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UNDERSTANDING AUGMENTED REALITY GAME PLAYERS' VALUE CO-DESTRUCTION PROCESS IN POKÉMON GO

Research in Progress

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Abstract

We conceptualize the mobile game Pokémon Go as a service provider aiming to offer customers value propositions over an augmented reality (AR) platform, where players engage in co-creating value, such as fun, social unity and health. However, playing Pokémon Go can also ensue to value co-destruction through critical service interactions involving e.g. increased mobile costs, trespassing, accidents or assaults. Such could ensue to negative value outcomes, such as frustration, humiliation or unsafety. In order to prevent critical service interactions, it is significant to gain an understanding of value co-destruction, which currently remains an unclear concept with a call for empirical studies. We address this gap by adopting a qualitative research approach and examining 55 critical Pokémon Go user incidents, and ca. 30 laddering interviews. The data is coded into process components categorized in three interrelated dimensions and three temporal points. As a result, a value co-destruction process framework for AR mobile games will be proposed. We contribute to the literature by empirically extending the extant value co-destruction conceptualization, and pioneering a study of value co-destructive user behaviour in the AR mobile games domain. Our findings will help researchers and managers understand value co-destructive user behaviour and rectify critical interaction components.

Keywords: Value, Co-creation, Co-destruction, Service, Augmented reality, Mobile games.

1 Introduction

The quest for pocket monsters over an augmented reality (AR) platform swoop the world as the Pokémon Go (Niantic, Inc., 2016) mobile game broke Apple's App Store record for most launch week downloads in July 2016. According to the market intelligence firm Newzoo (2016), Pokémon Go was downloaded 550 million times in its first 80 days. Pokémon Go players utilize a mobile platform in catching AR characters, which appear to be reflected in their physical surroundings. Drawing from service-dominant logic (SDL) (Vargo & Lusch, 2004), such interactions can be regarded as processes of two or more service systems integrating possessed and utilized resources, in order to co-create value. Maglio et al. (2009) define service-systems as configurations of people, technologies, and other entities that interact with other systems to create value. Value co-creation is a key function in such service interactions between service systems (Vargo & Lusch, 2004). According to SDL, service providers can merely offer customers value propositions, and value is subjectively and contextually determined by the beneficiary (Vargo & Lusch, 2004). We utilize the lens of SDL and conceptualize Pokémon Go as a service provider aiming to offer customers value propositions over the AR game platform, where players globally integrate resources, such as time, money and skills, co-creating value, e.g. fun, sociality and recreation (Vargo & Lusch, 2004).

Pokémon Go players can co-create value for physical (Baranowski, 2016; Althoff et al., 2016; Joseph & Armstrong, 2016) and psychological well-being (Tateno et al., 2016), cultural and historical awareness, sense of social unity and escapism (Serino et al., 2016). However, players have also experienced accidents and assaults (Ayers et al., 2016; Raj et al., 2016), increased mobile costs, abduction and violence and they have engaged in trespassing (Serino et al., 2016). Players are likely to not co-create positive values in such negative service interactions. Instead, the outcome value could be negative, such as frustration, disappointment, humiliation or unhappiness. Co-creation of value within games has been researched with the SDL lens, but the literature is silent about the subversive side of AR gaming. Recently, value co-creation has been suggested to be an overly optimistic conception (Echeverri & Skålén, 2011), and *value co-destruction* has been proposed as a concept for the critical service interaction ensuing to a decrease in well-being for at least one of the parties involved (Plé & Chumpitaz Cáceres, 2010). Moreover, a process conceptualization attempt has been made for value co-destruction (Lintula et al., 2017), but empirical evidence of it is called for.

Occurrences of value co-destruction increase customer loss and dissatisfaction, as well as negative word of mouth and costs (Smith, 2013). Hence, acknowledging the threat of value co-destruction in AR game design and in managerial situations could prevent unwanted outcomes for players and the service provider. However, extant SDL literature focuses on value co-creation and only few studies address value co-destruction, leaving the concept unclear (Plé & Chumpitaz Cáceres, 2010; Echeverri & Skålén, 2011). This study addresses this gap by mapping players' value co-destruction behaviour in the AR mobile game context by asking, "How do AR mobile game players co-destruct value?"

We conduct an empirical study of 55 actual critical experiences of Pokémon Go, collected using the critical incident technique (Flanagan, 1954: 327), and ca. 30 laddering interviews (Reynolds & Gutman, 1988). Beside to the literature gap, the emergence of the new era of services, such as Internet of Things, Artificial Intelligence and Augmented Reality, taking over traditional service domains, drives the motivation of this study. Studying value co-destruction within the AR mobile games domain is particularly essential because, value co-destruction in AR games may have more concrete consequences than purely virtual games. We utilize the lens of the emergent value co-destruction process framework for service systems (Lintula et al., 2017) in guiding this study towards its primary goal: attaining an understanding of AR game players' value co-destruction process.

We will contribute to information systems and service research with a representation of the value co-destruction process for AR mobile games, and empirically extending the conceptual framework for value co-destruction process for service systems (Lintula et al., 2017). Our framework brings forth topics for future research, and helps researchers and AR game designers attain a better understanding of players' threefold value co-destruction process. Furthermore, we pioneer a study of value co-destructive user behavior in the AR mobile games domain, and provide practical guidelines for AR game designers and managers to steer value co-destructive service components, and prevent critical service interaction occurrences.

2 Theoretical background

2.1 Value co-creation and service-dominant logic

Traditionally, value has been regarded as a matter of exchange between a company (creating value) and a customer (consuming value) (Zeithamal, 1988). Differing from the traditional product-centred "demand - deliver" logic, where value is the subject of exchange, systematically created by companies and consumed by consumers, Prahalad and Ramaswamy (2002;

2004) suggested that interactive customer involvement with the producer leads to cooperatively created value unique to the individual customer. Consequently, Vargo and Lusch (2004) introduced an emerging service dominant logic (SDL), where service is the function of resources being applied to benefit others, with value co-creation as a key function. Co-creation of value is regarded an interaction between service systems, where service systems integrate resources with each other. Vargo and Lusch (2004) suggest that companies should start focusing on services rather than products, and considering service the fundamental unit of exchange in all economies, where value is always subjective and contextual, and determined by the beneficiaries as a result of a co-creation process (Vargo & Lusch, 2004; 2008; 2016).

Services are regarded to be delivered with or without the assistance of physical goods, and in cases where products are used, they are regarded as tools of delivering service (Vargo & Lusch 2006, p. 40). The integrated resources are mostly operant resources, such as knowledge and skills, which are at times transmitted by applying operand resources, such as goods or substances (Lusch & Vargo, 2006). The provider offers value propositions to the customer, enabling the establishing of connections and relationships between the involved service systems (Vargo et al. 2008). The SDL holistically states that all economies are service economies, where customer value is driven by service use and resulting from the beneficial application of resources between actors, including beneficiaries (Vargo & Lusch, 2004; 2008; 2016).

Tuunanen et al. (2010) have presented a conceptual framework for the design of consumer information systems (CIS), explaining value co-creation as interaction between system value propositions and customer value drivers. The framework suggests that in successful co-creation of value, the system value propositions (i.e. construction of identities, social nature of use and context of use) are complemented by user value drivers (i.e. participation in service production, service process experience and goals and outcomes), and that value co-creation in the context of IS use occurs as an interplay between these two entities (Tuunanen et al., 2010).

2.2   The negative side of value co-creation

The emergence of service-dominant logic (SDL) (Vargo & Lusch, 2004) and customers co-creating value-in-use together with the service provider (Grönroos & Voima, 2013) has shaped the way services are designed and value proposed to customers. However, service encounters do not always have positive outcomes (Prahalad & Ramaswamy, 2004). Extant literature has referred to value co-creation in an intrinsically positive manner (Plé & Chumpitaz Cáceres, 2010; Lefebvre & Plé, 2012), and engaging in interactive value creation processes have also mainly been explained in unproblematic ways (Echeverri & Skålén, 2011). As value co-creation in SDL is defined as an interaction process between parties involved (Vargo & Lusch, 2004), its subversive side ought to be regarded as an equally interactive action. Furthermore, the subjective determination and salience of value-in-use (Vargo and Lusch, 2004) and the perishable and intangible essence of service (Parasuraman et al., 1985) ought to be accounted in explaining subversive value co-creation interactions. Hence, this phenomenon cannot be explained e.g. with marketing theories of service failure and recovery (Tax & Brown, 1998) focusing on managerial actions and dealing with issues related to service provision, or IS theories on users' technology acceptance or continuance (e.g. Bhattacherjee, 2001), which overlook the subjective and contextual value stemming from perishable and intangible service interactions, focal in SDL. Some studies imply there is a negative side to value co-creation, or in other words, value co-destruction, but overall the literature has overlooked potential negative consequences of failed or errored co-creation processes (Dong et al., 2008).

2.3   Conceptualizing value co-destruction

Plé and Chumpitaz Cáceres (2010) argue that since value can be co-created, it is logical that service processes may also result in value co-destruction. Value co-destruction has been recognized as an important research topic, however, the concept has not been thoroughly discussed (Plé and Chumpitaz Cáceres, 2010; Echeverri & Skålén, 2011). Plé and Chumpitaz Cáceres (2010) have introduced and coined the notion of value co-destruction in the SDL framework, defining it "an interactional process between service systems that results in a decline in at least one of the systems' well-being". For instance, as consumers turn to online medical websites for self-diagnosis, false and incomprehensible results can occur due to insufficient medical knowledge. Such a critical service encounter could negatively impact users' well-being, and thus, value could be co-destructed in the interaction (Robertson et al., 2014).

Within the IS research domain, Vartiainen and Tuunanen (2016) have proposed that IS artefact users may simultaneously co-create and co-destruct value. Furthermore, an emergent value co-destruction process conceptualization framework (Lintula et al., 2017) arranges key concepts of the value co-destruction process into three overlapping dimensions – *orientation, resources* and *perceptions* – and their components. The components are temporally categorized by their appearance in a service encounter. *Orientation* dimension comprehends service systems' *goals and intentions*, which evolve throughout and after the service interaction. Furthermore, *resources* dimension comprehends the following components: *lack of resources* (prior to the service encounter), *misuse, nonintegration* and *loss of resources* (during service encounter), and *attempt to restore resources* (after service encounter). Finally, *perceptions* dimension comprehends *expectations, incongruence of applied practices, insufficient perceived value* and *contradictions of value* throughout the service encounter. (Lintula et al., 2017.) The process components can individually trigger value co-destruction, or have interrelated correlations. However, the concept and process of value co-destruction are not enough examined and need more empirical research attention in order to reach scientific consensus.

2.4   Value co-creation and co-destruction in augmented reality games

Augmented reality (AR) games, such as Pokémon Go, use AR mechanics in supplementing the real world with animated add-ons, which play a substantial part in the players' co-creation interactions. For instance, Pokémon Go is an exergame (Kari & Makkonen, 2014) requiring players to navigate in real world settings catching animated Pokémon characters, and thus be physically active in order to play the game (Baranowski, 2016). Pokémon Go can be conceptualized as a service provider aiming to offer customers value propositions over an augmented reality (AR) game platform, where players globally integrate resources, such as time and skills, co-creating value, e.g. fun, sociality and recreation. So far, some studies have discussed the positive influences of Pokémon Go to physical activity and well-being (e.g., Althoff et al., 2016; Baranowski, 2016; Joseph & Armstrong, 2016). Furthermore, players have been found to co-create value also related to psychological wellness (Tateno et al., 2016), cultural and historical awareness, sense of social unity and escapism (Serino et al., 2016).

However, there have also been implications of Pokémon Go players engaging in negative service interactions, ensuing to increased mobile costs, trespassing, abduction, violence (Serino et al., 2016), and injuries related to accidents and assaults (Ayers et al., 2016; Raj et al., 2016). These negative occurrences could be regarded as processes of value co-destruction, ensuing to negative value, e.g. unsafety, sadness, hurt and disappointment. Studying such instances is particularly important, because some of them can have severe concrete consequences, which could be prevented by acknowledging and addressing risks in service design and management.

3 Methodology

In this research study, we adopt a qualitative research approach and conduct a two-phased empirical study. The first phase involves preliminary data collection with the critical incident technique (CIT), analysis and preliminary findings. The second phase involves design and conducting ca. 30 laddering interviews, analysis, and proposal of results.

In the preliminary data collection, we applied CIT in order to address Pokémon Go players' actual negative experiences instead of hypothetical statements. CIT is a well-established technique that involves "a set of procedures" (Flanagan, 1954, p. 327) for collecting, analysing, and classifying observations of human behaviour (Gremler, 2004). It allows the respondents to describe the actual use experiences in their own words, and it is suitable for acquiring insights and understanding on an undiscovered phenomenon (Meuter et al., 2000). CIT has been extensively applied in several different disciplines (Butterfield et al., 2005), for example, in information systems, marketing and other business disciplines (Gogan et al., 2014). CIT has been suggested as a useful technique to obtain stronger study findings and a well suitable method for IS research (Gogan et al., 2014), and critical incident reports can uncover valuable information regarding user behaviours (Andersson & Nilsson, 1964; Gogan et al., 2014). Relevant critical incidents are also easy to remember and describe and can thus be used to produce an accurate and in-depth report of events (Grove & Fisk, 1997). Overall, several studies (e.g., Andersson & Nilsson, 1964; Gremler, 2004) have demonstrated that CIT provides both reliability and validity, and is thus a sound method.

To collect the data, we conducted an online survey based on previous CIT studies (e.g. Bitner et al., 1990; Meuter et al., 2000). The data was collected for four months from mid-July 2016 to mid-November 2016. The survey was distributed to the respondents through social media channels, discussion forums of various topics and audiences, and through different informative mailing lists.

To collect the open-ended descriptions of critical incidents, we used the exact wording of principal CIT-related articles (e.g., Bitner et al., 1990; Johnston, 1995; Meuter et al., 2000): "Think of a time when you had an outstandingly positive or negative experience [with Pokémon Go]", followed by a series of elaborating questions. The full question items are available from the authors by request. In total, we received 57 responses with negative experiences. To ensure the quality of the empirical evidence, we followed previous guidelines (Bitner et al., 1990; Gremler, 2004; Sweeney & Lapp, 2004) and set a criterion that for a reported critical incident to be included in the analysis, it was 1) required to be a single incident involving a specific Pokémon Go playing session with 2) sufficient description of the incident. Of the 57 reported critical incidents, 55 met the criteria and were used for the analysis.

The framework of Lintula et al. (2017) was utilized in designing a classification scheme for coding the selected CIT responses. The framework comprehends value co-destruction process components categorized in three interrelated dimensions (orientation, resources and perceptions) positioned in three temporal points. As the goal was to recognize a possible value co-destruction process in the CIT data, the classification scheme followed the components and temporal points of the conceptual framework (Lintula et al., 2017).

The analysis was done in two phases. In phase 1, one of the authors analyzed the CIT responses and classified them according to the framework components. Each CIT response was coded and tabulated with at least one initial code, e.g. "Disappointment in playing", which was linked to a particular sentence within the response. In phase 2, the initial codes were assessed and categorized by final codes of the classification scheme (cf. Table 1).

Code	Initial code	Responses
CONTRADICTIONS	Enthusiasm vs. Saturation	2
	Nature of the Game vs. Disappointment	2
	Nature of the game vs. Don't want to move	1
EXPECTATIONS	Disappointment in the nature of game	4
	Disappointment in playing	1
	Instrumental consequences	1
INCONGRUENCE OF APPLIED PRACTICES	External issues	4
	Flow of game	5
	Technical issues	16
INSUFFICIENT PERCEIVED VALUE	Flow of game	7
	Technical issues	4
LOSS OF RESOURCES	In game	10
	Material	4
	Self	8
MISUSE OF RESOURCES	Game features	2
	Game impact on person	2
	No local content	6
NONINTEGRATION OF RE-SOURCES	Technology issues	6

Table 1.   Critical service process components coded by the classification scheme.

The CIT analysis reveals the threat of value co-destruction in the examined service interactions. In the next phase, we pursue to attain an in-depth understanding of players' actual value co-destruction by conducting 30 laddering interviews with Pokémon Go players. The laddering interviewing technique was developed by Reynolds and Gutman (1988), to study means-end structures consumers have about a product. The technique replicates the mental models of informants and provides tools for analysis in order to understand the connections between critical service process components and co-destructed values. The informant selection will follow theoretical sampling, with the interviews beginning in April 2017.

Laddering interview technique is based on the Personal Construct Theory (Kelly, 1955). In the interview data, a complete description of a sequence of associations is referred to as a means-end chain, recorded as a chain of feature, consequence and value (Peffers et al., 2003). Prior to the interviews, we collect pre-interview data of informants utilizing an online survey form distributed through social media channels. In the pre-interview form informants briefly explain their negative Pokémon Go experiences, and volunteer for further interviewing.

We then conduct a stimuli collection, which comprehends a list of actual negative Pokémon Go playing incidents, which could potentially have a co-destructive value outcome. We conduct a realistic stimuli collection by reflecting the CIT data to the pre-interview data.

Each interview begins with the presenting of the stimuli collection, and continues by asking the informant to rank the proposed stimuli from most to least problematic. Then, one at a time, for the two highest-ranked most problematic stimuli, the interviewer will ask informants to describe these particular situations, and to describe what caused this occurrence (feature ladder). The interviewer then proceeds to ask why each particular feature caused problems, so as to elicit the consequences that the participant had perceived of the feature (consequence ladder). The interviewing process continues with a series of "Why was that problematic for you?" questions to elicit what was the ultimate negative effect of the service (value ladder). For instance, a value co-destruction chain could appear as follows: *No Pokémons nearby* (feature ladder) – *can't play in the area* (consequence ladder) – *feel frustrated* (value ladder).

After the completion of the interviews, the ladder chains will be coded one by one into attribute, consequence and value codes. First, the attribute code will stand for the feature ladder of the particular chain, explaining the initial starting point of the perceived negative experience. Second, consequence ladders of the particular chain will be coded to a consequence code. The conceptual framework for value co-destruction process (Lintula et al., 2017) is utilized in coding consequence codes for the negative experiences. The framework consists of components, which we predict may directly account for the consequence codes. When necessary, our analysis will develop other, better suited consequence codes, also suggesting the need for further development and extension of the conceptual framework in the light of the new data. Third, we will code the value ladder of the particular chain into a value code. These value codes will stand for the ultimate negative perceived impact the informant has experienced in the particular Pokémon Go playing instance, e.g. "frustration", "humiliation" or "unsafety".

After the data coding phase, we analyze the codes as means-end chains and report recurring phases of the experiences: we depict negative service experiences and, furthermore, particular co-destructive value outcomes of such instances. Symmetries in revealed interaction processes would suggest there is a recurring pattern to be found and asymmetries would suggest the process is unpredictable and perishable. By reflecting these findings to the extant value co-destruction process framework (Lintula et al., 2017) we answer our research question and propose a framework for value co-destruction for AR mobile game players.

4   Preliminary findings

Our preliminary findings show that potential AR mobile game value co-destruction processes occur due to various triggers. Expectations related issues were often triggered by problems with the flow of the game and technology:

> *Before, I was really optimistic about the game. After that, I figured that it's*
> *no use trying outside major cities and pretty much just went back to earlier*
> *geo-games.*

Resource misuse, nonintegration and loss related critical incidents were reported. Server and other technological issues, such as misfunctions of the GPS, were often triggers of frustration or other negative value. Not only did the technological failures decrease the ease of use of the service, but they also increased loss of personal resources, such as real world time and effort, and cyber world creatures and special items, such as *Poké balls*. In addition, safety, self esteem and self efficacy values were found to diminish, which translates as loss of resources:

> *Drove with the dog at night after kids in bed to a local park to spin poke*
> *stops. Felt uncomfortable when an older man followed me in a car and*
> *pulled up next to me at a poke stop.*

Humiliation in the physical world as a consequence of playing could also be translated as loss of resources (loss of dignety):

> *I was playing and my boyfriend got upset because he doesn't like me*
> *playing the game so he started to scold me in a tram and it was humiliating.*

Incongruence of applied practices, as the player suffered from flow or technical problems of the game, was a possible trigger of value co-destruction. There were also implications of insufficient perceived value, where some value seemed to be created, but the level of the created value was not high enough to satisfy the player. Additionally, some players had experienced

value contradictions, such as not wanting to walk even though wanting to play the game, and loosing interest in the game as playing "obsessively":

I chased it obsessively. After later I got it caught my interest has waned.

Our preliminary findings of a critical service process are tabulated in Table 1. According to the value co-destruction process (Lintula et al., 2017) co-destruction of value can ensue as an outcome of critical service components revealed in our analysis (*Expectations, Incongruence of applied practices, Insufficient perceived value,* and *Contraditions*). Some implications of co-destructed value could evidently be detected from the CIT data, e.g. "frustration", "humiliation" and "obsession". In the next phase of this study we will apply the laddering interview technique to gain an in-depth understanding of actual co-destruction of value ensued by such critical service processes. By analysing the laddering interview data we will propose a process framework for value co-destruction in AR games.

5   Implications and concluding remarks

This project aims at proposing a value co-destruction process framework for AR mobile games. As previous value co-destruction research is scarce and the concept remains unclear, we will contribute by empirically extending the extant conceptualization of the value co-destruction process (Lintula et al., 2017). Furthermore, we pioneer a study of value co-destructive user behaviour in the AR mobile games domain. The proposed process framework will provide researchers and managers with an understanding of the value co-destruction process taking place between players and AR gaming service provider.

Moreover, complemented with practical guidelines, the proposed framework will help AR game designers understand and prevent value co-destruction occurrences. Industries working with AR mobile games will gain valuable insights for service design, promoting value co-creative behaviour as an advantage, and avoiding unnecessary emerging of value co-destruction. We will distinguish process components of value co-destructive service interactions, which, being acknowledged, can be managerially steered and rectified. The implications will be most significant in AR mobile gaming applications.

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