruction/Co-destruction by User
Value contradiction	Value is co-created for the actor while a different value is co-destroyed during or after the service	Wanting to take care of responsibilities (3) Luck defines success too much (3) Play takes time from other things in life (3) Playing excludes others (3) Setting a bad example for kids (3)	Having fun through playing and being mentally engaged in pursuing in game goals contradicts with focal values, such as being an attainable friend: co-created value "fun" contradicts with co-destroyed value "friendship"
Unmet expectations	The actor's preconceptions remain unfulfilled during or after service regardless of attempted co-creation	Increased meaning of teams and sociality in game (3) Social conflicts with peers (4) The game evolves slowly (4)	Expecting to meet new people/ forming new friendships while playing, when in reality, users play alone ignoring each other
Technical challenges	The actor cannot co-create value during the service as resource integration is restrained due to technical failures, damage or a shortcoming, e.g., in the employed hardware, software or the environment	Mobile device fails to function/ collapses (3) Achieving of goals in game: no goals left to achieve (3) Bad weather for playing outside (5)	A player's personal device fails to function; intra-game issues, such as lack of challenges in the game; or exterior issues, such as stormy weather
Personal or Social Norm Conflict	A self- or socially positioned norm conflicting with the actor's service activity causes e.g., self- and/or social disapproval during or after the service	Having to take the car to travel far for the game (7) Personal values conflict with playing (7) Players behaving badly/disrespectfully (7) Being assessed by others and put in a box (7) Need to control a child playing (8)	A playing parent struggles to take control of a child's game usage: the self-positioned norm "a mature adult" conflicts with parent playing the game; or a dentist wants not to be assessed by his/her subordinates as "someone who plays mobile games": the social norm "a formal professional" conflicts with playing the game
Effect of Constant Mobile Use	Co-creation requires the actor's constant attendance to the technology and the service, which reflects unwanted effects on the actor and/or on the actor's relationships/ environment during or after the service	Dependence on technology and peers (9) Being left as an outsider (7) Negative effects on health (9)	A player develops an unwanted dependence on other players or an addiction to the service use, which can lead to the health issues or the player being left outside of a group of friends
Absence or Loss of Resources	Actor experiences lack or loss of resources (e.g., time, effort, information or reputation) before, during or	Outsiders' negative preconceptions of the game (14) Psychological presence suffers (13)	Player experiences loss of acceptance from non-players; or player perceives time going to waste; or player experiences misplacement of psychological

	after the service	Playing becomes more difficult over time (17)	presence when playing
Insufficient Perceived Value	Co-created value is perceived as insufficient by the actor as compared to the invested resources during the service	Sole concentration in game (20) Requires too much resource investment (37) Playing is useless/senseless/childish (16)	Perceived value decreases as the challenge level increases; or the amount of invested resources exceeds the gained value as perceived by the user

Table 2. Findings of Hierarchical Clustering Analysis

Value Contradiction

The Value Contradiction cluster has the largest set of constructs for potential value co-destruction, each presenting contradictive values emerging from service use. By value contradiction, we regard that value is co-created for a user while a different value is co-destroyed during or after the use of the service. Five out of 25 constructs emerged as most focal based on the number of total occurrences in the data (3 occurrences each). First, being and appearing to others as a responsible person, parent, spouse, student, or supervisor was perceived contradictory when the user engaged in playing the game, as represented by the construct [Wanting to take care of responsibilities]. For example, a respondent experienced that playing the game was fun, but it took her away from her young child, which made her feel like a bad parent. Furthermore, the excitement of playing contradicted with the values of safety and security when playing in traffic or late at night. Playing the game was also perceived to conflict with taking care of one's self or others and with being considerate of others' feelings, as in [Play takes time from other things in life] and [Playing excludes others]. For example, some respondents recognized that their friends felt neglected if they had played the game in their company. Continuing to play led to a perceived contradiction with the value of friendship. Additionally, continuing to play was perceived as contradictory when a player wanted to quit the game but considered the ensuing loss of in-game achievements as a worse alternative. Therefore, the player experienced the feeling that quitting the game was not an option despite actually wanting to stop. Some respondents also felt that aiming to develop as a player and abiding by the rules of the game was frustrating, as skills did not play a key role in gaining success. This was represented by the construct [Luck defines success too much]. Furthermore, some informants experienced the contradiction of being a parent and restricting their children from constant playing and being a Pokémon GO player themselves, as represented by the construct [Setting a bad example for kids].

Unmet Expectations

Three out of the five constructs emerged as the strongest (minimum of three hits in the data) in the second cluster, Unmet Expectations. We describe unmet expectations as an occurrence where a user's preconceptions remain unfulfilled during or after service use regardless of attempted co-creation. If the expected level of value gained from service was not reached, the user may have experienced value co-destruction. Some users' expectations appear to have formed according to value propositions made by the game provider. For instance, some respondents explained that the expectation of a fun team game was crushed because conflicts emerged among team members, as represented by the construct [Social conflicts with peers]. Players' unmet expectations had also been formed based on previous game experiences. For instance, one of the informants felt that too much social interaction was required after the *raid* feature was added to Pokémon GO, as represented by the construct [Increased meaning of teams and sociality in game]. For him, the new feature meant he could no longer play whenever he wanted, as he had become more dependent on other players. As he continued playing, he perceived a loss of independence. As the nature of the game had changed, this user could no longer experience fulfilment of expectations. However, some informants explained they had expected the game to evolve dynamically, as represented by the construct [The game evolves slowly]. They had experienced disappointment, as updates and new features had been implied by the game provider but were never put into practice.

Technical Challenges

In the third cluster, namely Technical Challenges, is described as occurrences where a user cannot co-create value during the service use due to resource integration being restrained by technical failure, damage or shortcomings, e.g., in the employed hardware, software or the environment. A total of three

constructs emerged in this cluster, all of which were regarded as most emphatic within the cluster, each having three to five hits. The constructs reveal users of Pokémon GO experienced potential value co-destruction due to technical challenges related to in-game issues, dysfunctional devices, and the conditions of the physical environment: [Achievement of goals in game: no goals left to achieve], [Mobile device fails to function/collapses], and [Bad weather for playing outside]. Here, in-game technical issues, such as problems with the flow of the game, led to negative experiences. For instance, a player who had completed all levels or achieved all launched milestones described a perceived feeling of emptiness, as there was nothing left to achieve. In addition, technological challenges within the game led to the game collapsing at a critical moment. Such in-game issues were reported as causes of frustration. Furthermore, the cluster of technical challenges includes occurrences where a player's smartphone had collapsed or was physically damaged in the playing activity. This happening at a critical moment in the game may have led to perceived frustrations, which were aimed at the game provider or the player themselves.

Personal or Social Norm Conflict

The fourth cluster regards occurrences where self- or socially positioned norms conflict with the user's service usage, leading to self- and/or social disapproval during or after the service use. More specifically, the activity related to playing conflicts with prevailing social norms, "rules and standards that are understood by members of a group and that guide and/or constrain social behavior without the force of laws" (Cialdini and Trost 1998, p. 152), or personal norms, "the expectations people hold for themselves while underscoring that these expectations derive from socially shared norms" (Schwartz 1973). The cluster includes 12 constructs, five of which were included as emphatic, with seven to eight hits each. In each construct, a conflict between playing activities and predominant personal and/or social norms underlies potential value co-destruction. First, some informants reported of a worry that their personal image would suffer due to playing the game or being a part of the Pokémon GO community [Being assessed by others and put in a box]. Here, playing may have had a bad reputation and been negatively perceived by non-players, which the player perceived as damaging to his/her image. Some respondents explained that they did not want to be regarded as "one of the Pokémon GO players" and felt that being a Pokémon GO player did not fit the image they wanted to present of themselves, such as a being professional or a parent. One respondent expressed worry about not being taken seriously in the eyes of her subordinates if seen playing Pokémon GO. Some informants also described playing Pokémon GO as a conflicting activity with the expectations they personally have of themselves [Personal values conflict with playing]. For instance, one informant noted that playing was actually not in line with her identity as a mother because she wanted to regard herself as not being the kind of person who would leave her children home and go out playing a mobile game. Whereas in rural areas, driving long distances had become a necessity for playing, which was conflicting for respondents because more physical exercise and less cost would have been preferred, as represented by the construct [Having to take the car to travel far for the game]. An emerging need to better control one's own playing was also mentioned, as perceived by several informants. Furthermore, as the construct [Need to control a child playing] represents, the duty of monitoring and controlling a child playing was perceived as challenging if the parent was an active player themselves. With respect to playing with children, challenges were also faced when other players were behaving inappropriately or in a disruptive manner, such as swearing or bullying others [Players behaving badly/disrespectfully]. Here, the self-formulated parental duties were challenged, as the parent was responsible for exposing his/her children to such misbehavior of peer players.

Effect of Constant Mobile Use

Fifth, the Effect of Mobile Use cluster holds negative service occurrences where value co-creation requires a user's constant attendance to the technology and/or the service, which reflects negatively on the actor and/or on the actor's relationships or environment during or after the service use. The cluster includes four constructs related to mobile device usage, three of which were selected as emphatic within the cluster, with seven to eight hits each. While playing the game, one may perceive an unwanted dependence on other players and technology, as represented by the construct [Dependence on technology and peers]. This was manifested as, for example, anxiety when meeting and communicating with strangers about the game. Some informants perceived they were excessively dependent on and/or addicted to their smartphone. Moreover, several respondents reported incidents where their non-playing family members were left as outsiders while the rest of the family went out playing. This was due to, for example, the non-

playing family member's intentional non-playing and overall reluctance regarding the game. Similarly, a player could be left as an outsider in a non-playing group of friends or family members, which was represented by the construct [Being left as an outsider]. Such occurrences tended to hinder relationships. For instance, one informant explained that a rude atmosphere would take over the house if she talked about Pokémon GO with her child while her husband was listening. Another respondent explained that her partner did not tolerate her playing Pokémon GO. The respondent therefore ended up hiding her playing from him, which made her feel guilt and shame. Additionally, health disadvantages emerged from excessive playing, as some respondents experienced neck and back pain and increasing stress levels [Negative effects on health].

Absence or Loss of Resources

The Absence or Loss of Resources comprehends lack or loss of resources (e.g., time, effort, information or reputation) as experienced by the user before, during or after the service use. Five out of 11 constructs were selected as most emphatic in this cluster, all with a minimum of nine hits in the data. The players experienced an absence or loss of resources due to the playing activity itself, for example, when playing took away resources that were needed to engage in social relationships and time was lost, as represented by the construct [Psychological presence with loved ones suffers]. As playing evidently requires the integration of a player's resources to co-create value, we found that players expected to invest a particular amount of time or money. If the expected amount of resource investment was exceeded or if value was not co-created as expected, the player may have experienced loss of resources. For example, if a player had walked for a long time to hatch an egg only to notice s/he had forgotten to switch on the Pokémon GO app, s/he experienced loss of invested resources. Several informants explained that in cases where walked kilometers went unnoticed by the game, they felt that all the effort (time and work) had gone to waste. This was also the case for the informants who suggested they initially played the game to motivate more physical exercise. Moreover, as the degree of difficulty increased over time, more time was required [Playing becomes more difficult over time], which in some cases was also perceived as a loss of resources.

As the distribution of information in Pokémon GO is vital for more success in the game, lack of information resources was experienced as a trigger of potential value co-destruction. Furthermore, lack of acceptance by non-players, e.g., negative comments, was noted by several respondents [Outsiders' negative preconceptions of the game]. However, players' lack of knowledge and experience appeared to attract bullying and misbehavior on the part of higher-ranking or more knowledgeable players. It was also evident that some players were disregarding and intentionally excluding children and elderly players from group playing. This led to some informants perceiving a lack of acceptance by other players. Furthermore, as competing players started to recognize their competitors' physical appearances and vehicles, loss of anonymity was experienced as a potential security threat. Finally, lack of social unity was reported as potentially leading to experienced value co-destruction. For example, a respondent explained that playing the game made her feel lonely, as she perceived a lack of community.

Insufficient Perceived Value

In the Insufficient Perceived Value cluster, the user experience is that the co-created value is insufficient with respect to invested resources during the service use. Three out of four constructs emerged as most emphatic: [Requires too much resource investment] with 37 hits in the data, [Sole concentration in game] with 20 hits, and [Playing is useless/senseless/ childish] with 16 hits. This cluster captures the idea of suboptimal co-creation outcomes leading to potential value co-destruction for players. Inequality issues emerged because the game did not offer equal opportunities for all players. For instance, as playing became more demanding over time, the pursued value became insufficient, making the user consider discontinuing the service use. Some informants reported a lack of *PokéStops* in rural areas, which meant that in those areas players could not obtain the *Pokéballs* required for the core activity of the game (catching Pokémon characters). Informants explained that, therefore, they had to travel long distances to continue playing, as playing was practically disabled in their area. They had experienced that their value co-creation attempts did not lead to sufficient perceived value that would balance the excessive amount of invested resources. Moreover, as Pokémon characters had become increasingly difficult to catch over time, some players felt frustrated and that value (i.e., fun) could not be co-created as attempted.

Furthermore, some informants reported that playing was inherently senseless, and therefore the need to invest resources was perceived as an unnecessary everyday strain with insufficient perceived value.

Discussion

We conducted laddering interviews with 43 Pokémon GO users. Based on our analysis of the data, we proposed a classification of reasons for users' value co-destruction in AR mobile games (Table 2). The classification indicates that value co-destruction for users occurs due to seven distinct yet potentially interlinked clusters of reasons: 1. Value contradiction, 2. Unmet expectations, 3. Technical challenges, 4. Personal or Social Norm Conflict, 5. Effect of Constant Mobile Use, 6. Absence or Loss of Resources, and 7. Insufficient Perceived Value. Each of these clusters is comprised of three to five focal constructs. Our classification sheds light on the value co-destruction phenomenon from a customer-centric viewpoint.

Our findings suggest that users may experience value contradictions while playing the game, thus, supporting the idea that value can be simultaneously co-created and co-destroyed by the user in service use (Vartiainen and Tuunanen 2016). Moreover, our findings support the arguments of Vargo et al. (2017) that to promote co-creation, service providers ought to consider users' potential value dimensions and both the positive and negative sides of emerging value. Our findings suggest that in using AR mobile games, a contradiction between a user's personal identity-related values may become critical for value co-destruction. This extends the findings of Tuunanen et al. (2010), who state that construction of identities is a focal system value proposition promoting value co-creation for users. According to our findings, it appears that identities may also be co-destroyed through the use of Pokémon GO. For instance, a respondent lied to their spouse about going to a Pokémon GO event because the spouse had previously expressed non-appreciation of playing. Thereupon, the respondent experienced a contradiction between his/her identities as a Pokémon GO player and a spouse and the values related to those identities, e.g., excitement vs. honesty. Therefore, we suggest that aiming to understand users' values and potential value contradictions is important in service design and provision. Furthermore, Tuunanen et al. (2010) emphasize users' service experience as a driver of value co-creation. Our findings indicate that value co-destruction may also occur due to technical challenges and constant mobile use regarding physical and virtual complications related to the technical service process. We therefore propose that users' service experience also plays a critical role in value co-destructive outcomes in AR mobile games.

Edvardsson et al. (2011) state that value co-creation is affected by the social context in which actors operate, along with a set of values and norms. We found that AR mobile games may trigger conflicts with social norms as well as with personal norms, which may lead to perceived value co-destruction. More particularly, such norms were sometimes in conflict with the playing activity, for instance, when a user played the game while driving a car despite this setting a bad example for their children, which made the parent feel disappointed in them self. Although the value co-destruction literature has addressed the effect of conflicts or violations of social or cultural norms on value co-destructive outcomes (e.g., Chowdhury et al. 2016; Daunt and Harris 2017; Prior and Marcos-Cuevas 2016), no distinction has been made between personal and social norms. Our findings reveal the potential for value co-destruction rooted in both personal and social norm conflicts. We encourage further research in this area to obtain a deeper understanding of users' value co-destruction experiences. Such efforts may provide researchers and practitioners with an improved understanding of the service user perspective in social contexts.

Furthermore, a shift in focus from the dyadic experience between customer and provider toward the shared experience between those present in the service encounter has emerged in the service experience literature (Carù and Cova 2015). Carù and Cova (2015) state such collaborative service experiences are shaped either positively or negatively by the actors present in the encounter. Our findings support this idea, and we further suggest that non-users may affect the service experience (e.g., by their physical presence) of a user engaging with an AR mobile game. We found that in such occurrences, a conflict with social norms may potentially lead to perceived value co-destruction for the user. The current value co-destruction literature has investigated services in dyadic relationships (e.g., Echeverri and Skålén 2011; Robertson et al. 2014), interfirm relationships (Prior and Marcos-Cuevas 2016), or from a user community and provider perspective (e.g., Camilleri and Neuhofer 2017). However, the literature is silent on non-user-driven value co-destruction for service users. As non-users and onlookers do indeed influence users' ways of engaging with technology (Sergeeva et al. 2017), we suggest researchers investigate the role of non-users in the context of value co-destruction in future studies.

Our findings indicate that value co-destruction may also occur due to critical issues with service provision and value realization. Here, value propositions constructed by either the user and/or the provider were inconsistent with the outcome of the process, potentially leading to insufficient perceived value. We found that users may experience absence or loss of resources potentially due to inadequate service design/implementation or users' intrinsic issues, such as lack of time or skills. Earlier studies have pointed out that users' lack of resources (Robertson et al. 2014), such as knowledge, or perceived loss of resources (Neuhofer 2016) may lead to value co-destruction. We found that such issues may occur, for example, due to the lack or insufficiency of distributed information on the part of the provider. In the same vein, Baumann et al. (2017) found that a communicative incongruence in value proposition and sought value— i.e., the provider failing to communicate the intended value proposition to the customer— could negatively affect the customer's value co-creation experience. Our findings reveal lack of information as a perceived reason for potential value co-destruction. This extends the findings of previous studies implying that by improving communication (Baumann et al. 2017) and fostering transparency (Im and Qu 2017) between users and providers, potentially negative value co-creation outcomes may be rectified. For instance, a provider's prompt announcements about recent developments and reacting to users' feedback could prevent distorted user expectations and insufficient perceived value.

Altogether, our study contributes to the extant literature of value co-destruction in different levels. In addition to building an in-depth understanding of users' experienced value co-destruction in AR mobile games, the proposed classification reveals seven different experiential ways in which users may reason value co-destruction. The classification of users' reasoning to value co-destruction is a novel approach, as previous literature has mainly considered the value co-destruction from a dyadic, organizational or community perspective. Moreover, the classification depicts value co-destruction triggering constructs within a service use experience, underlining the complexity of users' resource integration and service experience as a driver of value co-destruction. Thus, our study takes a more detailed, in-depth approach in comparison to that taken by previous literature. We have also presented considerations that are new to the extant literature and relevant for the understanding of value co-destruction, e.g., the effect of conflicting personal norms, the non-users (onlookers) and lack of information. Furthermore, we have shown that the laddering interview technique offers a purposeful set of tools for data inquiry regarding not only value co-creation but also co-destruction and co-destroyed values.

Conclusions

The existing SDL literature focuses mainly on explaining the co-creative side of interactions between actors and therefore tends to overlook processes with negative outcomes. The emerging discussion of value co-destruction aims to address this shortcoming, but this literature is still in its infancy (Lintula et al. 2017). A few studies have used a conceptual approach (e.g., Plé and Chumpitaz Cáceres 2010) or an empirical approach (e.g., Echeverri and Skålén 2011; Robertson et al. 2014; Smith 2013) to examine value co-destruction, but the concept remains unclear. More research and theoretical development has been called for (Kuppelwieser and Finsterwalder 2016; Plé 2017). We have attempted to answer this call by investigating the value co-destruction phenomenon in the context of AR mobile games. We conducted a qualitative study and looked at users' value co-destruction experiences in a particular AR mobile game, Pokémon GO. Our data collection was based on laddering interviews with Pokémon GO players regarding their actual value co-destruction experiences. Employing a hierarchical clustering analysis, we shed light on users' subjective reasons for value co-destruction experiences and found that value co-destruction occurs as a result of at least seven types of reasoning: 1. Value Contradiction; 2. Unmet Expectations; 3. Technical Challenges; 4. Personal or Social Norm Conflict; 5. Effect of Constant Mobile Use; 6. Absence or Loss of Resources; and 7. Insufficient Perceived Value. In this study, we have given examples of each cluster along with their most focal constructs emerging in our data.

Our findings support the idea that in the SDL literature, scholars need to look at co-destruction of value as well as the co-creation of value. Previous studies on the critical aspects of AR mobile games have mainly focused on the impacts on individuals' physiological and psychological well-being (e.g., Ayers et al. 2016; Raj et al. 2016; Serino et al. 2016) and influence on society (e.g., Faccio and McConnell 2018) but have not considered why these negative occurrences happen from the user perspective. To our knowledge, our study is the first to apply the SDL lens in the context of AR mobile games and to examine playing activities as value co-creation and/or value co-destruction occurrences from the user perspective.

We conducted laddering interviews with 43 Pokémon GO users and showed that the laddering interview technique offers a purposeful set of tools for data inquiry on value co-destruction. Based on our data analysis, we proposed a classification of reasons for users' value co-destruction in AR mobile games (Table 2). The classification indicates that value co-destruction for users occurs due to seven distinct yet potentially interlinked clusters of reasons: 1. Value contradiction, 2. Unmet expectations, 3. Technical challenges, 4. Personal or Social Norm Conflict, 5. Effect of Constant Mobile Use, 6. Absence or Loss of Resources, and 7. Insufficient Perceived Value. Each of these clusters comprised three to five focal constructs. The classification views the phenomenon from user perspective and contributes with new considerations to the previous knowledge of value co-destruction. As previous literature has taken a dyadic, organizational or community perspective on the phenomenon, we take a novel, in-depth approach classifying users' experiential value co-destruction reasoning. Furthermore, we present considerations that are new to the extant literature and relevant for the understanding of value co-destruction, e.g., the effect of conflicting personal norms, the non-users (onlookers) and lack of information.

The findings of our study can inform service providers who utilize emerging technologies, such as AR and virtual reality. Gaining insights about value co-destruction in services mediated by such technologies is particularly important because value co-destruction may have more severe consequences in both the physical world and the virtual world compared to the consequences triggered by using fully virtual services in closed settings. Our classification of users' reasons for experienced value co-destruction showcases that attempted value co-creation may lead to value co-destruction due to seven distinct types of reasoning. The classification depicts critical service interaction components that ought to be addressed by, for example, preventive actions in service provision. For instance, unmet expectations ought to be addressed by extended information provision and/or improved service implementation. Likewise, potential value contradictions ought to be considered from different user perspectives to develop the service toward a less contradictory process for users. Service providers may derive new insights from our findings and classification for improved service design, implementation, and provision. Furthermore, an improved understanding of users as active co-creators (and co-destroyers) of value may be attained.

We recognize that our study has some limitations. First, all our informants were predominantly playing Pokémon GO in a demarcated geographical area. The game utilizes location data and is richer in material in areas of higher population density and poorer in rural areas. Therefore, our findings may not be generalizable to all geographical and cultural contexts. Second, we investigated service interactions in a particular AR mobile game; therefore, our findings may not be generalizable to all AR mobile games. However, we believe that Pokémon GO represents typical AR mobile games and provides an interesting case for this study, as its users are well distributed in various age and socio-economic groups. It is also likely the best known and most widespread AR mobile game. Based on our research design, we were able to study users who were actively co-creating and co-destroying value. Therefore, our data was not biased by negative experiences of users who generally disliked or stopped using the service. Third, the laddering interview technique as a data collection method is subjective by nature. However, as we explored an emerging phenomenon, the technique enabled us to collect rich and relevant data on value co-destruction.

We propose three future research directions—conceptual development, process understanding, and the dimensions of effect. First, to gain a holistic understanding of services and value co-creation, more research is needed to conceptualize value co-destruction within the emerging SDL paradigm. Research ought to address whether value co-creation and co-destruction are flip sides of the same phenomenon or if they are rather distinct. The conceptual understanding of value co-creation ought to be harnessed further in the design of new systems and services. We propose that understanding the actual components of the value co-destruction process will be key for finding ways to inhibit its occurrence in AR and other smart services. A process model for value co-destruction could be utilized in the investigation of, for example, the dynamic nature of co-destruction and the most critical components of the process by researchers and service providers. Second, research is needed to investigate which parts of the service process are particularly prone to value co-destruction and whether the process components or their relationships differ in different types of services. In turn, practitioners could use the process model in mapping value co-destructive service components and critical bottlenecks within service provision and subsequently rectify identified issues. Finally, this study and other recent studies have started to shed light on value co-destruction and have found negative effects on individual, relationship/community, and societal levels. All levels could be further investigated, as they complement the evolving understanding of the phenomenon. Furthermore, future research might combine these levels and aim at establishing a

multi-level understanding of value co-destruction. Here, an ecosystem perspective may be useful in accounting for effects on multiple stakeholders and complex service systems.

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