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„Value Creating Ecologies as the Main Factor for
Customer Acceptance of Servitization in Creative
Industries. Case Study: Game Industry“

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Abbreviation Register

AI – artificial intelligence

F2P – free to play

GTA Online – Grand Theft Auto Online (video game)

GTA V – Grand Theft Auto V (video game)

LOL – League of Legends (video game)

PSS – Product-Service System

Abstract (English)

Keywords: servitization, value, digitization, creative industries, value co-creation, value creating ecologies, game industry

Digitization of global business and of all sides of particular businesses has made it possible to provide customers with eServices on an everyday basis. Research as well as examples from creative industries show that the process of servitization is equally as challenging for companies as it is for customers because of ambivalent character of product-service bundles. In the recent years there were many examples of unsuccessful servitisation, which was not well accepted by customers and as a result didn't meet companies' expectations in terms of generated revenue.

The servitisation and digitization has also raised the importance of public mechanisms and made this as important as market mechanisms, leading researchers to considering business environments as value-creating ecologies.

In this paper is researched influence of public mechanisms on customer acceptance of servitization and two main research questions are raised: "Can the development of value creating ecologies be considered the main factor for customer acceptance of servitization in creative industries?" and "How should services be designed in order to increase the value of a product-service bundle for value creating ecology and to increase customer acceptance of servitisation?"

To answer these questions in this paper was made a literature review on the topics of servitisation, digitization and value co-creation. Theoretical connection between development of value creating ecologies and customer acceptance of servitization were found as well as measurement criteria for the following analysis. As a proof of concept, a product analysis from the game industry has been made and correlations have been revealed.

In the end of the paper the following conclusions are made: Development of value creating ecologies can be considered the main factor for customer acceptance of servitization in creative industries. Regarding servitization, it is important to design services in a way that they can generate additional value even for those customers who do not consume these services.

Abstract (Deutsch)

Schlagwörter: Servitisierung, Wert, Digitalisierung, kreative Industrien, Co-Schöpfung des Werts, Wertschöpfungsökologien, Spieleindustrie

Die Digitalisierung der globalen Wirtschaft und aller Seiten der einzelnen Unternehmen hat es ermöglicht, Kunden täglich mit e-Services zu versorgen. Forschungen sowie Beispiele aus den Kreativen Industrien zeigen, dass Servitisierung für Unternehmen ebenso herausfordernd ist, wie für die Kunden aufgrund des ambivalenten Charakters von Produkt-Dienstleistungsbündeln. In den letzten Jahren gab es viele Beispiele für erfolglose Servitisierung. Beispiele welche von den Kunden nicht gut angenommen und die Erwartungen der Unternehmen, hinsichtlich des erzielten Umsatzes, nicht erfüllt haben.

Die Servitisierung und Digitalisierung hat auch die Bedeutung sozialer Mechanismen erhöht und so wichtig wie andere Marktmechanismen gemacht, dass Forscher heutzutage dieses Geschäftsfeld als Wertschöpfungsökologie (value creating ecologies) betrachten.

In diesem Papier wird der Einfluss sozialer Mechanismen auf die Kundenakzeptanz der Servitisierung untersucht und zwei Hauptforschungsfragen werden erhoben: „Kann die Entwicklung der Wertschöpfungsökologie (value creating ecologies) der wichtigste Faktor für die Kundenakzeptanz von Servitisierung in den Kreativen Industrien angesehen werden?“ und „Wie sollen Dienstleistungen darauf ausgelegt sein, um den Wert von Produkt-Dienstleistungsbündeln für die Wertschöpfungsökologie (value creating ecologies) und die Kundenakzeptanz für die Servitisierung zu erhöhen?“

Zur Beantwortung dieser Fragen wurde in diesem Papier eine Literaturrecherche zu den Themen Servitisierung, Digitalisierung und Co-Schöpfung des Werts durchgeführt. Es wurden theoretische Zusammenhänge zwischen der Entwicklung von Wertschöpfungsökologien und der Kundenakzeptanz der Servitisierung sowie Messkriterien für die nachfolgende Analyse gefunden. Als „Proof of Concept“ wurde eine Produktanalyse aus der Spielebranche erstellt und Zusammenhänge aufgezeigt.

Abschließend werden folgende Schlüsse gezogen: Die Entwicklung von Wertschöpfungsökologie kann als Hauptfaktor für die Kundenakzeptanz von Servitisierung in den Kreativen Industrien angesehen werden. Im Hinblick auf die Servitisierung ist es wichtig, Dienstleistungen so zu gestalten, dass auch diejenigen Kunden, die diese Services nicht in Anspruch nehmen, einen Mehrwert generieren können.

1 Introduction

Even though the terms eProducts and eServices are not new and have already been clearly defined in scientific literature, we can observe combinations of them in today's eBusiness landscape or even in the global shift from eProducts to eServices in particular industries. Today, this shift is clearly seen in the game industry. More and more game developers and publishers offer their games not simply as complete products, but as long-life experiences which require constant support and development of additional content, and the release of patches, in-game boosts and in-app purchases such as loot-boxes, skins, emotes, energy and many others. This means that the final product for game developers has shifted from an eProduct to a product-service platform.

The size and tempo of growth of the game industry makes it a valid example of this shift from eProducts to eServices. In the past 30 years, interactive games have developed from "entertainment for children" into a "grown up" business, the revenue of which reached an estimated \$96.5B in 2017 and is predicted to reach \$123.5B by 2021 (SuperData Research 2018b, p. 3).

Digitalization of global business and of all sides of particular businesses has made it possible to provide customers with eServices on an everyday basis. For game developers, this means that they can provide gamers with additional content as soon as it is released or even with parts of this content during the development phase (for example, the Early Access model). It is now possible for gamers to have constant access to in-game purchases.

More crucially, the digitization of gaming has raised the importance of public mechanisms and made this as important as market mechanisms, leading us to the second part of this master thesis: Value-creating ecologies. This parallel shift of customers from consumers of eProducts to co-creators of value makes developers and publishers concentrate more on network value than on product value (Hearn/Pace 2006, p. 59). Considering that a digital product reaches its critical mass of users and becomes more valuable for every single user, provided eServices become even more valuable. This means that from a certain point in Value-creating ecologies, eServices that can be provided within an eProduct prevail over the eProduct itself from an economical point of view, especially in the game industry.

Servitization of the gaming industry is meant to enhance user experience, add value to a product, and increase both loyalty of customers and revenue generated by product-service bundles (Tukker, 2004). In fact, research as well as examples from the industry show that the

process of servitization is equally as challenging for companies as it is for customers. The coexistence of products and services in one bundle brings an element of ambivalence into the context of servitization (Reim/Parida/Sjödin 2016; Smith/Maull/Ng 2014).

The question of servitization is relevant for modern businesses as it challenges companies' traditional organizational values, structures and business models (Bowen/Siehl 1989; Gebauer/Kowalkowski 2012; Ferreira 2013). In other words, companies face difficulties in merging products and services, as product design and service design require different approaches at their cores. In a servitization context, service must be meaningfully implemented into a product-service bundle and add value to the whole system (Kryvinska et al. 2014).

This additional value should also be understood, visible and accepted by customers. Customer acceptance of servitization is also a big topic for industries, which were traditionally focused on product value and offered their customers tangible goods at a fixed price. The gaming industry is also an illustrative example of such a shift, as games were traditionally positioned as products and customers paid a fixed price for software, which they could use (or play through) "from beginning to the end" without the necessity or possibility to consume additional services associated with the product. In recent years, we have seen several examples of successful servitization of games, which has been accepted by customers and resulted in increase of revenue, generated by product-service bundles. There have also been unsuccessful examples, where the service aspect was not accepted by customers and revenue generated from additional services was not high. Both types of example will be covered in the following chapters of this master thesis.

Servitization of creative industries is even more challenging for companies because of their interaction-rich character, which increases the importance of understanding of how customers consume additional services (Voima/Heinonen/Strandvik 2010). Interaction-rich businesses establish more connections between product/service providers and their customers and between consumers of products/services, which has led many researchers to the idea of considering business environments as ecosystems. This also shifts understanding of value creation and co-creation from company-centric to customer-centric (Heinonen et al. 2010, p. 533) or even network-centric.

In that sense, companies play the role of moderator, building an environment and giving customers tools for value co-creation, regulating their interactions and moderating their sense of social presence, which can result in better evaluations of e-service quality (Kang/Lee

2018). The question is what tools of value co-creation are already implemented into the product-service bundle and what kinds of interactions between customers are “allowed”, in other words, how developed the value creating ecology is. This leads us to the first research question of this paper:

“Can the development of value creating ecologies be considered the main factor for customer acceptance of servitization in creative industries?”

To succeed in this work and to answer the research question, it is important to start with research of professional literature and to cover the theoretical aspects of eProducts, eServices, and Value-creating ecologies. In order to understand the global shift in value creation and to determine the theoretical frameworks of the research, not only will professional literature relative to the topic of the thesis be considered, but also internet sources, statistics and interviews. The theoretical frameworks and methodological key factors determined by the literature review will affect the findings, interpretation of these findings and results of the research. Therefore, old scientific papers will be analyzed in combination with new ones in order to establish existing theories and the relationships between them, regarding the researched topic. If any gaps in the existing theories and hypotheses are revealed, they will also be highlighted in this paper.

In the literature review, the connection between servitization, digitization and social value cocreation in creative industries, such as the gaming industry, will be also covered. This is relevant for this research in order to find correlations between development of value creating ecologies around specific products, customer acceptance of servitization and the willingness of customers to consume additional services after purchasing a product.

The goal of the literature review is also to find classifications and typologies in order to measure the grade of servitisation, value co-creation and development of value crating ecologies. Measurement tools will help to carry out a product analysis and to find correlations between the researched factors as a proof of concept. After the product analysis, conclusions considering the influence of value creating ecologies on customer acceptance of servitization and on the willingness of customers to consume additional services will be made.

Due to the shift of value perception from company-centric to customer-centric it is also important to understand how value is co-created in value creating ecologies and how product-service bundles should be designed in order to maximize added value. This question has economical relevance for companies as the maximization of value generated by additional

services can also increase customer willingness to consume these services and as a result their acceptance of servitization.

The customer-centric approach and the shift from product value to network value underlines the importance of keeping an ecosystem healthy consistent, as health of the ecosystem directly influences the satisfaction of each individual within the system (Iansiti/Leiven 2004) and determines the success of implemented services (Arthur 1996), which can result in increase of customer acceptance of servitization. For that reason, it is important to understand how products/services should be designed in order to increase the value of a bundle for the whole value creating ecology. Therefore the second research question of this paper is:

How should services be designed in order to increase the value of a product-service bundle for value creating ecology and to increase customer acceptance of servitisation?

To answer this question, a theoretical framework will first be established. It is important to find a concept that will help measure value co-creation and distribution of product/service value among actors within the ecosystem. Theoretical results will be also applied to the product analysis presented in the third chapter of this master thesis.

2 Servitization and Gaming Industry

2.1 *E-Service definition*

There are many different definitions of eServices. Most of them concentrate on different aspects, characteristics or production processes. The problem lies with the fact that these definitions are broadly used in economic theory and practice but there is no commonly accepted, generalized term. Some definitions are focused solely on the most common and researched aspects of eServices such as e-learning, e-government and e-commerce, which are not easily classified. Therefore, this Master Thesis will make a comparison of existing theories and research of existing classification models.

Development of information channels and communications technologies have made it possible to provide services through these channels. One definition which is broadly used nowadays describes eServices as services which are provided over the internet with the possibility of making a transaction through the same electronic channel (Chun Hai 2007). Some definitions are more narrow in terms of services, that can be characterized as eServices and defined only as web services, provided through internet (Zeithaml/Bitner 2003). Some research defines eServices as any kind of activity and interaction between provider and customer through any electronic channel (Wilson 1998) which correlates with the definition provided by local European governments which define eService as a service, provided electronically. The European commission defines eService as a service delivered over the internet, involving minimum human interaction and which has no value in situation of unavailability of information technology (European Commission 2006).

All these definitions agree on the importance of the internet and internet-based communication technologies in eServices. At the same time, some research shows that eServices can be also provided offline, for example, through text messages, Bluetooth or radio-frequency identifiers (Kvasnicova/Kremenova/Fabus 2016).

Recent research provides a more general definition of eServices, describing “e-services as activities provided by provider to a recipient; these services are non-material; they are provided by means of information and communication devices and the result of their consumption can be a benefit, service or acquisition of property” (Kvasnicova/Kremenova/Fabus 2016). This definition broadens the end result of e-transaction from the concentration on the obtainment of a service to the gain of benefits or acquisition of property.

2.2 Classification of eServices

Classification of eServices and eProducts is also a topic which researchers address. Classification helps in understanding customer behavior, and how they perceive eServices and the required, or at least expected level of co-creation of a service.

Sheth and Sharma (2007) provide a two-dimension classification of eProducts and eServices (see Figure 1): The first dimension is “the degree to which the product or service can be digitized” or the digitization level; the second dimension is the co-creation level, meaning the degree to which the provider of a service and the customer can interact in order to co-create or adjust the product or service for personal needs.

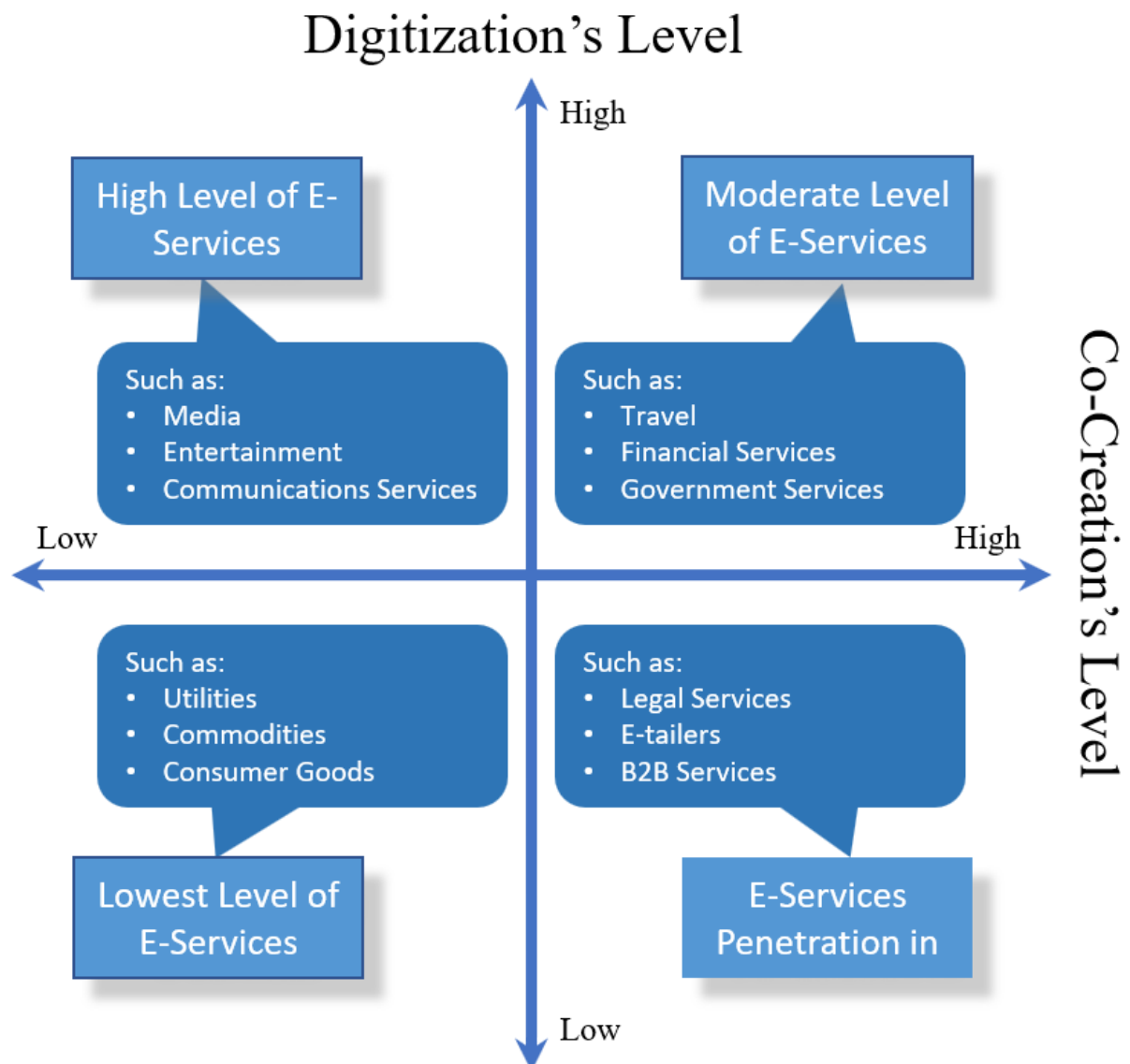


Figure 1: Classification of Service and Product (Sheth/Sharma 2007; Taherdoost/Sahibuddin/Jalaliyoon 2013).

Some products or services cannot be changed or adjusted by customers. At the same time, many allow customers to create their own outcome examples and co-create value.

According to this two-dimension table, games are classified as eProducts/eServices with high level of digitization and low level of co-creation. Hamed Taherdoost et. al. also provide the analysis of eService applications, based on questionnaires distributed among 172 e-service users, which shows that eProducts/eServices with high level of digitization and low level of co-creation are used more by customers than other types of eProducts and eServices (Taherdoost/Sahibuddin/Jalaliyoon 2013).

In conclusion, the authors affirm that customers are more likely to consume eServices with a high digitization level and a low level of co-creation. As a result, it is expected that providers of such services are reaching the maximum level of penetration. This is even more expected in industries dealing with creative products like music or video games. Moreover, if such companies do not supply these services, it may result in becoming less competitive in the market than who provide eServices.

2.3 Servitization of the game industry

Nowadays more and more companies generate a large percentage of revenue through ongoing services which support customers who have bought their products. This concerns not only eBusiness, but also manufacturers who produce physical goods and offer additional support for customers. This strategy is not new and has already been broadly discussed. Through the integration of product and service offerings, companies aim to generate more value for the consumers of these products.

A review of the literature shows that servitization has been conceptualized as an external force which leads companies to the implementation of services in order to gain competitive ground (Vandermerwe/Rada 1988, p. 315) by offering “bundles”, combining goods, services, support, self-service and knowledge (Vandermerwe/Rada 1988, p. 314), reorganization of business processes to shift from selling products to selling PSS (Baines et al. 2009, p. 555).

This means that generalized concept of servitization is characterized through the following features (Brax/Visintin 2017):

- 1) changes in the positions that firms occupy in their industry value stream;
- 2) changes in the types and scope of the firm's market offerings;
- 3) the shifting orientation from product-focused service towards dominant or customer-focused business models;

4) observed or required changes in the structures, capabilities and relationships at the organizational and network level.

The transition from product-based business to the implementation of services is common for different concepts of servitization.

Development of technologies and communication channels have made it possible to digitalize creative products that were traditionally associated with the analog medium, even though products themselves may have been digital (music, software, video games). In the case of creative industries, physical retail has been replaced by online service platforms and have engaged with servitization. Servitization has shifted traditional customer-producer relationships (Bagozzi 1975) in which customers exchanged money for product ownership, for example, an audio cassette or CD which contained the product itself. It has also created a new paradigm that replaces classical “ownership” with value-in-use. Many service platforms now provide customers with usage rights instead of possession of property (Vargo/Lusch 2004; Vargo/Lusch 2008).

Value-in-use is not a new term and whether digitalization of a product does not bring any value of ownership of an analog medium, only value of consumption is left. A digitally downloaded music track only has value when the customer listens to it or at the moment when the product is consumed. The same principle can be applied to digital copies of video games. It is also wrong to reduce value-in-use to value of consumption. Macdonald, Wilson et al. (2010, p. 671) point out that understanding value from a customer’s perspective is important. They therefore define value-in-use as “a customer's outcome, purpose or objective that is achieved through service” which is created by provider, customer (Macdonald et al. 2011) and customer to customer as well as customer to provider interactions (Macdonald et al. 2011). Value-in-use relates to the means-end theory which suggests that the product and/or service is attributed with goals - benefits, risks and/or individual or organizational values - which the product and/or service helps to achieve (Gutman 1997). Goals are set by individual mental models according to the actions of individuals as well as the outcomes of their goals; thus building goal chains. Gutman takes the example of coffee-drinking to describe such goal chains. The primary goal of drinking a cup of coffee is immediate refreshment for the coffee drinker. A cup of coffee can however enhance other activities for the coffee drinker e.g. studying. The act of studying is performed in order to obtain the next goal, such as positively passed exam (Gutman 1997). In this way, the simple act of consuming coffee leads to the achievement of further goals. Each goal is hierarchized according to its value and customers are ready to pay for certain attributes because of the association of these attributes with higher

goals (Macdonald et al. 2011). This framework can be applied to the usage process: if a customer co-creates value by using a service, it is expected that the customer's mental model includes this usage process and their relationship to value-in-use in the customer's goal hierarchy (Macdonald et al. 2011).

Servitization enhances the value of digital products through greater interactivity on social media (Parry/Bustinza/Vendrell-Herrero 2012). This activity allows communication between different parties of the industry with their customer base, and between the consumers of products and services. This allows for further contribution in value creation (Parasuraman/Zeithaml/Berry 1985). This innovative approach to co-creation of value changed customer experience in the music industry some years ago (Macintyre et al. 2011; Angelis/ Pinheiro de Lima 2011) and the same changes can be observed nowadays in game industry. Consumers of eProducts can change from the role of passive consumer to participating actor both in the development of products and through the exchange of individual user experience with developers and other consumers, in order to shape future outcomes and contribute to value co-creation (Zeithaml et al. 2006). In the game industry, the role of social media as a main tool for customer communication decreases as players can use in-game resources for social activity. Aspects of value co-creation in the game industry will be covered in the following chapters of this paper.

If we consider servitization as a shift from the strategy of the offer of goods and end products to the offer of bundles of goods and services (Robinson/Clarke-Hill/Clarkson 2002), which research suggests is the best way for manufacturers to develop their strategies (Neely 2005; Porter/Ketels 2003), we will see a conceptual shift to the selling of complete solutions (Baines et al. 2007). These complete solutions have already existed in the music industry for many years (iTunes Store). At the same time, the game industry has had a longer way to go in terms of communication capabilities due to the large amount of transferred data.

Differences between products and services and their characteristics are clearly defined in the scientific literature (Demsetz 1993; Chase/Aquilano 1992; Bowen/Ford 2002; Gadrey 2000; Hill 1999; Miller 2000), though their practical integration is still an ongoing topic. The problem is that companies are still defined as product based or service based with respective management organization. Difficulties in business structure appear when companies that were traditionally organized as product-based companies start shifting their focus from products to services. These difficulties have been observed in recent years in the game industry, and have led to losses for game developers due to inappropriate integration of eServices into eProducts.

2.4 *eService systems*

Servitization of the game industry has led to a shift from the logical concept of a game as an all-in-one software to an eService system which offers enhanced service experience. In theory, enhanced service experience may lead to a higher level of customer satisfaction and as a result an increase of revenues and profitability (Rust/Kannan 2003). Even so, the development of service platforms can be challenging (Swamynathan/Kannan/Geetha 2006), especially for an industry which was traditionally focused on the development of all-in-one software without integrated service solutions.

Another aspect of the shift from eProducts to eService systems in the game industry is the global shift by digital product developers from mass production to mass customization (Pine 1993). In that sense, Lifset (2000) refers not only to material flow, but also to social and cultural factors that shape the process of servitization. Companies aim to offer mass customization to customers in order to satisfy individual requirements while keeping near mass-production efficiency (Helander/Jiao 2002). For this reason, many companies have strategically changed course from the game-as-product to the game-as-service model. These changes now apply not only to free-to-play or freemium games, but also to games which customers buy at full price. At the stage of game development, integration of services affects the system (product itself) and vice versa (Kaczor/Kryvinska 2013, p. 141). This can have a negative impact on the game, and as a result, on user-experience

In her research, Rowley (2006) comes to the conclusion that eService predominantly contains characteristics of self-service. This means that the customer, at the moment of service consumption, takes on the role of co-producer of that service (Meuter et al. 2005). As a form of self-service, eService poses difficulties for developers of service platforms when it comes to customer engagement. Users of service platforms often have difficulties in identifying features they want (Meuter et al. 2005). It therefore becomes a challenge for developers of service platforms to develop platforms which engage customers in self-service (Stoshikj/Kryvinska/Strauss 2016). Even actively contributing customers with knowledge and skills in the process of development do not always address their expectations. It is often the case that customers fail to request important capabilities (Neill/Laplante 2003; Betts 1995; Stabell/Fjeldstad 1998). In the game industry, this can be observed in crowdfunded projects and in early access business models, when even in the case where developers actively collect feedback of users and their requirements, finished products fail to pay off and result in negative feedback from customers.

As a service platform, and keeping in mind the “creative” aspect of the industry, game design is even more challenging, involving not only technical programming know-how, but also knowledge of other fields: arts, engineering, humanities, education, computer sciences, etc. (Mäyrä/Looy/Quandt 2013). Currently, most games are developed without direct contact to customers and decisions on game design are mainly based on investigations in ludology, psychology, anthropology and design in order to fulfil customers’ game experience expectations (Schell 2008). This problem concerns not only classical entertainment games, but also games that acquire knowledge in diverse areas (Simulation Games, Persuasive Technologies, Game-storming and Gamification) (Hamari/Koivisto/Pakkanen 2014; Hamari/Koivisto/Sarsa 2014; Deterding 2012).

For these reasons, game development, which has shifted towards a service-dominant logic (Vargo/Lusch 2008; Vargo/Lusch 2010), has started to concentrate on the customer’s point-of-view with focus on revenues and profitability employing design thinking principles (Brown 2008).

This means that games which focus on revenue generation from eServices and which can no longer be characterized as pure eProducts, can be defined as eService systems with experience-centric services (Vargo/Lusch 2008; Vargo/Lusch 2010), which increases the importance of proper integration of services at the stage of game design (Pullman/Gross 2004; Zomerdijk/Voss 2011).

If we consider Games as an eService system and not as pure digital product anymore, we can observe an analogy with recent changes in other markets, like the music market. Developments in servitization of the music market clearly show the influence of social mechanisms integrated into eService platforms. Acceptance of a new paradigm of music distribution was highly affected by integrated solutions for social interactivity and value co-creation.

One of the goals of this paper is to cover the topic of the influence of integrated tools for value co-creation on success of the implementation of new business principals and changes in the positioning of products as eService systems on a market.

For this reason, it is important to define specific requirements for analysis of social involvement and value co-creation as well as the grade of the shift from product-based business model to service-oriented systems.

2.5 *Product-to-Service transition*

Manufacturing companies have come a long way on the product-to-service continuum in in of the transformation of company strategy from the offering of products to selling combined solutions (Baines et al. 2009; Oliva/Kallenberg 2003; Reim/Parida/Sjödin 2016; Smith/Maull/Ng 2014). Companies have had to accept the double focus: on products and on the extended service offer for customers (Kowalkowski et al. 2015; Storbacka et al. 2013).

In strongly digitalized creative industries like music stores, digital book purchasing or in the game industry, there are a lot of factors that differ from those in physical manufacturing. When a customer buys a physical product he or she acquires valuable personal property, which the customer can use, resell, lend or give away. When dealing with digitalized products, the customer usually signs an End User License Agreement, which does not offer the same rights as ownership. Most End User License Agreements do not give users any property interest and the owners of intellectual property - developers and publishers - have the right to terminate access to the game at any time. In terms of servitization, customers do not pay for the product, but rather for access to servers, support, and the intellectual property of others, etc., which can be considered as intangible personal property (Marsh 2017).

More important are changes in the course of positioning from product to service-oriented offers. Product and service orientation is determined by the company's position on the product-to-service continuum (Oliva/Kallenberg 2003) on one end of which products or physical goods are more important and on the other at which services are of more importance. In other research, service orientation is considered according to broadness of the offer (number of customers to whom services are offered and number of offered services) and to its emphasis (activeness or intensity of offer) (Bowen/Siehl 1989; Homburg/Hoyer/Fassnacht 2002).

On the product end of the product-to-service continuum, customers deal with standardized outputs, low customer involvement, and separation of production and consumption characteristics. On the service end of the product-to-service continuum, characteristics of intangible and customized outputs, greater customer involvement, and simultaneous production and consumption are implied (Lenka et al. 2018). Due to this orientation, a shift in the game industry can be observed in terms of product-service orientation from retailing of digital copies or copies on physical medium, which were positioned as finished products, which customer could buy and consume all content “from beginning to the end” without necessity or possibility to get additional services in order to

enhance user experience, to modern approach, when customers, in many cases, get access to digital environment where they are involved in offer of additional services in order to enhance user experience, customize product and change its characteristics. In this study, the analyzed products will be chosen according to the relative focus placed by companies on products or services and on standardization or customization.

The shift of orientation from products to services raises a conflict of the co-existence of two conflicting forces: product orientation and service orientation (Kowalkowski et al. 2015; Storbacka et al. 2013; Windahl/Lakemond 2010). This conflict appears on both sides: on the side of developers and on that of customers. Customers are not ready for this co-existence and not willing to pay for additional services in games, which for a long time were positioned as finished end products without the necessity for additional payments, if additional value was not obvious for them (Ashforth et al. 2014; Pratt/Doucet 2000; Westenholtz 1993). At the same time, companies face difficulties in areas of organizational values (Bowen/Siehl 1989), capabilities (Paiola et al. 2013), structures (Gebauer/Kowalkowski 2012), sales (Uлага/Loveland 2014) and business models (Ferreira et al. 2013).

The shift in the positioning of games from products to product-service systems enhances competitiveness and secures sustainability (Tukker 2004; Hines/Marin 2004). In fact, servitization of the gaming industry allows developers to create added value in terms of fulfilling customers needs, enhancing customer loyalty and following customer needs, which leads to faster innovation progress.

This co-existence brings ambivalence into the context of servitization (Baines et al. 2009; Oliva/Kallenberg 2003; Reim/Parida/Sjödin 2016; Smith/Maull/Ng 2014). It is represented by two forces which are meant to work in collaboration, but in fact require different approaches and are influenced by different behavioral mechanisms. The grade of servitization can be determined by the positioning of a company on the product-to-service continuum. Researchers propose different types of product-service systems (Bartolomeo et al. 2003; Brezet et al. 2001; Behrend et al. 2003; Zaring et al. 2001):

- Product-oriented services. The company is still mainly focused on revenue generation from selling products, but certain extra services are provided for customers.
- Use-oriented Services. The Company's revenue is generated from products, which are not handed into the customer's ownership, but are made available for a particular user or shared between multiple users.

- Result-oriented services. This type reflects customer-provider relationships where both sides agree on a specific result of a service without the involvement of pre-defined product.

Tukker, Hines and Marin (2004) enhance these three types of product-service systems with an eight-dimension typology system for diverse product-service systems within the above-mentioned categories according to different economic and environmental characteristics:

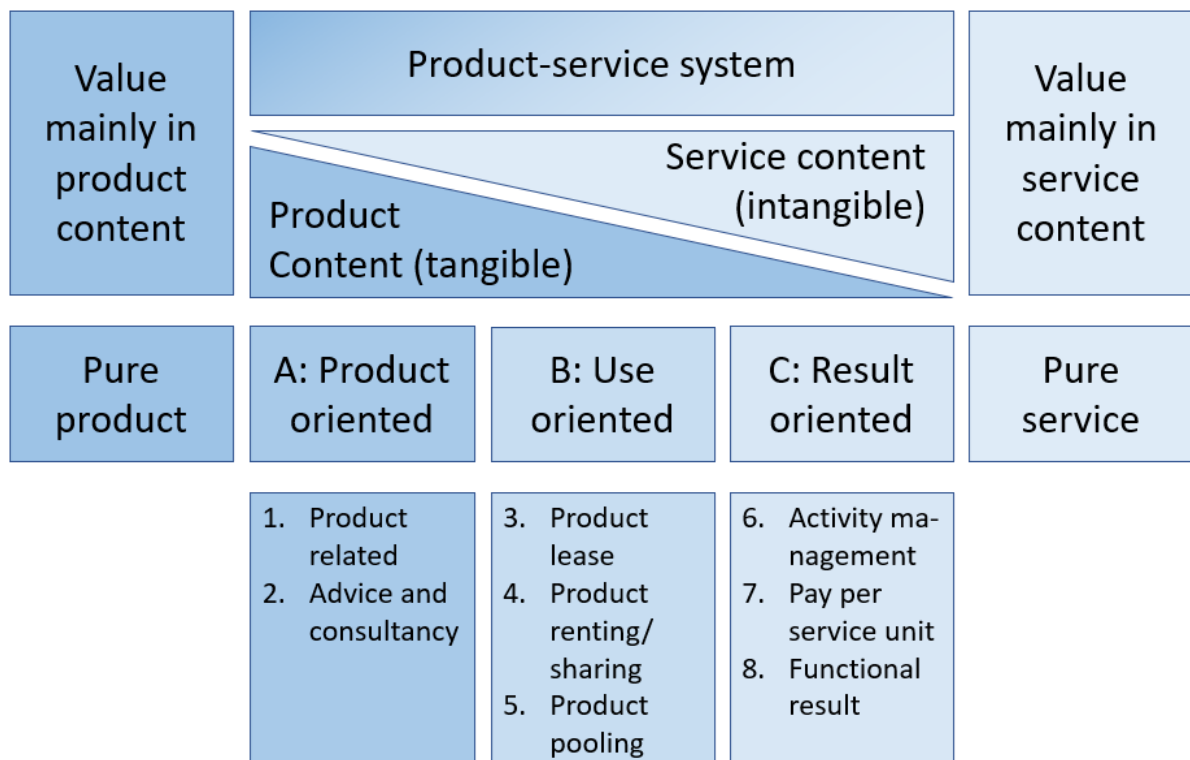


Figure 2: Main and subcategories of PSS (Tukker/Hines/Marin 2004).

Product-oriented services are divided into product-related services and advice and consultancy, where product-related services describe the business model when after purchasing a product the customer is offered additional services in the form of a maintenance contract or the supplying of consumables. Advice and consultancy reflect customer-provider relationships when after selling a product additional consultancy is offered, which can be related to effective usage of a product, e.g. structural reorganization, logistics, etc.

Use-oriented services include product lease, product renting or sharing, and product pooling. Product lease is a type of service where the product stays in the ownership of the provider, who is responsible for maintenance and repair, and the customer pays for individual

access to a product and its usage. Product renting or sharing is a type of relationship where customers pay for access and usage of a specific product, but do not get exclusive usage rights. Instead, the product is used by multiple customers sequentially. Product pooling involves simultaneous use of a product by multiple users.

Result-oriented services are divided into activity management/outsourcing, pay per service unit and functional result. Activity management/outsourcing is a type of product-service system where part of the company's work is outsourced by the provider of a service. This service can also be connected with products, for example in catering. Pay per service unit is a category where the provider of a service owns a product and customer doesn't gain access to the product itself. Instead of this, a result or an output of the product is provided by the company to the customer. Functional result is the type of provider-customer relationship where a specific result of service is agreed upon. The provider of a service is free in the choice of how to deliver a result and can use any type of product which may be suitable for the specific customer situation.

These eight types of product-service systems proposed by Tukker, Hines and Marin (2004) help to identify the position of a company (or specific product-service bundle) on the product-to-service continuum, where the first types are more influenced by a specific product as the core component of a system. Along the way to functional result, the product itself does not have much value in a bundle and the demands of customers are formulated in a more abstract manner. It also shows that on the path from product related systems to systems with a functional result, the provider has more freedom in the choice of ways to satisfy customer needs.

In the game industry, product-service bundles are more complex. On one hand the product itself still has a core value for customers and on the other hand users don't buy a product, but pay for access to it, which is often shared with other users. Advice and consultancy are usually also implemented in product-service systems in the form of customer support, where a support team consults users in order to help with setting up a system (for example PC operating system or internet connection) for better user experience. Some product-service systems in the game industry also offer specific services to customers, for example, the Battlefield "Rent-a-Server Program" where as an additional service, users can rent a server for a period of time to enhance user experience and adjust different gameplay aspects such as server name, maps rotation, game modes, gameplay setups and modifications. This means that nowadays in the game industry, we deal with mixed product-service systems, which include different features, ranging from advice and consultancy to product pooling. At

the same time, most product-service systems in the game industry range from product lease to product pooling with elements of advice and consultancy.

Three types of use oriented product-service systems differentiate not only in the influence of a specific product as a core component of a bundle, but also in the social involvement of users of a product. Product lease supposes individual usage of a product with low social involvement during the usage phase. Product pooling is, on the other hand, connected with high social involvement at the moment of usage of a product, which means a high grade of value co-creation for other users of a product. In that sense, single player games without the social component implemented into the product itself are mostly characterized by the product lease type of product-service systems and multiplayer games or games with a multiplayer feature can be characterized as the product pooling type.

2.5.1 User experience and value-in-use

Before, customers' needs were satisfied through the supply of specific products. This meant that companies were concentrated on the manufacturing of products and followed by the selling and delivery of these products to the customer (Smith/Maull/Ng 2014). With the development of product-service systems, the concept of goods-dominant logic and the understanding of value creation for customers has also shifted from value-in-ownership to value-in-use (Johnstone/Dainty/Wilkinson 2009).

Tukker (2004) considers servitization as a way to increase a company's revenue through the addition of additional services to products, which can make customers pay more and for a longer period of time. In this sense, "added value" is supposed only in the context of achieving higher exchange value of a product, which is only one level of value creation. Lapierre (1997) suggests considering value creation on two levels: the first level is value created during an exchange transaction; and the second level is revealed after the transaction is complete, which is value-in-use. The second level of value is attained with skills, customer or provider activity, and resources applied to a product (Vargo/Lusch 2008; Vargo/Lusch 2004).

The logic of value-in-use or of user experience is more customer-focused, ambivalent to the goods-dominant logic, and is more concentrated on outcomes provided by product usage or service activities, which corresponds with idea of product-service systems as bundles. Following this logic, Smith et al. (2014) draw on the work of Pawar et al. (2009) identifying three challenges of product-service systems:

- 1) offering the value proposition to support collaborative value co-creation;
- 2) designing the operational system;
- 3) delivering the value.

Smith et al. (2014) assume that in product-service systems recognizing value-in-use, value is no longer determined by the provider, which is in opposition to the goods-dominant logic. In the case of product-service systems, the customer does no longer plays the role of recipient of value, which is determined, designed and delivered by provider. Companies cannot define value but propose it with following realization through co-creation with the customer, which means that they don't "satisfy" customer needs, but collaboratively support value co-creation (Smith/Maull/Ng 2014, p. 247).

This shows differences in approaches to the analysis of product-service systems and product dominant businesses. Much research still applies goods-dominant logic to product-service systems (for example Tukker (2004), Pawar et al. (2009)). The main problem here is that the goods-dominant logic deals with the concept of utility, which is not the same as value-in use. Utility logic considers the customer as a passive recipient of designed values whose only concern is to estimate a source of supply according product benefits. In product-service systems with service-dominant logic, customers play a role of active co-creators of value, achieving value-in-use in order to enhance user experience in the sense that both parties of the transaction - the customer and the provider - are accountable for attaining value-in-use. This means that the provider does not "satisfy" customer needs in terms of the classical understanding of goods-dominant logic but proposes unrealized additional values, or the "store" of potential value. These values-in-use, on the customer's side, are realized through co-creation, which brings him additional benefits (Ng/Smith 2012; Smith/Maull/Ng 2014).

This means that concepts of value-in-use and user experience take customers into account as active participants of value realization according to evaluation of their own performance and satisfaction. In this sense, the customer's own resources are used in order to achieve the initial goal, get desired benefits and realize value-in-use. For this reason, in order to achieve increase of revenue by adding additional services to products, companies as well as researchers should also consider behavioral mechanisms of customer consumption processes, satisfaction from user experience and value co-creation (Ballantyne/Varey 2006; Ng/Smith 2012; Smith/Maull/Ng 2014).

3 Servitization and Value Co-creation

3.1 From Supply Chain to Value Ecology

Traditional focus of the supply chain is set on flows within and around the organization, which show the necessary steps a product has to take in order to minimize costs and inventory turnover rate (Sahay 2003; Rainbird 2004). The concept itself is focused on distribution and costs, which are held at the minimum possible level at each step of the chain, rather than on the value added. The value chain approach has been applied in non-digital industries such as retail, automobiles, fast food, grocery, IT etc. (Lee 2002). Hearn and Pace (2006) have addressed a number of limitations in regards to the concept of supply chain on interactive software and other creative industries. These limitations include fact that the concept of supply chain considers business processes as static, stage-based and linear; do not take into account possible competitive character of value chain; do not cover influence on environment; considers value as embedded to a product; ignores customer-to-customer relationships (Hearn/Pace 2006).

To overcome these limitations, a number of other concepts have been suggested: value circuit (Jeffcutt 2004, p. 81), value chaining (Moore 1996, p. 70), value shop and value network (Stabell/Fjeldstad 1998), etc. Hearn and Pace (2006) use the metaphor of an ecosystem to describe businesses where supply chains, networks and value chains merge and interflow. The concept of value ecologies has shown itself to be a more suitable for describing business models, where value creation and co-creation play a key role in revenue generation. In this sense, value ecologies focus more on the effects of developments and changes which modern business models take on in order to increase competitiveness on the market. They suggest a more dynamic approach to the analysis of products and services, emphasizing generation of value, rather than the product or service itself. They also take into consideration both competitive and cooperative processes which are closely connected with idea of environment of factors and emphasize the idea of networks or webs of relationships (Hearn/Pace 2006).

Value ecology shifts provider-consumer relationships from a concept where value is generated within companies and offered to customers, to the creation of environments where the customer and provider of products or services co-operate in tandem with communities of consumers in order to maximize revenue through maximization of added value. In creative

industries such as the game industry, this shift is strongly influenced by the process of servitization.

In value ecologies, value creation is not a one-way process, but a relationship involving reiteration and feedback. In this sense, companies must face the challenge of transformation from traditional corporate logic, where value is generated by the company, into consumer-centric logic, which requires more openness, interactivity, individuality and customer influence (Prahalad/Ramaswamy 2002). Customers' influence on value creation means that customers integrated into the system of value creation and at multiple points of exchange are involved in competition with the company in value co-creation, can influence when and how value is co-created and must be a considered and imprescriptible part of the environment.

The transformation of traditional corporate logic from supply chain to value ecologies in creative industries influences the way companies reflect on provider-consumer relationships and on the way that value creation works in business. Product or service providers shift their way of thinking from company level to value system thinking, from product value to network value, from consumers to co-creators of value and from co-operation or competition to complex co-opetition (Prahalad/Ramaswamy 2002, p. 52).

This shift in thinking has already been applied among game developers. A case study on "Trainz", provided by Humphreys et al. (2005), shows the example of content co-creation in a train simulation game released by Auran (N3V Games Pty. Ltd.). Auran released a game itself and a platform, which could be downloaded from a website and enhanced user experience in a way that customers could create and distribute additional content. Such an approach made it possible to outsource a part of value creation to customers and build up a fan base or "developer" community, in order to involve players in value co-creation, sharing of ideas and know-how, and development of concept arts and content. The company acquired game innovation at a low cost and users received a product they wanted. This enhanced the value of the game and as a result formed a customer base, which led to higher longevity of the product and to an increase in revenue.

In this example, the customer's role has been shifted from that of the passive, isolated consumer to an active and connected co-creator of value. Auran doesn't act as an autonomous provider but offers more than just a product. It offers a co-creation experience for customers which becomes a basis for additional value.

The importance of network formation instead of chain creation is also connected with benefits of information flows. Networks in their nature provide more horizontal connections

which allow rapid information transfer as customers are connected not only to the provider but interconnected with each other within a network. This principle supports the creation of new information as each person receives information and can build new ideas upon the information received. Value creation is based on manipulation of the information accessible in networks, which underlines the operation of value ecologies (Hearn/Pace 2006) and brings additional economic benefits to companies. The traditional top-down approach to product development is replaced with a bottom-up approach.

Another benefit of Value Ecologies for companies lies in market externalities. The value of a product increases with the size of its user network or with the ability of a product to connect customers with each other. When connection within a value ecology takes place, a snowball effect can be observed, making it more difficult for customers to change network due to the high social cost of disconnection (Brandenburger/Nalebuff 1996). In service systems, the snowball effect and social aspect of a network increases not only the value of a product, but also the value of services and of value co-creation.

Value co-creation in value ecologies has not only a cooperative but a competitive character. Brandenburger and Nalebuff (1997) termed this “co-opetition”, which reflects the competitive activity within networks needed for network evolution. They suggest the following classification of network players: customers, suppliers, competitors, and complementers. This classification was extended by Bengtsson and Kock (1999) with four types of relationships within a network: coexistence, co-operation, competition, and co-opetition.

Co-opetition is the basis of the “coevolution” of products and services in service systems, increasing customer satisfaction and longevity of a system. In the game industry, coevolution and customer involvement in value co-creation have shown the necessity of product-service bundling in order to engage co-opetition and increase a succession of offered products/services to customers. In this sense, a web of products is offered to the customer, increasing the interest of players involved in the network and allowing businesses to offer and sell more.

This makes companies focus on the whole value of the ecosystem instead of employing the traditional consideration of product value. To engage customers in value co-creation it is important to build healthy ecosystem as the health of the ecosystem determines the satisfaction of each individual (Iansiti/Levien 2004) and as a result the success or failure of a product or service in a network it belongs to. (Arthur 1996).

From this perspective, even if a product or service system is successful on the market, continuous success of a product and its services, which are obtained in a system, is highly dependent on the health of the ecosystem. For the game industry, this means that the readiness of consumers to accept additional services offered in a game depends on the value ecology created around a specific product.

Therefore, even if a specific product or service is successful, continuous success of the whole bundle is highly dependent on the ongoing state of its ecosystem. In that sense, companies are more likely to receive financial benefit from the ecosystem regardless of the failures of specific elements within it because in contradistinction to supply chain in the environment of an ecosystem, supply can easily be rerouted and a failures in an individual creative element of the network is recoverable.

Sawhney and Prandelli (2000, p. 32) compare business ecosystems with organic systems and conclude that this similarity allows turbulent businesses, such as those in creative industries, to operate within complex contexts with a high degree of flexibility through their ability to create and adapt to “chaotic” situations.

There are three main processes embedded in the core of business ecosystems: the self-referencing process, which maintains the stability and continuity of a system; the self-transforming process, which brings variety; and the self-organizing process, which helps a system to adapt to its novelty (Rooney et al. 2003). All three processes underline the idea of continuous consumption of additional products and services in the system and its ability to adapt. They also show a value creating ecology as a constantly evolving and growing system containing several connections which can be considered as hubs of creative business activities. At the same time, the element of the “fitness” of an ecosystem as a whole should be also taken into consideration (Hearn/Pace 2006).

3.2 Value Creation and Co-Creation in Value Creating Ecologies

For further analysis, it is necessary to understand how value is created in value creating ecologies and how customers and companies are involved in the process of value creation and value co-creation.

In scientific literature there are different views on value creation (Vargo/Lusch 2004; Vargo/Lusch 2016; Grönroos 2008; Grönroos/Voima 2013), but all of them agree that value is to be considered mainly as value-in-use. In other words, the service provider generates the value of a service in the process of development and the customer always co-creates value in

the process of obtaining benefit. In this sense, the provider and the customer are always value co-creators in the moment they take specific actions to fulfil a service or benefit from it, even when these actions are not clearly defined.

Grönroos and Gummerus (2014) offer a Service Logic approach according to which value creation is a customer driven process, especially referring to the value-in-use concept. Value can be created in direct or indirect interactions and determined by the consumer during physical, virtual, mental or possessive experience of the user (Grönroos/Voima 2013). A deeper look on this concept shows that service providers in reality do not create any value but only potential value-in-use for customers, where customers generate the value of a service during the process of consumption.

Following this logic, three main spheres of value creation can be determined:

1) The provider sphere

In this sphere, the service provider generates potential outputs of a service. These outputs are available to the customer only after fulfilment of a service from the side of provider, which generates potential value-in-use and determines the value that a customer can generate during the process of service consumption.

2) The joint sphere

This sphere represents collaborative value co-creation where the service provider directly or indirectly sets free companies' resources and makes them accessible for customers' interaction in any form, in order to establish a collaborative merged process of value co-creation.

3) The customer sphere

This sphere is closed to the service provider. The customer creates value by interacting with provided resources, applying his or her own processes individually or in a community of customers (Grönroos/Gummerus 2014; Grönroos/Voima 2013).

Sorensen and Drennan (2017) validate social media-based organization-supporters as value co-creators as well. From this perspective, customers, who affirm value-in-use of specific products or services, can be considered value co-creators. This affirmation takes place in both the interaction of customers with the provider and in interactions between customers and potential customers (posts on social media and comments on companies' posts). In this sense, social media communities play the role of an ecosystem as discussed in the previous section. In the game industry, instruments of customer interaction are often integrated into the product (chats, emojis, emoticons), etc.). In analogy with social media-

based communities, value co-creation cannot only take place during the process of service consumption, but also during interactions between customers within the ecosystem. Sorensen and Drennan (2017) refer to this type of value co-creation as an altruistic type because customers do not obtain direct benefit from such interactions. This type of value co-creation can (however) bring additional social benefits to the customer, though this is not a research topic of this paper.

The organization of value creating ecosystems not only brings additional benefits to customers, but also to companies. Building a healthy environment for customer interaction and stimulating these customers for altruistic value co-creation offers low cost access to the understanding of service consumption and value creation processes. This gives providers more opportunities to set and achieve goals, find better ways to satisfy customer needs, and support ecology and the process of servitization.

According to research of practices (Schatzki 1996) in business ecosystems, parties perform different actions that are dynamic and evolving, and which lead to value creation through the usage of company resources (equipment or infrastructure) (Schau/Muniz/Arnould 2009). These practices contain three main elements: procedures (instructions or rules); understandings (knowledge and tactics); and engagements (emotionally charged commitments), which can be observed in many gaming communities.

Other studies divide practices into two groups based on the assumption that consumption of a service is not a compulsory element of a value-in-use creation (Arnould 2014; Hartmann 2016; Hartmann/Wiertz/Arnould 2015). In other words, practices can be productive and consumptive. Productive practices represent creation of value through active usage or consumption of a service whereas consumptive practices address customers or potential customers who play the role of recipients of other customers' practices. Consumptive practices are also divided into direct, where parties directly interact with each other (recommendation, advice, etc.), and indirect, where customers observe each other's practices (reading comments, observation of usage, etc.). This classification is relevant for this research because, in video games, value can be invisibly co-created through customers' interactions (also indirect).

This research and these classifications offer a better understanding of value creation through interaction between customers and companies, and interactions between customers, which enhance understanding of value co-creation. It gives better overview on how customers

employ practices of value creation. However there is still a lack of studies which show how this employment functions in the unique context of gaming communities.

Traditionally, games were focused more on direct rather than indirect practices. Digitalization and the development of communication channels made it possible to combine direct and indirect practices within an ecosystem. Customers had to fulfil their need by performing indirect practices via developers' forums or online retail platforms (for example, Steam). The development of ecosystems around specific games has made it possible to co-create value in services not only directly in-use (through the interaction between service providers and customers), but also indirectly through interaction with other users. Indirect practice also includes addressing of other customers through visibility of obtained service.

In the process of value creation, game developers often use practices of direct interaction (also through game platform) in order to share news, information about upcoming changes, schedule of server maintenance, sales, etc., and indirect practices where players communicate and share user experiences.

Servitization of the game industry and the bundling of products with services show that, when using this business strategy, it is important to leverage the social component of games in order to increase customer willingness to consume games not only as a product, but also as services, which can be obtained in a virtual environment. Stimulating customers to use direct as well as indirect practices in order to increase value co-creation boosts the value of a bundle both for users who actively co-create value through the value-in-use principle and for those who can "observe" additional value through or without direct interaction with others. In other words, to maximize revenue, organizations' strategic planning should be focused not only on creating potential value-in-use, but also on ways that add value and spread it even among those who do not actively use additional services but only observe others doing so. In this sense, game developers should not only build strong relationships and support communication between the company and its customers, but also build stronger ties among supporters. This leads companies away from focusing on organization of supply chains towards building value creating ecologies, and from prioritizing product value to prioritizing network value instead.

3.3 Value and Value Co-creation in the Game Industry

In the previous section, attention was given to the shift from an organizing principle focused on product value to a principle focused on network value. The value of a game as a product-service bundle binds together different systematic parts (Edvardsson/Tronvoll/Gruber 2011). Considering business structure as a value creation ecology makes it necessary to talk

about the understanding of value, not from the perspective of the single component of an ecosystem, but as a merged output of multiple practices on multiple levels, involving a large scale of actors (Corsaro 2014; Akaka/Vargo/Lusch 2013).

In the game industry, a core component of generating of value on the customer side is the value-in-use experience, which is an individual phenomenon. At the same time, indirect practices rely more on the collective character of value co-creation. In this sense, the value of games as product-service ecosystems has emerged and is characterized by both of these phenomena (Xie/Bagozzi/Troye 2008; Chandler/Vargo 2011).

From this perspective, it is important to study value created in video games as value created ecologies, referring to the customer from whom it emerges and to the ecosystem as a whole. The individual level of value co-creation cannot be isolated from the collective level because value generated on the micro-level is incorporated with the macro-level (Chandler/Vargo 2011). In the game industry, this interconnection stimulates customers to co-create value with the value-in-use principle because in a value ecosystem, both active direct practices and altruistic practices are merged. For servitization of the game industry, this means that customers are more likely to consume services and to co-create value if consumption of a service can increase value for others as well, in other words - if value co-creation can be observed. Figure 3 shows how value is generated among actors of value creating ecologies.

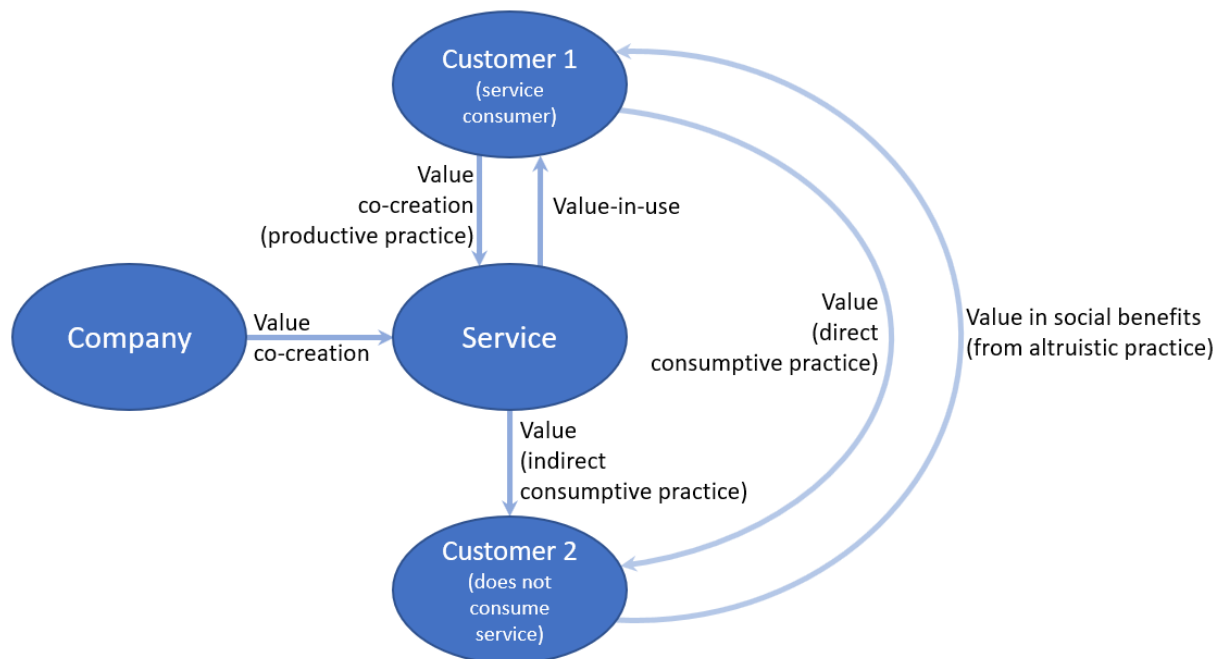


Figure 3: Value co-creation in value creating ecologies.

Understanding the synergetic character of value in value ecosystems can help game developers offer services or product-service bundles, not only from the perspective of potential value-in-use, but also from the perspective of collective value within an ecosystem, even when a service is consumed by one individual and not collectively. On the stage of service development, a question should be answered: “How can this service co-create value for those who do not consume it?” Value created on specific levels of an ecosystem is generated in a specific context and shared with other individuals in their own contexts, meaning that value is added in mutual contexts (Giddens 1984).

Meynhardt (2009, 2015) asserts that value “is situated” only in a social environment and lies beyond economic transaction, meaning that companies can influence service experience through psychological processes (Eagly/Chaiken 1993) and as a result appraisal of a service system. In games with a strong social component, engagement of individuals in value co-creation influences the whole value co-creation system.

The subjectivist view on value creation affirms that value is not a characteristic of an object (of a product-service bundle). It claims that value is not “physically” attached to a product, but identified, realized and created by individuals through consumption. Thus, co-creation of value is not an option (Vargo/Lusch 2008, p. 9). In games with an implemented social component where consumers operate in a network, once one individual consumes a service and co-creates value-in-use, co-creation of value for other individuals within the network is not optional anymore.

For game designers, this means that servitization shifts its approach from product design to experience-centric service design and a service delivery system focused on value co-creation and relationships within the network (Pullman/Gross 2004). In service ecologies, interactions take place on multiple levels and often without involvement of the company. Customer-to-customer interactions and service experiences cannot be fully controlled (Klapztein/ Cipolla 2016). Developers do not offer services in the usual sense, but allocate prerequisites and customers, on their side, get a desired experience and spread it further through indirect altruistic practices.

Prahalad and Ramaswamy (2013) offered the DART model to analyze and manage value co-creation processes. The DART model includes four blocks which represent different aspects of value co-creation: D-dialogue; A-access; R-risk assessment; and T-transparency.

Dialogue. Dialogue represents interactive dialogue between both sides – the company and the customer, who act as equal problem solvers and co-creators of solutions. In the case

of games, dialogue is established between developers and customers by granting access to information about services through a platform where the company and the customer “meet” in order to agree on outcomes and conditions. Dialogue also helps to establish loyal relationships with the customer (Prahalad/Ramaswamy 2013).

Access. Access relates to the ways in which the customer can obtain tools, information and knowledge in order to collaboratively co-create value. Game developers usually grant access with in-game methods and with a platform.

Risk assessment. This aspect of value co-creation includes information about potential risks and possible harm, which specific services can incur. In the game community, this aspect most often lies with customers within a network. Information about “risks” is usually shared through reviews, ranking, comments, screenshots, videos and user profiles.

Transparency. Transparency relates to level of openness between the company and the customer and is required to proceed with collaborative value co-creation. Players usually get access to a platform and services within a service platform and they are also free to leave feedback and express their opinions, which other customers can see.

Payne et al. (2009) offers a process-based co-creation model, which includes the customer’s value creating processes and the supplier’s value creating processes. A customer’s value creating processes are processes where the customer takes certain actions in order to achieve a goal. Co-creation of value takes place during these activities. The supplier’s value creating processes refers to an understanding of the customer’s value creating processes at its first step. This understanding then leads to the establishment of means and ways to offer opportunities for value co-creation.

The process-based co-creation model illustrates relationships between provider and customer and extends the DART model in order to give a more complex view on value co-creation. At the same time, all these approaches do not illustrate customer-to-customer relations, which are crucial to understanding value creating ecologies. For the analysis of products in further chapters, this element will be added.

3.4 Customer-to-customer Value Co-creation in the Game Industry

Gaming as a type of activity is often connected with social interactions and experiences shared with other players. The social experience in gaming influences user experience of games and experience of services, which payers often realize through social interactions. Customers participate in different in-game events and activities, take part in indirect

competitions (leaderboards, ranks, etc.), discuss products and services and share different types of specific information. With these interactions, players build social relationships, use and enhance social skills and as a result co-create value of products and services.

In that sense, the social context of gaming makes the user experience similar to that of tourism, which also takes place in social context where people take part in guided tours and events and meet other tourists (Brown/Chalmers/MacColl 2002; Huang/Hsu 2010; Packer/Ballantyne 2011; Prebensen/Foss 2011). Many marketing studies conceptualize value co-creation as a part of provider-consumer interaction (Binkhorst/Den Dekker 2009; Cabiddu/Lui/Piccoli 2013; Griessmann/Stokburger-Sauer 2012; Sfandla/Björk 2013) forgetting to take customer-to-customer interactions into consideration. For that reason, it is important to acknowledge customers as actors who co-create value for each other through a social context, which plays an important role in creative industries.

Following this logic, the positioning of games as services cannot be dominated by an outcome-oriented perspective where the value of a service is defined only by the benefits or additional features which consumers can obtain. This logic focuses on how game designers can create and deliver valuable experience and show this value through customer perception, however it does not take into consideration the fact that customers can co-create value of a product or service for other customers even without active participation of the provider.

Traditionally “value” was studied as a customer’s evaluation of outcome and the benefits one could receive in exchange for the sacrifice made (Zeithaml/Berry/ Parasuraman 1988). This approach was adopted by other researchers and extended with other concepts such as “value for the customer” (Woodall 2003) or “customer-perceived value” (Kotler et al. 2009), which focused on customers perception of value according to offered benefits and expectations. This approach focuses on customers’ judgments, evaluations and perceptions of value in order to predict consumption choices customers will make. In their study, Pine and Gilmore (1999) focus more on the emotional side of choices and value perception rather than on the logical aspect of evaluation.

This approach considers a “value” as an inprescriptible attribute of a product or a service, which is “glued” to it at the stage of conceptualization and development. Even if value is obtained only thorough the usage of a product or consumption of a service, its potential is still embedded in it before it is consumed. This means that customers are eager to obtain a specific type of value-outcome according to their expectations and experience (Turnbull 2009). These expectations are studied in order to make a decision such that a

suitable solution can be designed and a service delivering desired experiences can be offered (Walls 2013).

This approach focuses on two main categories of service delivery: the subject and the object of consumption (Rihova et al. 2014). Here, the subject is a customer who evaluates the object according to his or her expectations and experience, and the object is a product or a service designed to meet the subject's expectations.

In this concept, customers take on the passive role of recipients of "value" created for them by developers. In the context of social behavior, game consumers can be considered "dynamic social actors". Through the consumption of products and services, they aim to "interpret their experience and to create new meaning and reality through their actions" (Selby 2004, p. 191). In this way, A gamer's consumption and realization of services creates new meaning and realities for other consumers around them and this leads companies away from a producer-recipient logic.

From this perspective, value is not an attribute of service and cannot be exchanged on a market to deliver desired benefits (Vargo/Lusch 2004). The market cannot offer a benefit for the customer, but only co-create it with customer in joint activity through company and customer interaction (Payne et al. 2008). The value of a service is not a static element but is dynamic and situational. This means that it emerges only in the moment when customer uses it Vargo and Lusch (2008). In this sense, all actors of value co-creation can be considered resource integrators (Vargo/Lusch 2004). Consumers as well as providers of services allocate their tangible and intangible resources, which are inter-integrated, in order to achieve a common goal and to co-create value. Just as the consumer of a service inter-integrates resources with provider, customers can allocate their own resources for the co-creation of value, which in the context of group consumption leads to co-operation, co-opetition, common participation and identification with a group of users. (Finsterwalder/Tuzovic 2010).

In the context of videogames, all this not only leads to individual increase of value in consumed services, but also to the increase of shared value for the community. Gamers who take on an active co-creation role are more "visible" and seen as more sociable and cooperative. Such gamers actively contribute to others' service experience and as a result are more likely to enjoy their own service experience (Bendapudi/Leone 2003). Gamers who can be considered as active value co-creators can also be a source of in-game innovations (see the above-mentioned example "Trainz") (van Limburg 2008). Active value co-creators become a useful source of information for further development and innovation (Kryvinska/Auer/Strauss

2009, p. 308). Not only can a company or developer adjust their offer according to information received, but other consumers can also get additional information and “learn” ways to enhance their own user experience within a service. In this sense, the role of consumer shifts in the direction of provider and developer (Cova/Dalli 2009). Co-creation of value and additional value generated by customers is not always the result of a service-related or company-related value creation (Grönroos 2008). Gaming communities often move between games still staying in one group in order to get user experience as a group. This means that they traverse the borders of a specific game and develop into a multi-product community, co-creating value outside of a specific service context in their own social context (Grönroos 2011; Heinonen et al. 2010). Service related value co-creation evolves into value outside of the specific service and stays with customers afterwards.

In interaction-rich industries such as creative industries and in particular games, it is important to understand what customers “do” with services (Voima/Heinonen/Strandvik 2010) in order to set up economic goals. The analysis of services and servitization using a customer-centric focus instead of a provider-oriented approach offers a “holistic understanding of customers” (Heinonen et al. 2010, p. 533) and will lead to a better understanding of their lives and practices and how services can be naturally integrated into their everyday lives.

The social sphere of games as product-service bundles plays an important role in the willingness of customers to use additional services. The understanding of the customer’s social sphere within a game community will help developers support and manage customer co-creation processes including customer-to-customer value co-creation. Value resides in the consumption experience (Holbrook 1999, p. 9) and only users themselves can make sense of their own subjective experiences and value outcome even if these experiences are influenced by other users and the community.

Rihova et al. (2014) research parallels between social flow theory and value co-creation. Customers’ personal skills are used to overcome challenges in order to achieve positive psychological outcomes. In this sense, gamers are able to integrate their skills, receive a challenge and overcome it in a service setting. This often involves a social aspect and requires customer-to-customer interaction. As a result, customers achieve a positive emotional state, which brings some tangible or psychological benefit and better the customer’s well-being (Vargo/Lusch 2008).

Rihova et al. (2014) underline that in spite of similarities found between these two theories, too much focus on them could lead researchers to focus on inputs and outputs and this can lead to over-simplifications of value co-creation understanding.

Customer-to-customer value co-creation in games requires a more holistic approach as subjective perception of experience and mental processes do not answer the question of what customers “do” with services (Löbler 2011). A practice-based approach, discussed in previous chapters of this paper, provides a better basis for further research of inter-connected and inter-integrated customer-to-customer value co-creation in the game industry, as it gives a better overview on routine social practices, embedded with value (Holt 1995; Schatzki 2001; Korkman 2006; Holttinen 2010; Helkkula/Kelleher/Pihlström 2012).

Gaming, as a type of activity, is often connected with social interactions that involve a shared or collective experience. What consumers consider value depends on individual perception (Edvardsson/Tronvoll/Gruber 2011). At the same time the value of a service, which is subjective, is something that is created by social actors (Korkman 2006) and understood on subjective level (Edvardsson/Tronvoll/Gruber 2011). In games, we deal with social structures where individuals play their role in value co-creation (personal needs and expectations), but social forces are still dominant.

To take the social and individual character of value co-creation in games into consideration, the notion of social practices will be used (Schatzki 1996, p. 13). Social practices cannot simply be considered actions one takes. Practices have more characteristics and contexts in which individuals show specific behavior (Schatzki 2001). The notion of practices makes it possible to consider gamers as both objects and subjects of consumption at the same time. Contexts of consumption and value co-creation (mental state, tolls/skills, space) can also be considered in combination (Korkman 2006). Users co-create value for themselves and for others by using their skills and know-how, acting individually or in social groups, using different platforms as tools and performing practices.

Understanding customer-to-customer value co-creation principles can help organizations support engagement and value co-creation by individuals, thus enhancing the value “outcome” for all actors in the ecosystem through planned positive interventions. This goal can be reached with the stimulation of existing practices and reduction of those that are not attractive for the company or actors of ecosystem. Instead of trying to predict customer experiences, developers can enhance (the position of) their customers to active value co-creators and distributors of additional value through indirect consumptive practices.

This paper focusses on the understanding of the multidimensional and dynamic character of customer-to-customer value co-creation and its influence on the willingness of customers to use in-game services and accept servitization as a distribution and pricing model. For this reason, it is important to understand social context of games.

Gamers co-create value not only for themselves (but also for others) and not only through consumption of products and services (but also through collective use). This leads us to the enhancement of the “value-in-” concept to “value-in-social-practice” (Holttinen 2010) which underlines the importance of customer-to-customer value co-creation and replaces the feature-benefits value approach with one more suitable for value creating ecologies.

In games as ecosystems, there are different ways to perform practices and to co-create individual and collective value. For the purpose of this paper, it is important to determine the degree to which social practices are performed, depending on the possibilities and context of a specific game.

Gamers use their personal resources (skills, equipment, knowledge) (Korkman 2006) and this is one way of determining how value is co-created through value-in-practice. The social context of games determines whether gamers perform social practices individually or in a group and how they interact with strangers. This interaction can take place in an in-game environment as well as on external resources. The degree of active or passive interaction and value co-creation highly depends on the individuals and his or her personality and mood (Levy/Getz 2012).

Customer-to-customer value co-creation in social practices is represented by shared images, social structures and the consumption contexts in which practices are performed (Rihova et al. 2014). The context of consumption also influences the individual’s perception of value. If someone has a lack of personal resources (skill) and finds difficulties in overcoming in-game challenges or needs information about a product/service, others who possess more personal resources may help with solving a problem or with information. In such cases, social interactions take place and value is co-created.

In that sense, the role of value creating ecologies is to support companies’ learning and understanding in ways that help to facilitate customer-to-customer value co-creation processes. The game developer’s role is limited to support and shifts from the provision of benefits to the moderation of co-creation (Grönroos/Voima 2011; Korkman 2006). Based on this, companies could support servitization processes by implementing tools for easier performance of social practices in order to engage players in co-creating value in a service

consumption context. In this sense, open ecosystems with different levels of actor interactions (provider-customer, customer-customer, etc.) motivate customers to consume more services in order to experience value-in-social-practice. Enhanced user experience, which is offered to gamers as additional service in a bundle, is more likely to be considered “valuable” by the individual consumer if others can observe its value through indirect consumptive practices.

3.5 *Conclusions*

The purpose of the scientific literature review presented in the previous section of this paper was to present existing information on the topics of servitization, value co-creation and value creating ecologies, to find typologies relevant to this paper and to find methods of measurement in order to discover correlations and dependency between these factors in the gaming industry.

In the literature review, emphasis was placed on research on existing findings on eService: definitions and classifications; methods and features of servitization; development of eService systems; the transition from product to product-service systems and its typology; changes in user experience; the shift in the understanding of product structure and provider-customer relationships; value creation and co-creation; value creating ecologies; and customer-to-customer value co-creation. All these topics are relevant to this paper in terms of answering the research question and supporting findings with product analyses, which follow in the next section of this paper.

In order to avoid errors of omission, not only was current and recent research taken into consideration, but also older findings, which are still relevant to the topic of research. Citations from older research papers are supported by citations from papers written in recent years in order to justify the current relevance of these findings.

Errors of commission were avoided by the choice of literature sources. The previous sections of this paper are based on scientific articles from peer reviewed journals. Company reports, industry related citations, interviews and internet articles were intentionally excluded from the literature review in order to identify relevant research methodology, independent of the gaming industry itself.

3.5.1 *Materials and Methods (Scientometric Analysis)*

The literature analysis is based on 141 peer-reviewed articles published between 1975 and 2018. Figure 4 shows the distribution of referenced articles according to the year of publication.

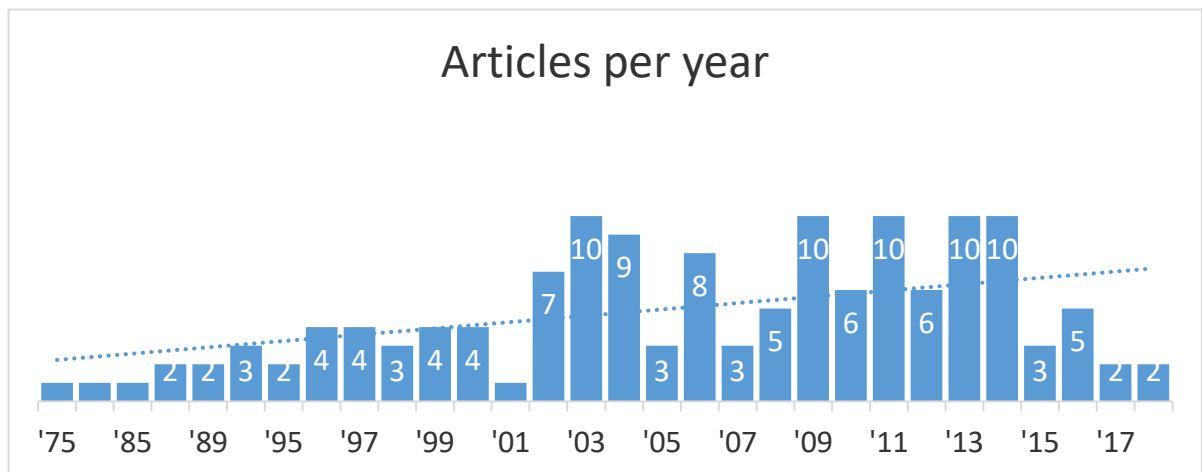


Figure 4: Distribution of referenced articles according to the year of publication.

The search for literature was based on identified key words and key word combinations relevant to the researched topic. The following search engines were used: u:search (University of Vienna), SE of springer.com, SE of sciencedirect.com and SE of ieee.org.

In order to avoid errors of commission, all reviewed literature was checked according to an associated online catalog. The catalog check showed that most of the articles have been published in the online catalogs of Springer, Emerald Insight and ScienceDirect. Figure 5 shows the distribution of articles according to online catalogs.

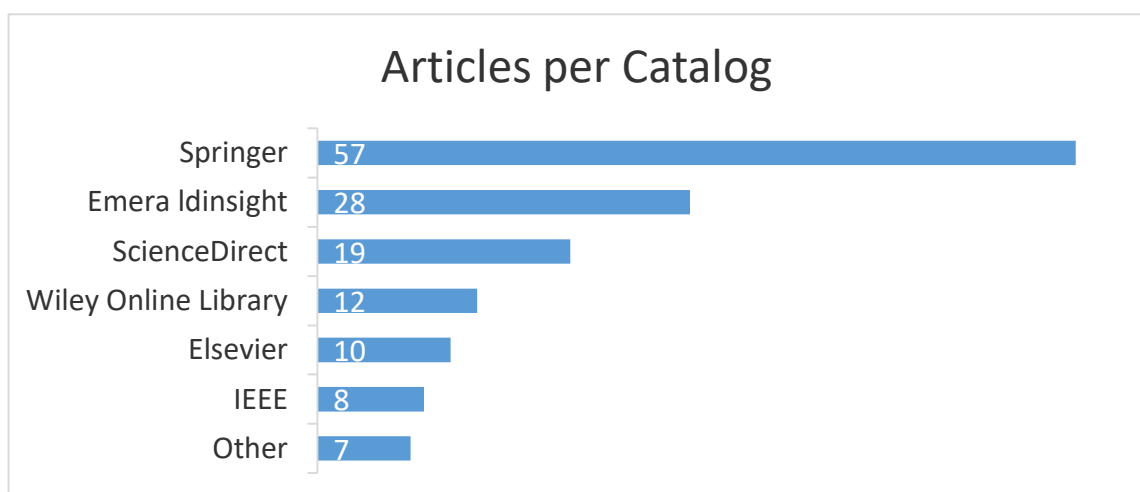


Figure 5: Distribution of articles according to online catalogs.

3.5.2 Limitations

Limitations were intentionally implemented in order to avoid errors of omission and commission. The scope of researched articles was also limited by language. Only articles published in English were taken into consideration.

The literature review also revealed a lack of economic research specific to the gaming industry. For that reason, publications related to other creative industries and electronic businesses were used as a basis for the literature review.

3.5.3 Results

In the first section of the literature review, an analysis of existing eService definitions has been made. A review of existing definitions was relevant for this paper as a basis for clearer understanding of the current state of the gaming industry from the perspective of positioning modern games as services. The definition proposed by Kvasnicova, Kremenova and Fabus (2016) shows that modern games can be defined as services, or at least have features of eServices, as “[...] activities, [...] provided by means of information and communication devices and the result of their consumption can be a benefit, service [...]” (Kvasnicova/Kremenova/Fabus 2016).

According to the two-dimension classification model proposed by Sheth and Sharma (2007), videogames were then classified as eProducts/eServices with high level of digitization and low level of co-creation. According to their research, such products have maximum potential for penetration and if providers of such products/services do not offer additional services (or product-service bundles), they appear to be less competitive on the market. This defined the necessity of servitization in the gaming industry in recent years.

This conclusion led to research on the topic of servitization. The literature review showed the connections between servitization, digitization and the understanding of value creation and co-creation (Vargo/Lusch 2004). The shift from a product-based strategy to product-service bundles has been equally as painful for companies as it has been for customers. For companies, it means the reinventing of strategies and for customers, the shift from ownership to usage rights and to generating of value-in-use (Vargo/Lusch 2004).

This fact also revealed the necessity to cover research on value creation and value co-creation as servitization enhances the value of digital products through greater interactivity on social media (Parry/Bustinza/Vendrell-Herrero 2012).

Servitization is considered to be a shift from the strategy of the offer of goods and end products to the offer of a bundle of goods and services (Robinson/Clarke-Hill/Clarkson 2002) or complete solutions (Baines 2007). The question of practical integration of products and services was also covered in the literature review.

This practical integration is reflected in the position of a product-service bundle on the product-service continuum (Baines 2009; Oliva/Kallenberg 2003; Reim/Parida/Sjödin 2016; Smith/Maull/Ng 2014).

Tukker, Hines and Marin (2004) propose enhanced classification of product-service systems according to their position on the product-service continuum and on the relations between value in product content and value in service content. This typology is relevant to this paper in terms of getting a clear picture of the position of products in further product analysis. This typology, which consists of eight types of PSSs will be a part of the product analysis methodology.

The next part of the literature review is focused on the shift to value creation and co-creation, influenced by servitization (Vargo/Lusch 2004). Digitization of creative industries strengthened connections between service providers and customers and interconnections between customers, which led to a shift from focus on the supply chain to focus on value creating ecosystems (Greg/Pace 2006). This means that companies now have to concentrate more on network value instead of product value, which can increase satisfaction for each individual in the network (Iansiti/Leiven 2004). This means that at the stage of service design, companies have to consider how these services will influence the whole network. In other words, how services provided by the company influence even those who do not consume these services.

The literature review revealed that this influence can be measured by the notion of social practices. Practices are actions that customers perform using the company's resources and lead to value co-creation (Schau et al. 2009). Practices can be productive and consumptive (direct or indirect). In the gaming industry customers can perform all types of practices depending on the design of a game's platform. Analysis of game platforms, according to customers' ability to perform social practices will be included in the product analysis. This is relevant to this research as it will help to measure the development of the value creating ecology built around a specific product (game). This measurement will also help to find the correlation between servitization, ecosystem and the willingness of customers to accept servitization and consume additional services within the network.

It is also important to understand if all necessary conditions for value co-creation within the ecosystem have been created. For this purpose, the DART-model proposed by Prahalad and Ramaswamy (2013) will be applied. The DART-model covers four main aspects of value co-creation: dialogue, access, risk assessment and transparency.

3.5.4 Product Analysis Methodology

Based on the literature review, product analysis will be done according to the following methodology. A short overview of each product will first be given. This is important in terms of understanding a product characteristics and acknowledging its servitization history (if it is the first game in a series to be positioned as a service or if the product was developed as a bundle from the beginning; if additional services were added after release; how servitization of the product was received by customers, etc.).

After the product overview, the monetization model will be analyzed in order to understand how the product is distributed. In other words, is it monetized as a product with additional services or is it distributed on a free basis.

An important part of this analysis is revenue generated over a period of time. It is also relevant to know what percentage of revenue was generated from additional services, not included in the initial price of a product. For this analysis, information will be taken from open sources (company annual reports, reports no sales, statistics), which also limits which products can be analyzed.

The next step is analysis of a product as a PSS and determination of its position on the product-service continuum according to Tukker, Hines and Marin (2004) classification. This is relevant in order to understand product/service value (value in product or value in service). To enhance product analysis and to include analysis of value co-creation, the DART-model proposed by Prahalad and Ramaswamy (2013) will be applied. The product will be analyzed in regard to how dialogue is established, how access is granted and how risk assessment and transparency are secured.

Integrated instruments for value co-creation and integrated support for the development of a value creating ecology will then be analyzed. This analysis is relevant to this paper as it will give an understanding of whether, in consuming additional services, customers can co-create value for themselves (through performance of productive social practices) and whether customers can receive added value through consumptive (direct or indirect) social practices.

After the product analysis, results will be compared. After this comparison of results, the main research question of this paper will be answered: *“Can the development of value creating ecologies be considered the main factor for customer acceptance of servitization in creative industries?”*

4 Product Analysis

In the previous chapters, the connection between servitization, digitization and the understanding of value creation and co-creation (Vargo/Lusch 2004) was stated. In value creating ecologies, customers play the role of value co-creators. Moreover, they co-create value not only for themselves (value-in-use), but also for other actors within the ecosystem by consuming services through productive and consumptive social practices. In other words, customers add value to a product/service and support the health of an ecosystem by performing these practices. In this case, customers are more likely to consume additional services and to accept servitization.

To prove this concept, a product analysis will be made in this chapter. The product analysis presented in this paper will be limited to 10 games. The games will be chosen according to the criteria of generated revenue, financial data, and different types of servitization.

Generated revenue

It is important to limit this analysis to “big” games, which generated a solid revenue from product sales, service sales or both for the company. For this reason, only games that generated at least \$ 50 million in revenue will be analyzed. This will leave out small and not mass products.

Financial data

Only games from companies that reveal their financial and sales results for public access will be analyzed. For this research, it is important to find financial information on generated revenues, numbers of copies sold and on used services.

Copies sold

For this analysis, it is relevant to exclude games with low sales. In the gaming industry, the size of a value creating ecology and number of actors in an ecosystem is proportional to the number of copies sold. For this reason, only games that were sold more than 500 000 times will be analyzed.

Different types of servitization

To make this analysis more relevant, products with different types of servitization will be taken into consideration: game series in which all games were sold as digital product and the

last game was sold as a bundle; games which were developed as a bundle from the beginning; games which were servitized after their release; and games that changed the service aspect during their lifecycle.

4.1 Methodology

In the first part of the analysis, a short overview of the game will be given. This is important in order to understand the acceptance of the product, its servitization and how a value creating ecology functions around each game.

Information about the monetization model of the game will then be given. This will give an understanding of how the company generates revenue and what additional services customers can consume.

Information about sales, revenue and percentage of revenue generated on sales of additional services will then be covered. This will help to understand customer acceptance of servitization and the willingness of customers to consume additional services within the ecosystem.

The next step of the product analysis is to determine the “grade” of servitization. For this purpose, a PSS classification, offered by Tukker, Hines and Marin (2004) will be used. Analysis of a game from this perspective will help to understand where value should be in theory (mainly in product or in service) and what types of PSS games include. To analyze value co-creation, the DART-model, offered by Prahalad and Ramaswamy (2013) will be used. This will help to understand how value is co-created, which tools the company uses to establish dialogue with customers, how customers get access to fulfillment of services and how risk assessment and transparency are granted.

Products will then be analyzed from the perspective of social practices. This analysis will consider integrated tools for social integration, support of an ecosystem and the possibility to co-create value for the consumer of a service and for other actors within the value creating ecology. After analysis of all products, results will be compared and the research question will be answered:

“Can the development of value creating ecologies be considered the main factor of customer acceptance of servitization in creative industries?”

4.2 Case Studies

4.2.1 Overwatch

Overwatch is a multiplayer team-based first-person shooter with diverse heroes, which was published by Blizzard Entertainment in 2016 on all main gaming platforms (PC, X-Box, Playstation 4). Within the first week of its release, the company reported that the game had achieved 7 Million active users. This number doubled within a month and grew up until May 2018 when the company achieved 40 Million active users (Statista 2018; Moore 2018).

This product resonated strongly amongst the gamer community. In 2016 it was the most mentioned game on the internet, with its title appearing in an estimated 72 thousand online articles. The second most mentioned game of 2016 was Pokemon Go, which appeared only in 36 thousand articles (Statista 2018). Overwatch won the “Game of the year 2016” award (Standart 2016).

Monetization Model

Overwatch uses both monetization models: single time entry payment and in-game micro transactions, which are optional. In a sense of servitization, this title introduces a classical bundle system where the customer pays a fixed price for a product¹ and has the possibility to use additional services in order to enhance user experience.

Product price differs depending on included additional content. The “Standard edition” costs € 39,99, including the basic game. The price for the “Legendary edition” is € 59,99. The “Legendary edition” includes the basic game, additional skins for characters and bonuses for other games from Blizzard Entertainment (Blizzard Shop n.d.a).

After purchasing a game, the customer has the option to buy loot boxes, which include optional cosmetic items that do not influence game play. Loot boxes are priced as follows (Blizzard Shop n.d.b) in Table 1.

Loot boxes	Price
2 Loot boxes	€ 1,99
5 Loot boxes	€ 4,99
11 Loot boxes	€ 9,99

¹ Product price includes customer support, maintenance of servers and regular updates and events.

24 Loot boxes	€ 19,99
50 + 10 Loot boxes	€ 39,99

Table 1: Prices of Overwatch Loot boxes in Blizzard Shop.

Loot boxes include 4 random items from the following list: skins, sprays, voice lines, victory poses, highlight Intros, Player Icons, Emotes, in-game currency (gold). If a customer finds a duplicate in a loot box, she/he is awarded a small amount of in-game currency – 20% of the original cost of a duplicate.

Customization of a game is one of the main leverages to stimulate in-game purchases. The second leverage is seasonality. As an additional service, the company provides seasonal in-game events where customers can get exclusive items from loot boxes, which are only available for a limited time. Examples of events are: Summer events, Halloween, Winter events, etc. All events are included in the basic price of a game.

Seasonal events do not only encourage gamers to buy more additional loot boxes, but also to play more as some loot boxes can be obtained through in-game methods.

Revenue

From May 2016 to May 2017, Overwatch earned about \$ 1 Billion for its company, including \$ 380 Mil. from in-game purchases and additional services (Activision Blizzard 2016; Activision Blizzard 2017; Activision Blizzard n.d.). In other words, 38% of revenue was made from in-game purchases, which were optional additions to the basic game. This contains additional services that were positioned as PSS and not as a product.

Product-service system

On the product-service continuum, Overwatch combines several types of PSSs. According to product service typology, offered by Tukker, Hines and Marin (2004), Overwatch is a use-oriented PSS, which includes features of Product Renting or sharing and of Product Pooling, as the Company keeps all ownership rights according to the End User License Agreement (Blizzard 2018). The customer pays for access and simultaneous usage of a product/service, whereas the company is still responsible for maintenance and repair. Blizzard is also responsible for server availability and its performance.

Servitization of Overwatch also includes features of Product oriented PSSs, as after purchasing a game, the customer may address customer support and receive consulting regarding adjustment of settings in order to get better user experience.

Overwatch is a use-oriented PSS as after purchase of the game, customers do not obtain any ownership rights. At the same time, without additional services provided by company, the product itself no longer makes sense. This is because it is valuable only in combination with software and access to a server where customers can use the product simultaneously.

DART-model analysis

In the case of Overwatch, **dialogue** is established through game software and the company's website. Directly in the game, the customer can get information about services, outcomes of services, running and upcoming events. On the website, the customer can also obtain required information about services and take part in discussions on a forum. Game software also grants **access** to tools and necessary knowledge for using these tools in order to maximize value in use. The End User License Agreement and description of in-game services provides the customer with information about potential **risks**. Customers also share information about risks through posts on the forum and on other web-resources. The forum and the freedom to give feedback on the company's web platforms as well as on other websites provides **transparency** of offered services.

Value Co-creation and Value Creating Ecology

Overwatch is a competitive multiplayer product. This means that consumption of services and usage of the product takes place in social context. Customers create value-in-use for themselves and for other customers as well. Taking the notion of social practices into consideration, customers co-create value in many ways. By playing the game, customers co-create value by performing productive practices with active usage of a service. At the same time, through interaction with other players, customers perform consumptive practices which are direct (active interaction, communication), as well as indirect (observation of other's interaction, passive observation of skins, emotes, etc. of other gamers).

In the sense of performing of social practices, involvement of customers in the process of value co-creation is high. In that sense, the company provides customers with the environment for value co-creation, where all parties can build a value creating ecology and create PSS value through interactions on different levels.

4.2.2 Grand Theft Auto V/ Grand Theft Auto Online

Grand Theft Auto V is an action adventure game developed by Rockstar Games. It was released in September 2013 on main gaming platforms: PC, Playstation and Xbox. This title is considered the fastest-selling entertainment product in history (Sinclair 2018). GTA V achieved \$800 Million on the first day of its release (Their 2013) and \$1 Billion in the first 3 days (Acuna 2013).

GTA V is the seventh game in a series and the first game with a stand-alone multiplayer component - GTA Online. This means that all games in the series were positioned as products that the customer could buy for a fixed price. No additional services were available and long-term support was not needed. GTA V is bundled with GTA Online.

Monetization Model

GTA V is sold as a bundle of a single-player story-driven game and its “free” addition - GTA-Online. On its release date, the game was priced at \$60 for the basic bundle and \$80 for “The Grand Theft Auto V: Premium Online Edition” (Alwani 2018), which included additional in-game items for the online mode.

The story mode does not require any additional payments and no additional services are offered. In the online mode, players can buy in-game goods such as automobiles, property, clothes, etc. with in-game currency (GTA\$). GTA\$ can be obtained through in-game activities or purchased with real money. Customers have the opportunity to buy so called Cash Cards at the following prices (Steam n.d.b) in Table 2.

Cash card	Price
Red Shark Card (contains GTA\$100 000)	€2,49
Tiger Shark Card (contains GTA\$200 000)	€3,99
Bull Shark Card (contains GTA\$500 000)	€7,49
Great White Shark Card (contains GTA\$1 250 000)	€14,99
Whale Shark Card (contains GTA\$3 500 000)	€37,99
Megalodon Shark Card (contains GTA\$8 000 000)	€74,49

Table 2: Prices of GTA V Cash Cards.

Buying Cash Cards gives customers the possibility to use real money for in-game purchases, which reduce the amount of time one needs to spend in the game to progress. The basic price for a game includes updates and additional content, which the company releases regularly. Updates bring new in-game goods, which encourages customers to spend more real money in order to obtain these goods faster.

Revenue

By the end of 2017, 80 million copies of GTA V (including GTA Online) were sold. In sum, GTA V-related products brought a total of \$7 billion revenue to the company: \$4,5 billion from product sales and \$2,5 billion from in-game purchases on GTA Online (Take-Two ISI 2017; Alwani 2018). This means that 36 % of revenue was generated from additional services which were not included in main bundle.

Product-service System

As PSS, GTA V contains two connected aspects: product and use oriented PSS. GTA V can be characterized as a stand-alone game without additional implemented services. Rockstar Games servitized the game series, which was traditionally a single-player product, by adding to it a multiplayer mode. GTA Online can be characterized as a use-oriented PSS with elements of advice and consultancy. Customers have individual access to software and shared usage of servers.

Dividing GTA V into two different spheres, the company offered a product as expected by customers and added the element of servitization as additional mode to the single-player game.

DART-model analysis

According to the DART-model, customers establish **dialogue** through the game platform and other websites (Amazon, Steam, etc.), where customer and company “meet” in order to find suitable solutions for both sides. **Access** is granted through the game platform and the availability of servers for joint activities of players. **Risk assessment** and **transparency** are assured by a strong community, which shares information about products and services offered by company.

Value Co-creation and Value Creating Ecology

Rockstar Games built a community of gamers around GTA V. This community communicates in multiplayer mode and co-creates value of the product for themselves and for

other players. Customers perform productive and consumptive social practices customers during interaction and observation, as multiple players take part in diverse missions actively communicating and observing each other. In that sense, the service provider encourages customers to co-create value and the main product value is generated by users through value-in-social-practice.

4.2.3 FIFA

FIFA is a football simulator game series, developed and published by Electronic Arts. A new game in the series is released annually with the year number added to the title (FIFA 16, FIFA 17, FIFA 18, etc.). EA has sold more than 260 million copies of games (Valentine 2018; Daultrey 2016) and is regarded as one of the best-selling video game franchises (Business Wire 2010). Games in the series are usually released on all main gaming platforms (PC, PlayStation and Xbox) and are available for multiplayer systems.

Players have the opportunity to play matches against AI and participate in multiplayer activities competing against other players. The most popular mode is FIFA Ultimate Team, where players can assemble a football team with football players from diverse football clubs.

Monetization Model

Customers pay an initial fee for the game. The standard edition costs € 59,99 and the Champions edition costs € 79,99. Depending on the edition, customers get additional in-game goods that can later be obtained through in-game methods or purchased for an additional fee.

To set up a team of desired football players, customers must buy FIFA Packs, which contain random football players. Packs are priced from 400 to 125 000 FIFA Coins (in-game currency) (Lopes 2018a). The main idea of monetization is that players can buy in-game coins (or FIFA points) with real money.

Considering prices for FIFA coins/points and in-game prices for packs with football players, customers pay on average € 0,42 to € 20,83 per pack (Origin n.d.; Lopes 2018b). The outcome of such a purchase is random as customers do not know in advance which players they will get.

Revenue

FIFA 18 sold over 24 million copies (Valentine 2018) and brought a total of € 2,88 billion revenue to the company. Of this revenue, € 1,56 billion was made on sales of game copies and € 1,32 billion on in-game purchases and additional transactions (EA 2018a; EA

2018b). In other words, 45% of the company's revenue from this title came from additional services, which were not included in initial price of a game.

Product-Service System

The FIFA game service is a combination of product oriented and use oriented PSS with elements of advice and consultancy (customer support). Players can enjoy a single player mode, which does not require additional purchases and interactions with other customers. At the same time, players are more willing to play a competitive mode and enjoy advantages of the game through use-oriented PSS and product pooling (joint usage of game servers). In that sense, customers do not pay for the end-product but for the possibility to use the software in combination with additional services (server maintenance, in-game events, match making, etc.). Servitization of the game series shifted focus from individual usage of a product (or usage with a limited number of friends playing on one console) after purchase to joint usage of software and additional services in a community on a long-term basis.

DART-model analysis

Dialogue between customer and provider is established through the game platform, the company's website and the game website, as well as third parties who sell FIFA points and coins or grant access to multiplayer features of the game (PS Plus or Xbox Live). Terms of purchase and possible outcome is clearly defined and customers can decide what they are ready to invest and what outcome they will get. These resources also grant **access** to the necessary tools and knowledge required for service fulfillment and value creation and co-creation. **Risk assessment** is fulfilled in multiple manners. The community leaves feedback on services and regulates service consumption (for example, the organized Black Friday in-game purchase boycott in 2017) (Campbell 2017). From the side of the service provider, risk assessment is fulfilled through the software End User License Agreement. Customers also have full information about the randomness of service outcome. Transparency is achieved mostly by the community giving feedback to the provider and regulating of consumption of additional services.

Value Co-creation and Value Creating Ecology

FIFA has a strong community of fans due to multiplayer activities and the competitive character of the game. Customers actively co-create value for themselves by using a product as the product itself is a sports simulator. In other words, customers actively use their knowledge (football rules, knowledge of football players, tactics, etc.) and resources

(hardware, internet connection, time, etc.) to co-create value while performing productive social practices. Competing against other players and “observing” teams assembled by other players, customers perform consumptive practices co-creating value without active usage of services offered by the provider. The sports character of the game opens up another possibility for actors within the ecosystem to perform consumptive practices: members of the gaming community actively watch other people playing the game on streaming services such as Twitch or Youtube.

4.2.4 Hearthstone

Hearthstone is a collectible card game. It was developed by Blizzard Entertainment and released in 2014. Hearthstone is set up as a turn-based competitive card game between two opponents. Players construct a deck of 30 collectible cards and choose one of 10 characters.

Hearthstone also has a single-player component, where gamers compete against AI in a story-mode. This mode is offered to gamers as an alternative to the main competitive mode in order to enhance user experience. Still, the competitive mode of the game is considered the main experience the product offers and it is more popular amongst gamers.

Monetization Model

Hearthstone is distributed on a Free to Play (F2P) model. This means that it does not require any initial fees or subscription to start playing the game. Players start the game with a limited number of cards to build their own deck for the competitive game. To customize and improve their deck, customers need to buy “boosters” - packs with random cards. Each pack contains 5 random cards, which players can add to their deck. Boosters are priced as follows (Blizzard Shop n.d.c) in Table 3.

Card packs	Price
2 Card Packs	€ 2,99
7 Card Packs	€ 9,99
15 Card Packs	€ 19,99
40 Card Packs	€ 49,99
60 Card Packs	€ 69,99

Table 3: Prices of Hearthstone Kobolds & Catacombs Card Packs in Blizzard Shop.

Expansions that the company releases on a regular basis can be bought with in-game currency, which requires a lot of time investment, or with real money. Expansions contain a story-driven adventure mode and additional cards that can be obtained only after completion of an adventure. Price for adventures range from € 19,99 to € 24,99.

In the standard competitive mode, cards from each expansion and thematical Card boosters “expire” two years after release and are no longer usable. This motivates players who want to continue to compete against other players to invest money in new packs and expansions.

Revenue

In 2018 Hearthstone earned \$414 million in revenue (SuperData 2018a; SEC 2018b; SEC 2018c; SEC 2018d; SEC 2018e). As the game is distributed on a F2P basis, 100% of revenue is made from additional in-game purchases (boosters, expansions).

Product-service system

Customers get access to the game and can use company servers to play it. They register an account and receive no ownership rights on game or in-game goods. Blizzard offers use-oriented services for their customers, including necessary software, support, server maintenance and the release of add-ons, expansions and new cards. Customers jointly use servers to compete against each other. In that sense, customers can use most of the company’s services for free and pay for additional services in order to enhance user experience.

DART-model analysis

The company establishes **dialogue** with customers through the game platform and website. Customers are informed about upcoming changes, features and expansions. On this stage, customers “meet” with the service provider and agree on outcomes of future services. **Access** to software and servers, necessary to grant promised user experience and to fulfill purchased services, is granted on a free basis. The customer does not take any financial **risks** until she/he decides to use additional services on a paid basis. In that case, the customer is warned about possible “randomness” of outcome (boosters) or required actions needed to get a result (expansions). **Transparency** is secured by the community built around the game.

Value Co-creation and Value Creating Ecology

A strong value creating ecology with multiple levels is built around Hearthstone. Customers compete against each other simultaneously performing productive and

consumptive social practices. They co-create value in use by participating in competitive matches and they also co-create value for the second participant of a match, who performs active consumptive social practice.

Additional services, which can be consumed in the game result in the obtainment of additional cards, which can be added to a deck. This means that playing a card within the game (or usage of the result of a service) brings additional value-in-use for the “owner” of a card. This also co-creates value for the competitor, who performs active consumptive social practice (by needing to react to a move) and passive consumptive social practice (the competitor can observe a card or the result of a consumed service). In that sense, actors of an ecosystem constantly co-create value for each other through consumption of additional services.

Gameplay of Hearthstone requires knowledge of tactics and a certain skill level. For this reason, the game has become a popular eSport (Blizzard n.d.), which opened a door for other levels of interactions between actors of the ecosystem. Observing other people playing the game and discussing game strategies on forums, customers share knowledge and experience. eSports also bring an element of hierarchy into the community of the ecosystem, setting winners of international competitions at a higher place. All these factors connect actors of ecosystem even more and open up more possibilities for value co-creation through performance of social practices.

4.2.5 Dead Space 3

Dead Space 3 is a video game published by Electronic Arts in February 2013. It is a sequel of Dead Space 2 released in 2008 and the first game in the series to feature online co-op and in-game purchases. It is a single player game with a multiplayer component that allows a walkthrough of the main story, in cooperation with one other player. Dead Space 3 received positive reviews and within the first month, 605 000 copies of games were sold.

The game is a story driven horror survivor shooter. Players can play through the campaign alone or in cooperation with one another player.

Monetization model

Dead Space 3 includes both monetization models: a single time payment for a game and micro-transactions for in-game goods, which are optional. Dead Space 3 is the first game in the series to make a step towards servitization and was monetized as a bundle of the digital product and additional services.

The price of the product differs according to the bonuses included: € 50 for standard edition, and € 150 for “Dev-Team Edition”.

After purchasing the game, customers have the opportunity to buy additional in-game goods with real money (Microsoft Store n.d.b) (see Table 4)

In-game goods	Price
Bot Accelerator	\$4.99
Bot Capacity Upgrade	\$4.99
Bot Personality Pack	\$4.99
Bot Personality Pack	\$4.99
Carver Helmet	\$1.99
Carver Suit	\$3.99
Dead Space 3 Visor T-Shirt	\$1.00
EG-900 SMG	\$1.99
Enervator	\$1.99
Epic Weapon & Resource Pack	\$2.99
First Contact Pack	\$4.99
Isaac EVA Helmet	\$1.99
Isaac EVA Suit	\$3.99
Isaac Snow Helmet	\$1.99
Isaac Snowsuit	\$3.99
Marauder Pack	\$4.99
Necromorph Outline T-Shirt	\$1.00
Online Pass	\$9.99
Peng T-Shirt	\$1.00
Resource Pack	\$0.99
Scavenger Bot	\$2.99
Sharpshooter Pack	\$4.99
Tau Volantis Survival Kit	\$14.99

Tundra Recon Pack	\$4.99
Ultra Weapon & Resource Pack	\$1.99
Witness the Truth Pack	\$4.99

Table 4: Dead Space 3 In-game goods with prices in alphabetical order.

Using real money, players can buy goods that don't give direct advantage within the game, but make progress faster. As a horror survivor game, players are set in a situation of lack of resources, which then can be obtained through in-game methods or purchased using real money through microtransactions.

Revenue

In 2013, 850 000 copies of the game were sold bringing in a revenue of \$ 50 mil for the company (EA Inc. 2013). \$5 mil was generated from microtransactions and in-game purchases, meaning that only 10% of revenue was generated from additional services.

The monetization system of Dead Space 3 was criticized by gamer community (Phillips 2013). Players didn't understand the reason why they should consume additional services within the game, which had been sold at full price. This led to Dead Space 3 failing to meet sales the expectations of its developers (D'Angelo 2013) and the cancellation of the development of Dead Space 4.

Product-service system

Dead Space 3 is a digital product with additional services. Customers get a product that they can enjoy without any further interactions with the company. Players can use additional services in order to enhance user experience (such as) cooperative walkthrough of the campaign and purchase of in-game goods. During playing in cooperation with other players, customers jointly use servers in order to connect with each other. As a PSS, Dead Space 3 is a use-oriented system with a strong focus on the product itself.

DART-model analysis

Dialogue is established through the game platform as well as through other third-party resources (online shops, websites, etc.). Customers are informed about costs and outcomes of transactions. **Access** to the product and additional services is granted on a paid basis through game platform. The game itself provides the user with an in-game experience and also gives access to purchase and usage of additional services. **Risks assessment** as well as

transparency are achieved through community members who leave feedback on the game, in-game purchases and user experience.

Value co-creation and Value Creating Ecology

Dead Space 3 has more features of the classical supply chain than of the ecosystem. No special gamer community is built around the game and there are no built-in mechanisms that set gamers in a value creating ecosystem inside of the game. This means that when players perform social practices, they co-create value for themselves and generate value-in-use. Lack of in-game interaction leads to the problem that there are no in-game methods to co-create value of a product or services through the performance of indirect consumptive social practices.

Players can get a full single player game experience after purchasing the game and they co-create value for themselves through usage of the product or consumption of its services. At the same time, other players cannot observe this additional value and this lack of observation leads to the decrease of potential value co-created (through consumptive social practices).

The example of Dead Space 3 shows that lack of value co-creation possibilities or lack of value co-creation through consumptive social practices can lead to negative consequences regarding servitization of games. Servitization in creative industries gives customers more opportunities to co-create value for themselves and for others, which is interconnected with the whole process of servitization. In the case of Dead Space 3, customers were taken by surprise with the concept of additional services and for them, the additional value was questionable.

4.2.6 League of Legends

League of Legends (LOL) is multiplayer online battle arena developed by Riot Games and published in 2009. The game is available for Windows and macOS only.

In the main game mode, two teams, each of 5 players, compete against one another on a predefined map. The main goal of the game is to destroy the base (Nexus) of the other team. Players choose one out of 141 characters (Champions) and play the entire match with this chosen character.

The game is divided into distinct matches. Each match lasts for an average of 45 minutes. During a match, players buy items to develop their character and then proceed to destroy the base of the other team. After the match has ended, players can start new match from the

beginning, against another team. Characters start off fairly weak and players must develop their character all over again.

League of Legends is considered one of the most popular games in the world. In 2014, there were 67 million people actively playing LOL and at peak hours, 7,5 million players were playing League of Legends at the same time (Sherr 2014). It is also one of the most popular games on streaming platforms (Twitch.tv, Youtube.com)

Community interest is also supported by eSports events. The game has developed into a popular eSports discipline with famous teams and players among community and competitions all over the world.

Monetization model

League of Legends is distributed on a F2P basis. Customers can download the game and start playing without paying any initial fee. The game has a dual currency system: Blue Essence and Riot Points. Blue Essence can be earned through playing the game and is mainly used to purchase new characters. At the beginning, new players do not get any characters for free but can use up to 14 random free characters, which change through rotation every week.

Riot points can be only bought using real money. The of Riot Points depends on the desired amount (see Table 5) (Riot Games Support n. d.).

RP Cards	Prices
350 Riot Points	€ 2,50
750 Riot Points	€ 5
1580 Riot Points	€ 10
3250 Riot Points	€ 20
5725 Riot Points	€ 35
8250 Riot Points	€ 50
17250 Riot Points	€ 100

Table 5: Prices for in-game currency (Riot Points cards) in League of Legends.

With Riot Points, players have the opportunity to purchase new champions, skins, chromas, bundles, emotes, icons, experience boosts, and to change player name or transfer their account to another server.

The monetization model of the game is totally based on additional purchases that players can make within the game after downloading it from the company's website. All content and game modes as well as access to servers are free for players.

Revenue

In 2016, LOL brought in a revenue of \$ 582 mil to Riot Games (SuperData Research 2016). As a game distributed on a F2P basis, 100% of revenue is generated from additional services and in-game purchases.

Product-Service System

As a PSS, League of Legends is a use-oriented system with additional services integrated into the system. Customers can access the game as a digital product for free and also get free access to the joint usage of servers. The company also provides free ranking and matchmaking services.

Customers do not receive ownership rights to the product and its customization items. The company provides customizations services (skins, chromas, icons, etc.) and progress speed-up (characters, experience boosts, etc.) as additional services.

DART-model analysis

Dialogue is established through the game platform where customers receive information about additional services they can consume, terms and conditions, prices and outcomes. On the company website, customers are informed about upcoming updates, discounts and changes. **Access** to software and servers, which are necessary in order to consume services, is granted without any initial fee. Customers do not make any financial risk until they decide to pay for additional services. **Risk assessment** is granted by the community, who actively discuss the quality of the company's offered services, on forums and external resources. **Transparency** is also secured by the community in two ways: through discussion of outcomes of consumed services and through observation of services consumed (in matches against other players).

Value Co-creation and Value Creating Ecology

Riot Games has managed to build a strong ecosystem around their digital product. Customers, who are part of the value creating ecology, perform productive social practices while co-creating value-in-use. The competitive character of the game makes it easy to

provide active and passive consumptive social practices. During matches, players can interact with each other, discussing and observing consumed services.

Players are able to get additional characters, skins and emotes as an additional service which brings additional value for the consumer of a service during usage (a match) and at the same time, for other players in own and rival teams as passive consumptive social practice. This means that an actor within the ecosystem co-creates value for other actors within the system when he/she consumes additional services.

As an eSport, League of Legends forms the second layer of value co-creation by bringing an element of hierarchy into the community. With the support of Riot Games, teams or individual eSports players release their own nominal skins and this brings additional value to services already provided by the company.

As a competitive game, LOL requires understanding of game-mechanics and certain skills. Multiple streaming communities, online-streamers, guides, etc. popularize game and co-create value by providing tips and methods for enhancing user experience.

4.2.7 Middle-Earth: Shadow of War

Middle-Earth: Shadow of War is a role-playing video game released by Warner Bros. Interactive Entertainment in 2017 on PC, PlayStation 4 and Xbox One. It is a sequel to Middle-Earth: Shadow of Mordor, published in 2014.

Unlike Middle-Earth: Shadow of Mordor, Middle-Earth: Shadow of War introduced a micro-transaction system where customers could spend additional money on services, thus making a step towards servitization.

The game is set in an open world environment and introduces a single player campaign and multiplayer feature. Single player mode is a classical game product in which players find quests in an open world, which then drive narration of the game, leading to its finale. In the multiplayer or “Social Conquest mode”, players can build their own fortresses and allocate followers and generals to these fortresses. Other players can invade other player’s fortresses and fight against followers and generals.

Additional services are offered through experience boosts and loot boxes called “War Chests”. The service system was completely removed from the game on July 17th 2018 due to low revenue and negative feedback from players.

Monetization model

The game was monetized in two ways: customers had to pay an initial fee to buy the game and also had the opportunity to pay for additional services using micro-transactions. This meant that the game was initially monetized as a classical PSS bundle.

The initial price for a product differed according to additional content included: \$ 49,90 for Standard Edition, \$ 79.99 for Silver Edition, \$ 99.99 for Gold Edition and \$ 299.99 for Mithril Edition (Game Preorders n.d.).

After purchasing a game, the customer had the opportunity to consume additional services for an additional fee. Players could buy in-game currency (Gold), which they could spend on War Chests (200 to 1500 Gold per War Chest). The price for Gold differed according to amount (see Table 6) (Cryer/Orry 2018).

In-game currency (Gold)	Prices
500 Gold	\$4.99
1 050 Gold	\$9.99
2 200 Gold	\$19.99
5 750 Gold	\$49.99
12,000 Gold	\$99.99.

Table 6: Prices for in-game currency in Middle Earth: Shadow of War.

Players were encouraged to consume additional services through the multiplayer feature. The more competitive character of this feature motivated customers to look for better fellows and generals in loot boxes in order to perform on higher levels of this competitive mode.

Revenue

Middle-Earth: Shadow of War brought \$ 415 Mil in revenue to the company (SEC 2018a; SuperData 2018b), \$ 20,3 Mil of which was made from additional services (SEC 2018a). Less than 5% of revenue was generated from services around the digital product. The company considered such a result unsuccessful and the service aspect of the bundle was removed from the game (Purchase 2018).

Product-Service System

At the beginning, the game was positioned as a PSS including both components: the game as a full product, bought at full price and additional services, which players could consume for an added price. After purchasing the game, customers received full access to in-game content and multiplayer game servers and could also purchase additional goods.

After negative feedback from customers and bad results from servitization (customers were not supposed to spend additional money for services), the company made a decision to remove services from the bundle, shifting the positioning of the game from use-oriented PSS to a digital product.

DART-model analysis

Dialogue was established through the game platform and the company's website. Customers received information about services, prices and possible outcome. **Access** to the game and servers for the multiplayer mode was granted after purchasing of one of the game bundles. Customers could get access to additional services through the game platform and use outcomes of consumed services within the game. **Risk assessment** and **transparency** was secured by the community who defined the course of game's future development through feedback and readiness to pay for services.

Value Co-creation and Value Creating Ecology

Customers co-create value for themselves without interaction with other players in a single player narrative mode. Value-in-use is generated by customers during the campaign mode. The game suffers a lack of consumptive practices, because of the asymmetric character of multiplayer mode. Players do not interact with each other directly but with fortresses and AI-driven fellows and generals obtained from loot boxes. This means that the design of additional services failed to create additional value for customers who didn't consume the additional service, thus decreasing the value of service in the eyes of actors within the ecosystem and leading to anticipations of the service itself.

4.2.8 Metal Gear Solid V: The Phantom Pain

Metal Gear Solid V: The Phantom Pain is an action game published by Konami in 2015. It was released on main gaming platforms (PC, PlayStation 3, PlayStation 4, Xbox 360, Xbox One). This game, as well as the whole game series, is famous for its plot and story. For that reason, the Metal Gear series was associated with the narrative campaign and the single player experience.

The game received positive reviews from magazines and players. At the core of its gameplay lies an advanced stealth system in an open world environment. On an open world map, players can find a story event and decide in which direction and in which order the story will develop.

Metal Gear Solid V: The Phantom Pain is not the first game in the series where developers introduced a multiplayer component. It is however the first game in which micro-transactions were introduced and players were given the possibility to consume additional services after purchasing the main game. In that sense, the game series made a step towards servitization the product-service continuum by offering a product-service bundle instead of digital product. For that reason, this example is relevant for this study.

Monetization model

Metal Gear Solid V: The Phantom Pain is sold as a full price game, which gives players access to the full campaign and the online multiplayer mode. At the start, costs depended on the bonuses included: € 59,99 for the Standard Edition and € 99,99 for the Limited Edition (Metal Gear Informer 2016).

After purchasing a game, the player was given access to the multiplayer component of a game. One of the multiplayer features is the possibility to develop an own base, which can be attacked by other players. Development of one's own base is time gated. This means that players have to wait for a certain amount of time (from a few minutes to days) before they can upgrade their bases. This waiting time can be reduced by spending MB Coins, which can be purchased using real money. This type of monetization is very popular in mobile games. MB Coins are priced as follows (Valve Corp. n.d.): 2000 MB Coins - € 9,99.

The game generates revenue from both monetization models: the price which customers pay for a digital product (with some services already included) and additional services, which customers can later obtain.

Revenue

From its release until the end of 2015, Metal Gear Solid V: The Phantom Pain generated \$ 400 million in revenue for the company, including \$ 24 million made on micro-transactions and additional services (Konami 2015; Konami 2016; Makuch 2016). This means that only 6 % of the entire revenue was generated from additional services and 94% was made on product sales.

Product-Service System

As a PSS, Metal Gear Solid V: The Phantom Pain is a classical bundle consisting of the digital product itself and additional services, which customers can consume. According to the typology, offered by Tukker, Hines and Marin (2004), the game is a use-oriented PSS including Product renting or sharing and of Product pooling. The company gives usage rights to customers without providing them with any ownership rights.

The game was initially developed as a PSS bundle, including product and services, and containing features of both. The financial results show that the game was first commercialized as a product, therefore both willingness to consume additional services and acceptance of servitization of the new game in series can be considered as low.

DART-model analysis

In the case of Metal Gear Solid V: The Phantom Pain, **dialogue** between provider and customers is established through the game, platform, company websites and third party websites (for ex. Steam.com), where both sides can connect and decide on costs and outcomes of services. The game platform also grants **access** to tools and knowledge necessary to fulfill services from the side of provider and for customers' value co-creation. **Risks assessment** is provided by the community and company. Customers are warned about potential risks and the community shares information on resources from the company and from third parties. They are also free to share both positive and negative experiences, thus securing **transparency**.

Value Co-creation and Value Creating Ecology

In Metal Gear Solid V: The Phantom Pain, customers have multiple opportunities for value co-creation. After purchasing the game, players can play through a single-player narrative campaign and co-create product value by performing productive social practices. In that case, value is co-created by customers for themselves during usage of a product. In multiplayer mode, customers generate value-in-use and can also use additional services (purchased for MP Coins). Due to the asymmetric character of the multiplayer mode, customers are restricted in the ways that they can perform consumptive social practices. In other words, customers have to take extra actions in order to perform consumptive social practices in the ecosystem built around the game, and to connect outside of the game environment. Considering that additional services are consumed by customers "inside" of the game platform, the outcomes of these services cannot be directly observed by other actors

within the ecosystem. Therefore, by consuming additional services customers do not generate additional value through passive consumptive social practices.

4.2.9 Star Wars: Battlefront II

Star Wars: Battlefront II is an action shooter multiplayer video game based on the Star Wars franchise, developed by EA DICE and published by Electronic Arts in 2017 for main gaming platforms: PC, PlayStation 4, Xbox One.

The game was developed as a Product-Service system and criticized for its servitization aspect, which introduces loot boxes that offered a gameplay advantage to the customers who consumed these services (Salinas 2017).

The example of Star Wars: Battlefront II is relevant for this study as an example of unsuccessful use of servitization as EA had to temporarily remove micro-transactions and additional services from the game (Grubb 2017) in order to come back with a renewed servitisation system.

Monetization Model

The game is sold as a product-service bundle containing the digital product itself and additional services, parts of which are already included in the game (access to servers, matchmaking, etc.) and others, which customers can get for additional payment.

The cost of the game differs depending on bonuses included: € 59,99 for the Standard Edition (EA n.d.a) and € 69,99 for Star Wars Battlefront 2 Elite Trooper Deluxe Edition (Reed 2017).

After purchasing a game, a customer can buy in-game currency called Crystals. The price for Crystals depends on the amount of currency one wishes to obtain (see Table 7) (EA n.d.b).

In-game currency (Crystals)	Prices
500 Crystals	\$4.99
1000 Crystals	\$9.99
2100 Crystals	\$19.99
4400 Crystals	\$39.99

Table 7: Prices for in-game currency in Star Wars: Battlefront II.

Initially players could buy loot boxes, which were priced as follows: Hero crates cost 110 Crystals each; Starfighter crates cost 120; and Trooper crates cost 200 Crystals.

Loot boxes included weapons, gear and so-called Star Cards that gave customers benefits over other players. This fact caused a wave of criticism and negative reviews from players. After removing loot boxes from the game, the company reworked its monetization model and introduced a new one where players could only buy cosmetic items. Loot boxes were not completely removed from game but were reworked. Now players get loot boxes as a reward for daily logins and they no longer contain items that can affect gameplay (Byrd 2016).

Revenue

Due to the wave of criticism and negative reviews, game sales didn't meet the company's expectations (EA 2018c; Takahashi 2018). Instead of a predicted 12 mil copies, only 9 mil copies were sold in its year of release. In that year, the game made \$ 585 mil in revenue, \$ 23 mil of which was generated from sales of Crystals and the consumption of additional services (EA 2017; EA 2018d). This means that only 4% of revenue was generated from paid services. This percentage grew up to 19 % in 2018 after offered services were reworked (EA 2018e).

Product-Service System

As a PSS, Star Wars: Battlefront II introduces a classical use-oriented bundle. Customers get access to the game as a digital product and to joint usage of servers and the matching system in order to take part in multiplayer matches. The price of bundle also includes maintenance of servers and customer support. According to Tukker, Hines and Marin (2004) , Star Wars: Battlefront II also includes features of Product renting or sharing and of Product pooling. After purchasing the product, customers sign an End User License Agreement and do not get any ownership rights to software and in-game goods.

The servitisation system also includes features of Product oriented PSS (advice and consultancy) in the form of customer support. The provider helps customers to adjust their resources (for example PC or Internet connection) in order to get a better user experience.

DART-model analysis

Dialogue is established through the game platform, company website, game website and third-party sites, where customers get information about costs and outcomes. **Access** to game resources as well as to additional services is granted after purchasing the game through the game platform. **Risk assessment** is secured as the company warns the customer about

randomness of outcome after the purchase of loot boxes. It is also provided by actors within ecosystem through reviews and feedback. **Transparency** is also granted by the community.

The example of Star Wars: Battlefront II shows the influence of Risk assessment and Transparency on servitization. Customers were warned about risks by other customers and this caused negative feedback and critical reviews, forcing the company to rework its monetization model. These changes were driven by the ecosystem built around a specific product.

Value Co-creation and Value Creating Ecology

Customers can perform productive social practices in order to co-create value by using a product. As a multiplayer game, customers perform productive and consumptive social practices through in-game interactions. The problem for the company arose when customers who had not yet consumed additional services interacted with customers who had. Instead of co-creating value through passive consumptive practice for those who had not paid for services, actors within the ecosystem rather “decreased” the value of the product for others. This mechanism of mutual value co-creation appeared to become an obvious regulatory instrument in customer acceptance of servitization. In other words, the services were designed in a way that made customers frustrated with the value of the product itself. Consumptive social practices in the value creating ecology created the impression that the product was unusable without consumption of additional services and that these services were necessary not only in order to enhance user experience, but also to be able to use a product in a “normal” way.

4.2.10 Fallout 4

Fallout 4 is an action role-playing video game published by Bethesda Softworks in 2015 on main game platforms (PC, PlayStation 4 and Xbox One). It is an open world single player game where players can create and control their own character and explore a post-apocalyptic world.

The game received positive critical reviews and got multiple game rewards. Within its first 24 hours, the game generated \$ 750 million (Henry n.d.) and the number of players playing the game at the same time was estimated at 470 000 (Thier 2015).

Initially, the game was introduced as a digital product and didn’t include any additional services. Customers paid the full price for the game and could play through the full story without the possibility of investing additional money or consuming additional services. In

2017, Bethesda Softworks introduced Fallout 4 Creation Club - a system where customers could buy additional content created by the company or community developers. This means that customers also get the opportunity to create their own content and sell it to other customers (Bethesda n.d.).

Monetization Model

Initially, the game was sold as a digital product. The product price differed according to additional content included: € 59,99 for the Standard Edition, € 79,99 for the Tricentennial Edition and € 199 for the Power Armor Edition.

After the introduction of Creation Club and the addition of the service aspect, customers got the opportunity to purchase Creation Club credits. Credits are in-game currency, which players can spend on additional goods and modifications. Costs for additional content start from 50 credits. Creation Club credits are priced as follows in Table 8 (Microsoft Store n.d.; Steam n.d.a).

In-game currency (Creation Club credits)	Prices in USD
750 Creation Club credits	\$7.99
1500 Creation Club credits	\$14.99
3000 Creation Club credits	\$24.99
5500 Creation Club credits	\$39.99

Table 8: Prices for in-game currency in Fallout 4.

Fallout 4 is the 7th game in the game series. This game series has always had a strong private developer community, which has created modifications and additional content for the game (for example <https://www.nexusmods.com/>). The idea of servitization was to commercialize the existing community and to enhance possibilities of value co-creation in an ecosystem that already existed.

Revenue

In its first 24 hours, 12 million copies of the game were sold (Gaudiosi 2015), generating \$ 750 million in revenue (Henry n.d.). 100% of the revenue was generated from game sales, as it was initially introduced as a digital product. In 2017, the Creation Club and Fallout 4 VR

were released, 1,4 million copies of the game were sold, generating \$ 100 million in revenue, from which 21% was made from Creation Club (SuperData 2018b; SuperData 2018c).

Product-Service System

Initially, Fallout 4 was developed and published as a digital product. Customers paid a one-time fee for the game and could play all content through. As a single-player game, no internet connection or servers were required.

In 2017, the game was servitized with the release of Fallout 4 Creation Club. From this point, the game was introduced as a PSS, including both digital product and additional services, which the company offered in order to enhance user experience.

With the purchase of a bundle, the customer got access not only to a game as a product, but also access to servers where they could buy or publish their own additional content and modifications. Company also offered support and consultancy in order to make the process of creation of modifications easier for customers.

In that sense, according to Tukker, Hines and Marin (2004), Fallout 4 can be considered a use-oriented PSS with advice and consultancy.

DART-model analysis

Dialogue between company and customers is established through the game platform, company website and Creation Club, which has its own separate web resources. Customers get **access** to tools and knowledge in order to fulfill services through the game platform and additional tools for creation of modifications. As a community-based service, Creation Club grants **risk assessment** and **transparency**, as customers are free to discuss modifications, their prices and the ways they are created and implemented. Players also share outcomes of used services on third party resources (for example on Steam and Nexus).

Value Co-creation and Value Creating Ecology

Initially, the game was well accepted by customers. Fallout is an example of a game series where an ecosystem already existed around a specific product due to easy access to the creation of modifications and additional content by enthusiasts. Bethesda Softworks offered support for the existing value creating ecology and implemented necessary tools into the product itself. This example is a relevant one for this study because it shows servitizations of a specific product and its outcomes on a timeline. Servitization gave customers the

opportunity not only to co-create value through product use, but also by creating and sharing content.

In that sense, the company took on the role of moderator in an existing community, enabling actors to co-create value for themselves and for others. Customers can co-create value through productive social practices (creating additional content), active consumptive social practices (discussions, advice) and passive consumptive social practices (reading discussions, observing others, consuming additional services).

4.3 Aggregate Table of Analyzed Products

Product	% revenue generated from additional services	DART model	Product-Service system	Value co-creation in value creating ecology		
				Productive social practices	Active consumptive social practices	Passive consumptive social practices
Overwatch	38	D – game platform, company website A – game platform R – game platform, company website, company forum, external forums T – reviews, community feedback	Use-oriented PSS (product sharing, product pooling), advice and consultancy, Activity management	+	+	+
GTA V/ GTA -Online	36	D – game platform, company website, external websites A – game platform R – company forum, external forums T – reviews, community feedback	Product-oriented PSS, Use-oriented PSS (product sharing, product pooling), advice and consultancy, Activity management	+	+	+
FIFA	45	D – game platform, online shop of a company (Origin), external online shops A – game platform R – game platform, External web sites, external forums T – community feedback	Product-oriented PSS, Use-oriented PSS (product sharing, product pooling), advice and consultancy	+	+	+
Hearthstone	100	D – game platform,	Use-oriented PSS	+	+	+

		Company website A – game platform on multiple devices R – company web site, community feedback T – company forum, external forums, community feedback, video streams	(product sharing, product pooling), advice and consultancy, Activity management			
Dead Space 3	10	D – game platform A – game platform R – company web site, community feedback T - reviews, community feedback	Product-oriented PSS, advice and consultancy	+	-	-
League of Legends	100	D – game platform, company website A – game platform R – reviews, community feedback T – company web site, community feedback, video streams	Use-oriented PSS (product sharing, product pooling), advice and consultancy, Activity management	+	+	+
Middle-Earth: Shadow of War	5	D – game platform, company website, company shop, external shops A – game platform R – community feedback, reviews T – reviews, community feedback	Product-oriented PSS, Use-oriented PSS (product sharing, product pooling), advice and consultancy	+	-	-
Metal Gear Solid V: The Phantom Pain	6	D – game platform, company web site, external web sites A – game platform R – community feedback T – reviews, company forums, external	Product-oriented PSS, advice and consultancy	+	-	-

		forums				
Star Wars: Battlefront II	4 (initially) 19 (after rework)	D – game platform, company website, company shop, external shops A – game platform R – community feedback, company forums, external forums, reviews T – community feedback, company forums, external forums	Use-oriented PSS (product sharing, product pooling), advice and consultancy, Activity management	+	+	+
Fallout 4	21 (after servitization)	D – game platform, Creation Club, company website, creation club website A – game platform, creation club toolkit, creation club website R – community feedback, company forums, external forums T – community feedback	Product-oriented PSS, Use-oriented PSS (product sharing, product pooling), advice and consultancy, Activity management	+	+	+

5 Conclusion

In this paper, topics of servitization, value creating ecologies and their connection within creative industries have been covered. This connection and correlation has been applied to a product analysis of video games. The analysis showed a correlation between development of a value creating ecology and customer acceptance of servitization and the willingness of customers to consume additional services after purchasing a product. Based on the literature review, conclusions that processes of servitization, digitization and value co-creation are deeply connected (Vargo/Lusch 2004) have been made. For that reason, these processes should be researched as complex multi-level notions, which interconnect and depend on each other.

Digitization of the gaming industry has made it possible to offer additional services to customers in order to enhance user experience. Some products were already successfully bundled into PSSs and revenues were generated from both sales of the product and additional services implemented into the game platform.

The example of the gaming industry revealed many examples of unsuccessful servitization in recent years. Customers were not ready to accept the new product-service model and to consume additional services after purchasing a product.

Results of the literature review and product analysis show that customer readiness to accept additional services was much higher in products with integrated mechanisms of support in value creating ecologies. The more developed an ecosystem is and the more possibilities customers have to perform social practices, the more additional services they consume. This results in the increased shift of the percentage of generated revenues towards services.

The same processes can be observed in other creative industries, such as the music industry. Some research shows that the popularity of iTunes is also connected with a high level of social interaction within the platform, which offers a complete solution instead of pure (digital) products (Baines et al. 2007).

Instruments of social activity and interactions are important for customers not only because they help to satisfy their demand for socializing, but also because they serve as powerful tools for value co-creation. Customers can co-create value by performing productive and consumptive (direct and indirect) practice and this can be used as a measuring tool for further research on value co-creation and value creating ecologies.

Figure 6 shows the dependence on the percentage of generated revenues from integrated tools which enable social practice performance.

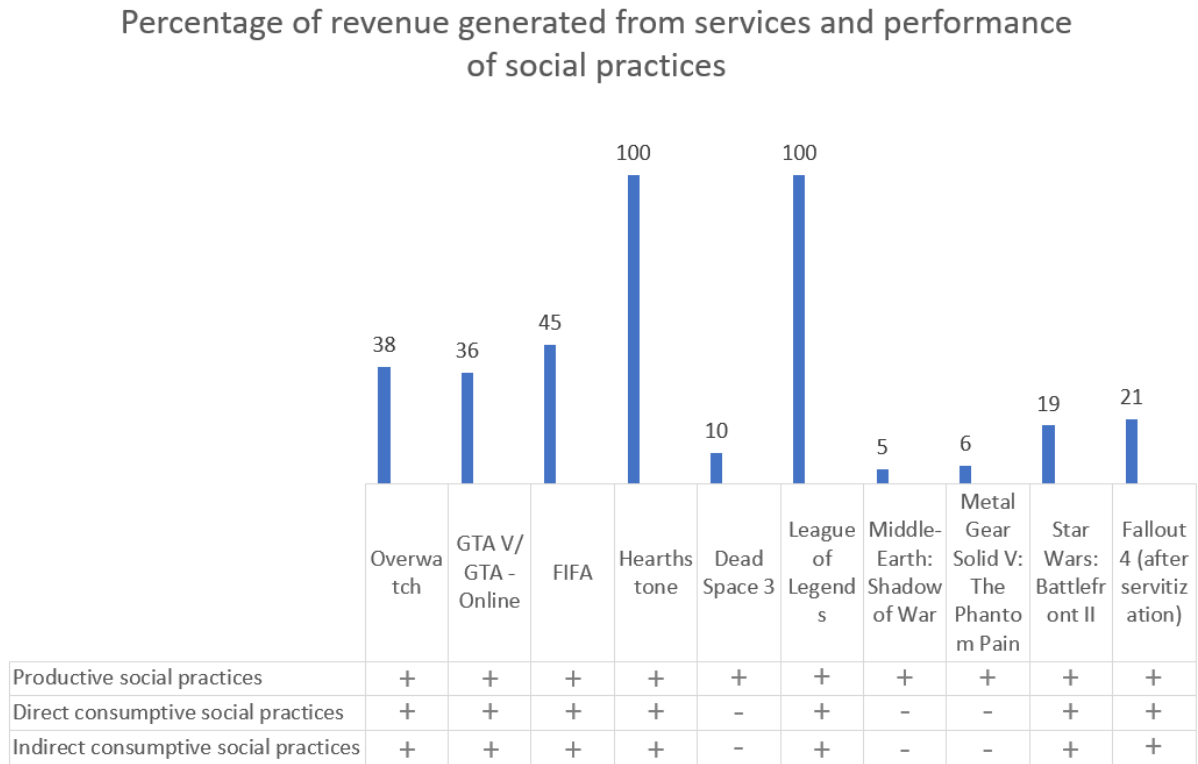


Figure 6: Percentage of revenue generated from services and performance of social practices.

The product analysis showed that in games with integrated social mechanisms where customers can perform productive practices as well as direct and indirect consumptive practices, customers are more likely to accept servitization of a product and consume additional services. This principle also applies to products, which are distributed and sold at full price as well as to products distributed on F2P basis.

In that sense, the development of value creating ecologies around specific products can help game developers to support the process of servitization and run it more “smoothly” and less painfully for both the company and the customers. This answers the first research question:

Development of value creating ecologies can be considered the main factor for customer acceptance of servitization in creative industries.

The product analysis also showed that value creating ecologies can play a regulatory role. The example of the unsuccessful servitisation of Star Wars: Battlefront II confirmed that the

health of the ecosystem determines the satisfaction of each individual (Iansiti/Leiven 2004). The service part of the bundle was designed in a way that set the health of the ecosystem in danger and as a result individuals were not satisfied with the product.

This leads us to the next research topic, which can be covered in following papers: *Does value co-creation processes always add value to a product/service or can they also decrease value?* This is relevant for companies at the stage of service design. The example of Star Wars: Battlefront II showed that by consuming services offered by the company, customers still had the opportunity to perform productive and consumptive practices. At the same time, instead of adding value to the product, these services decreased the value of the product in the eyes of customers, which led to negative feedback and unsuccessful servitization from the start.

This leads us to the next research question of this paper. Considering the character of servitisation as bundling of products with services and the offering of complete solutions, services must be designed in a specific way that will increase value of a product or a bundle for customers.

The notion of social practices reveals that there are many ways and directions in which customers can co-create value. In value creating ecologies, customers co-create value by performing productive practices (value-in-use) and by performing direct consumptive practices (communicating with each other) as well as indirect consumptive social practices (observation of others' interaction, observation of services consumed). Within value creating ecologies, customers want to consume services as well as perform altruistic practices.

This means that at the stage of service design, companies must answer the question: *How can this service add value for those who do not consume this service?* This is relevant for creative industries in the context of servitization because by observing additional value generated by services, customers are more likely to accept servitisation and to consume additional services themselves, resulting in increased revenues. In other words, this answers the second research question of this paper: *Regarding servitization, it is important to design services in a way that they can generate additional value even for those customers who do not consume these services.*

Finally, it is relevant for companies to build and support value creating ecologies and design services in a way that they can increase value for the whole ecosystem, in order to increase customer acceptance of servitisation and to increase revenues.

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