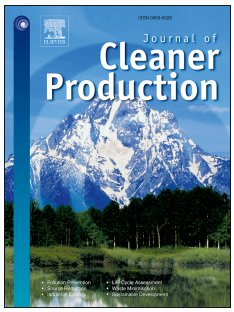
Accepted Manuscript



The sharing economy: A comprehensive business model framework

M. Ritter, H. Schanz

PII: S0959-6526(18)33864-2

DOI: https://doi.org/10.1016/j.jclepro.2018.12.154

Reference: JCLP 15212

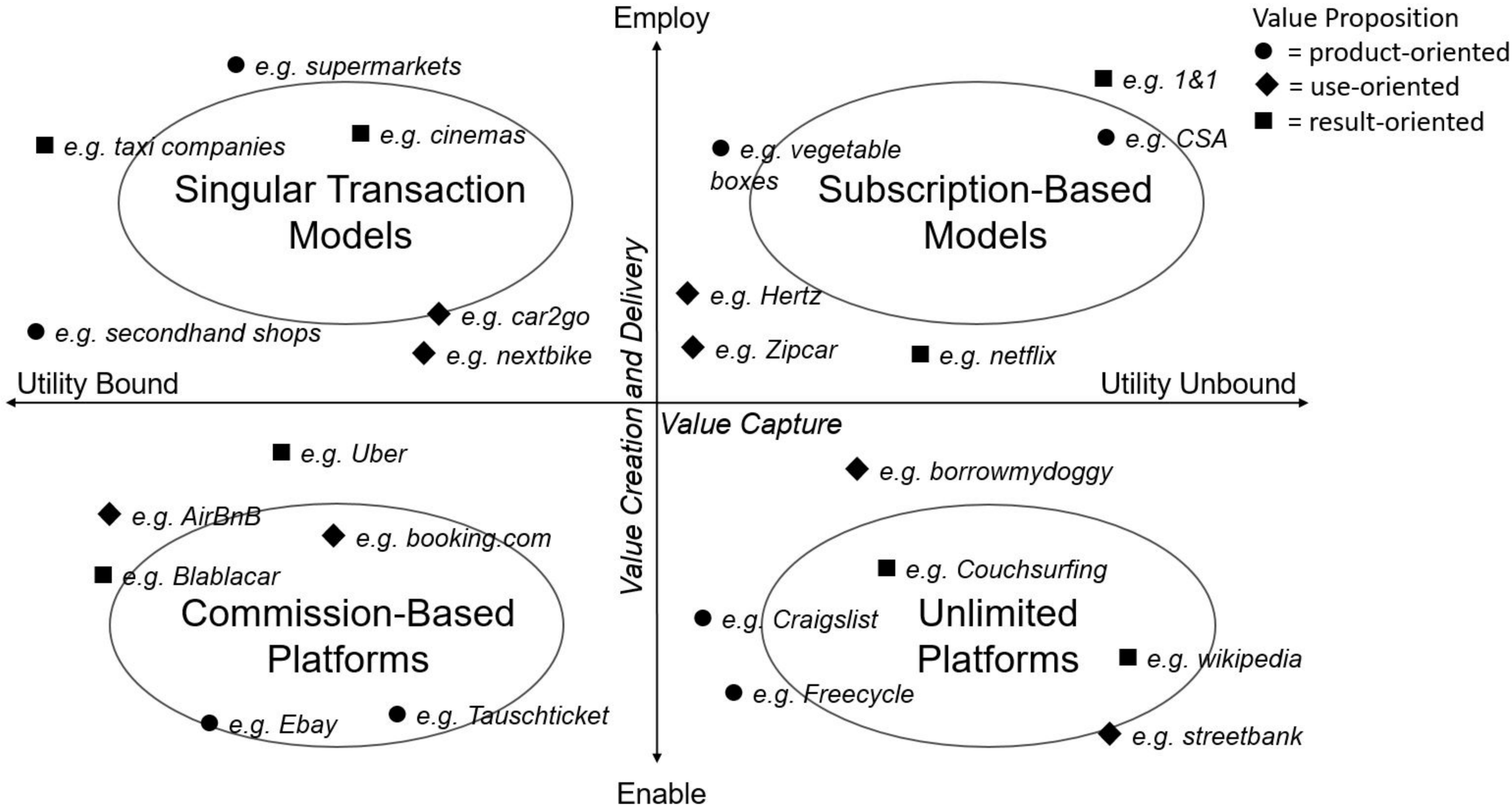
To appear in: *Journal of Cleaner Production*

Received Date: 21 August 2018

Revised Date: 12 December 2018

Accepted Date: 16 December 2018

Please cite this article as: Ritter M, Schanz H, The sharing economy: A comprehensive business model framework, *Journal of Cleaner Production* (2019), doi: https://doi.org/10.1016/j.jclepro.2018.12.154.


Employ
Enable
Utility Bound
Utility Unbound
Value Creation and Delivery
Value Capture
Value Proposition
● = product-oriented
◆ = use-oriented
■ = result-oriented
Singular Transaction Models
● e.g. supermarkets
■ e.g. taxi companies
■ e.g. cinemas
◆ e.g. car2go
● e.g. secondhand shops
◆ e.g. nextbike
Subscription-Based Models
■ e.g. 1&1
● e.g. CSA
● e.g. vegetable boxes
◆ e.g. Hertz
◆ e.g. Zipcar
■ e.g. netflix
Commission-Based Platforms
■ e.g. Uber
◆ e.g. AirBnB
◆ e.g. booking.com
■ e.g. Blablacar
● e.g. Ebay
● e.g. Tauschticket
Unlimited Platforms
◆ e.g. borrowmydoggy
■ e.g. Couchsurfing
● e.g. Craigslist
■ e.g. wikipedia
● e.g. Freecycle
◆ e.g. streetbank

The Sharing Economy: A comprehensive business model framework

M. Ritter*, H. Schanz

University of Freiburg, Chair of Environmental Governance, Tennenbacherstr.4 79102 Freiburg, Germany

Abstract: *The sharing economy is seen as an important building block for transitions to sustainability. Although the sharing economy concept is widely used, comprehension varies about what makes a sharing economy business model. This study aims to review and categorize the field of sharing economy business model research, by reviewing the fundamentals of the concept of sharing and feeding them back into the business model literature. A comprehensive framework of business model categories is proposed, distinguishing four market segments of the sharing economy: Singular Transaction Models, Subscription-Based Models, Commission-Based Platforms and Unlimited Platforms. The study's framework is grounded in an analysis of sharing economy fundamentals and business model literature, contributing to a better understanding of the potentials of sharing economy for sustainability transitions and the implementation of business model innovations.*

Keywords*: business model, sharing economy, business model innovation, value proposition, value creation, value capture*

**corresponding author. E-mail address: martin.ritter@zee.uni-freiburg.de Tel: 0049 (0) 761 203 3792*

1. Introduction

In recent years the sharing economy is seen as a disruptive innovation, made possible by new technologies – mainly the Internet, which is transforming economies and the way business is done (Ferrell et al. 2017; Heinrichs 2013). Enthusiasts of the sharing economy aggregate different environmental, social and economic promises, each corresponding to different framings, values and debates (Acquier et al. 2017; Cherry and Pidgeon 2018). The

environmental promises of sharing centers around better resource utilization, such as reducing idle capacity by favoring access over ownership, as well as using goods to the end of their lifespan (Botsman and Rogers 2010; Demaily and Novel 2014). A typical example are cars, which are idle 95% of the time and if were accessible to non-owners, would significantly reduce the number of cars required (Frenken and Schor 2017). Furthermore it is forecasted that sharing as a dominating consumption pattern leads to business models with a self-interest in using more durable products and recycling more actively (Demaily and Novel 2014). Some even see sharing as an opportunity to combine efficiency, consistency and sufficiency strategies and to move these into the mainstream to transform how business is done (Heinrichs 2013; Mason 2015). Others put forward social promises of sharing, viewing the sharing economy as a way to offer cheaper access to services, which will especially help the socially deprived (Hira and Reilly 2017; Schor and Fitzmaurice 2015). Additionally, sharing is seen as a possibility to promote non-reciprocal exchange, thereby fostering community building, solidarity and social bonding among individuals, leading to more social cohesion in society (Belk 2010; Gansky 2010; Stampfl 2015). The economic promises of the sharing economy are reflected in the aim to overcome centralized economic and political institutions and to replace them with well organized (peer-to-peer) networks — composed of economically and politically emancipated individuals (Acquier et al. 2017; Hira and Reilly 2017). Other commentators remark on the new business opportunities and potential arising for start-ups (Matzler et al. 2016; PwC UK 2016), necessitating established businesses pivot their business models to avoid creative destruction (Habibi et al. 2017).

Outfitted with such high hopes and promises, it is not surprising that the sharing economy has received attention from practitioners, policy makers and researchers. Despite the increasing use of the same term among these groups, no common concept has been established. These inconsistencies stem from the fact that the sharing economy debate is spread across a variety of disciplines with different conceptual emphasis (Ertz and Leblanc-Proulx 2018), including anthropology (Belk 2014c), property rights literature (Haase and Pick 2016), information systems (Hamari et al. 2015), product-service system literature (Barquet

et al. 2013) and management literature (Habibi et al. 2017). Additionally, sharing has a variety of semantic meanings in daily use (John 2012, 2013). Sharing is understood as acts of distribution (e.g. sharing a candy bar), having a similarity with someone (e.g. sharing a belief), acts of communication (e.g. sharing feelings and emotions), acts of copying digital data (e.g. file sharing), or mixing communication and distribution acts by uploading digital content (e.g. posting a photo and text) (John 2012). These ambiguities are reflected in the literature, leading to muddiness of the concept and its defining characteristics, continued by normative discussions about “true sharing” or “pseudo-sharing” (Belk 2014b). The integration of these perspectives into a sharing economy business model concept has yet to be developed to aid apportionment of research questions and to support effective implementation of socially desired sharing schemes.

This study aims to help frame the field of sharing economy research by reviewing the fundamental concepts currently discussed. Inspired by the papers of Nußholz 2017, on circular economy and Bocken et al. 2014, on sustainable business model archetypes, the discussion is synthesized into a conceptual framework of sharing economy business models.

2. Research Design

The sharing economy is a contested concept to the degree that it is unclear if it is a specific phenomenon at all, whereas business models are widely used as description devices of business phenomena (Osterwalder and Pigneur 2010; Richardson 2008). As a system, business models describe how elements of an organization fit together (Magretta 2002), thereby expressing the inner economic logic of a specific organization (Osterwalder et al. 2005). Business models articulate how the organization will convert resources and capabilities into economic value (Bocken et al. 2014; Teece 2010).

Innovators and entrepreneurs design business models in reference to existing business models and working templates found as stylized descriptions in the literature (Gassmann and Frankenberger 2016) that invite imitation (Doganova and Eyquem-Renault 2009). As a result business models are always under innovation pressure from competitors seeking to

successfully copy business models in an ever-changing market (Zollenkop 2014). Innovating a business model implies a reconfiguration of the model's elements, which includes changes in the content (selection of activities), structure (linkages or sequence of activities) and governance (who performs the activities). Business model innovation can change how a company is connected to its stakeholders, how it engages in economic exchange and how it creates value for all partners (Zott and Amit 2010). Business models have different usages and are deployed as descriptive analysis tools, as forecasting and planning tools or as demonstrative communication means (Doganova and Eyquem-Renault 2009). Every company and organization is built on a business model, whether or not its managers or founders conceive of what they do (Chesbrough 2007; Magretta 2002).

It seems therefore logical to start the search for a comprehensive conceptual framework of the sharing economy based on business models. Research could thereby take two departures, starting either from a review of the underlying business models of existing enterprises generally associated with the sharing economy or attributed by themselves, or from a sharing economy literature review with business model canvas as the analytical framework.

The first research option could be informed from various lists of sharing economy organizations built up via self-reporting and/or crawling the web for organizations attributed with sharing: e.g. i-share 2018; Owyang 2016; shareable 2018. Contradicting lenses on the nature of the sharing economy lead to differences in classification and demarcations of the prototypical sharing business model, which leads to methodological problems. Literature focusing on economic impacts and platform characteristics put forward businesses like Uber, Ebay or Airbnb (Hagiu and Wright 2015; PwC UK 2016; Stampfl 2016). Sources concentrating on ecological impacts tend to list businesses active in redistribution, better capacity use, change of consumption patterns or digitalization of consumption. Typical examples listed are secondhand shops, craigslist, freecycle, zipcar, car2go, nextbike, blablacar (Botsman and Rogers 2010; Heinrichs 2014; Puschmann and Alt 2016), netflix or

spotify (Watkins et al. 2016). Those focusing on the social promises of sharing economy put forward organizations active in community building without money interchange between attendees, like couchsurfing and streetbank (Belk 2014c; Eckhardt and Bardhi 2016), as well as community supported agriculture (CSA), community gardens, food swaps and time banks (Schor and Fitzmaurice 2015; Schor et al. 2016) or examples from the open-source movement like wikipedia, or even social media platforms (Frenken and Schor 2017). These lists overlap, resulting in the most often discussed examples, like Uber, variably seen as flagships of sharing (Dreyer et al. 2017), as threats for sharing economies (Gorenflo 2015) or as non-sharing business models (Richardson 2015). It remains unclear why some companies — like Hertz, booking.com, cinemas, taxi companies or vegetable subscription boxes — are not discussed as sharing companies, even though their value propositions are similar to Uber, Zipcar, CSA, netflix or Airbnb. A conceptual framework designed by handpicking business models would suffer from arbitrary attribution requiring implicit theoretical assumptions of sharing schemes and is therefore not a promising path to follow.

The second research option, a review of the sharing economy literature, faces two challenges. First, academic publications are spread across a variety of disciplines (Breidbach and Brodie 2017) and the sharing economy literature is vast and growing as the concept becomes prominent in the wider public with the popular publications of Gansky 2010 and Botsman and Rogers 2010 (Huber 2017; Martin 2016). Second, business model theory still lack a widely shared definition and framework (Schallmo 2014; Geissdoerfer et al. 2018). Regarding this second challenge, one of the most used and widely cited frameworks is the “Business Model Canvas” by Osterwalder and Pigneur 2010, which has proven its strength as a basis for conceptualizing business innovations for sustainability (Nußholz 2017). The nine building blocks of the Canvas are commonly aggregated into three major components: value proposition, value creation and delivery, and value capture (Fig. 1).

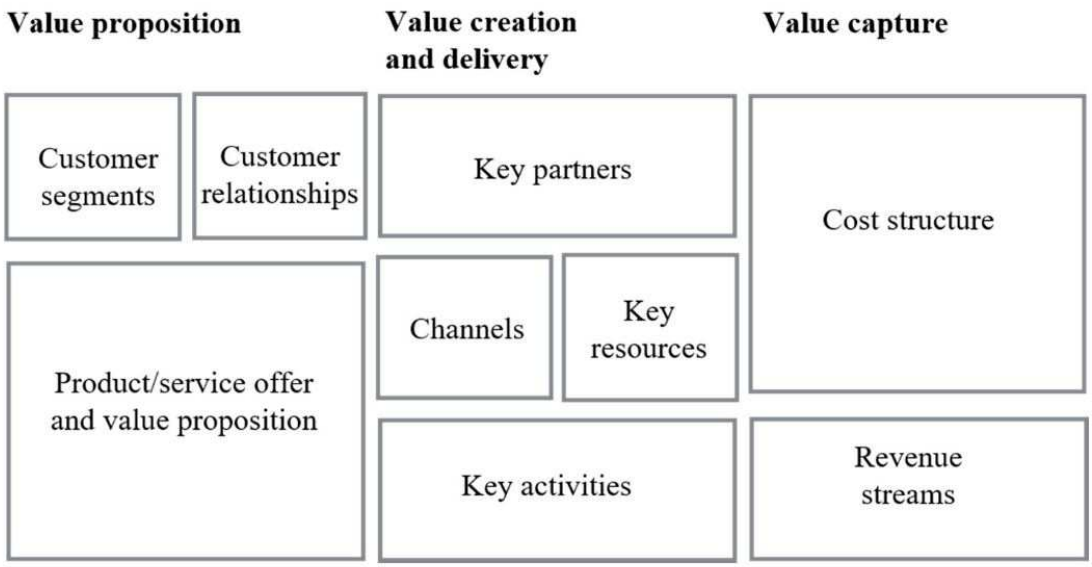


Fig. 1 Business model conceptualization (Nußholz 2017, p. 5; Osterwalder and Pigneur 2010)

The v*alue proposition* refers to the reasons a customer will value an organization's offering. It includes the offering and the intended customer target market, as well as the type of customer relation. The *value creation and delivery* include the numerous actions an organization undertakes to create, produce, sell and deliver their products or services to customers. Included are key activities that keep the business running, key partners like suppliers, joint ventures or alliances with competitors, key resources used in the process (e.g. physical, financial, intellectual or human resources) and communication, distribution and sale channels to customers. Finally, the *value capture* correspond to the origin of revenues, the different ways the organization receives money in exchange for its services, as well as the cost structure of the organization (Richardson 2008; Osterwalder and Pigneur 2010).

Value proposition, value creation and delivery, and value capture serve as analytical categories for the sharing economy literature review. The empirical scope was limited to academic papers and reviews that referred to 'sharing economy' in German and English. Conference proceedings, book chapters and book reviews were sorted out. No time frame was applied. Search terms used were "sharing economy" and its German equivalent "share economy". If the scope of the research results were to broad, the terms "AND def*", "AND

frame*", "AND categor*" and "AND business model" were separately added. The research was conducted with EBSCO Discovery Index, which integrates a large amount of publishers such as Elsevier, Wiley, Springer, Taylor & Francis and SAGE, as well as partner databases like Baker & Taylor, NewsBank, Readex, Alexander Street Press, ABC-CLIO, JSTOR, LexisNexis and Web of Science. In total, some hundred million articles are available in the database, including highly relevant journals like Journal of Cleaner Production, Technological Forecasting & Social Change, Journal of Consumer Research, Journal of Business Research, Environmental Innovation and Societal Transitions, International Journal of Production Research and Ecological Economics.

After checking the titles, abstracts were read to ensure the relevance of the article. Articles were marked as relevant if they discussed sharing economy business models, sharing economy definitions or the classification of sharing activities. Case studies were sorted out. If articles used or referenced synonyms for sharing economy, these were included as search terms. Via this process "collaborative consumption", "collaborative economy", "access-based consumption", "gig-economy", "on-demand economy", "product-service systems", "PSS", "p2p markets", "p2p sharing", "peer-to-peer sharing", "peer economy", "peer-to-peer markets", "platform economy", "access economy", "crowdsourced economy", "mesh economy", "rental economy", "DIY economy", "do it yourself economy", "crowd based capitalism", "app economy", "commons based peer production", "commercial sharing system", "piecemeal labor" and "online volunteering" were included and, if necessary, further filtered through the addition of "AND def*", "AND frame*", "AND categor*" and "AND business model".

Initially, 72 academic articles and reviews were considered relevant. The resulting set of articles was expanded via cross-reference techniques, ensuring oft-cited articles and background information were included. An additional 59 papers were read. Taken together, 131 articles were comprised in the review.

3. Literature Review

Starting with the value proposition in sharing economy business models, we discuss the resolving boundaries between product and service, as well as ownership and access. This is followed by a discussion about value creation and delivery in sharing economy business models, where the lines between insourcing or outsourcing, enable or employ decisions, as well as weak or tight social ties dominating a community become increasingly indefinite (Constantiou et al. 2017). Subsequently, we turn to the value capture of sharing economy business models and take a closer look at the role of profit and monetary compensation schemes, which become increasingly complex with the new possibilities of the net (Rappa 2010).

3.1 Value propositions in the Sharing Economy

A common distinguishing characteristic of the value propositions of sharing economy businesses is access rather than ownership of goods (Bardhi and Eckhardt 2012, 2017; Frenken and Schor 2017; Haase and Pick 2016). From an economic perspective, property is described by differentiation of property rights: *Ius usus* (the right to use a resource), *Ius abusus* (the right to change the form and matter of a resource), *Ius fructus* (the right to acquire the yield of resource usage) and *Ius successionis* (the right to transfer the resource and its rights). Access is based on the transfer of the first three, whereas ownership is marked by the transfer of the last one (Haase and Pick 2016). Accordingly, transactions are divided into transfer ownership of resources and rights, and transfer ownership of rights but not resources (Haase and Kleinaltenkamp 2011).

For authors with an anthropological background this distinction is simplistic, because “psychological ownership” as well as taking possession of a good can trigger similar behaviors as with legal ownership (Belk 2010; Watkins et al. 2016). Personal identification with an item leads to an extension of the self, regardless of whether we legally own it (Belk 2014a). Perceived ownership is established through practices like touching (Peck and Shu 2009), cleaning (McCracken 1986) and personalizing (Belk et al. 1989) and leading to singularization over time as an object's history becomes interwoven with the user (Kopytoff

1986; Watkins et al. 2016). Short-term access to an object (hours, days) leads to a “liquid” object-consumer relationship, which can be described as ephemeral, access-based and dematerialized (Bardhi and Eckhardt 2017). In contrast, long-term access situations (years) leads consumers to develop a perceived sense of ownership (e.g. car leasing) (Bardhi and Eckhardt 2012; Chen 2009) or joint ownership, even if objects belong to family members (e.g. family car, shared flat) or the public (e.g. park bench) (Belk 2007, 2010). These longer object-consumer relationships tend to have a “solid” character, described as enduring legal ownership or possession-based and tangible (Bardhi and Eckhardt 2017).

The accessibility of tangible objects is closely connected to the ecological promise to market underutilized assets (Acquier et al. 2017; Finck and Ranchordás 2016; Muñoz and Cohen 2017). Shareable objects are characterized as indivisible and “mid-grained” (Benkler 2004) – characteristics that lead to a preventable underutilization – either because the owner does not consume the product all the time (Frenken and Schor 2017) or other consumers could use (parts of) the object at the same time (Frenken 2017). The environmental promise of reducing grey energy and material throughput by better utilizing goods connects well to circular economy literature (Frenken 2017; Ghisellini et al. 2016) and leads to the introduction of the term sequential sharing, which includes ownership-based consumption models that foster reusing products and reducing waste to maximize the use of a product's lifespan (Heinrichs 2014; Matzler et al. 2016; Winterhalter et al. 2015).

A materialistic view (Frenken 2017), which was taken up to this point, is not sufficient to review the discussion on value proposition of the sharing economy. Often, value propositions built on intangible objects are counted into the sharing economy (Andersson et al. 2013; Bardhi and Eckhardt 2012, 2017; Watkins et al. 2016). Scholars have differing ideas of what intangibility means exactly. For Belk 2010, sharing intangibles means sharing ideas, values and time, whereas simple coincidences like sharing a common language, birthplace or set of experiences are excluded. For others, the dematerialization of consumption manifests itself in the immateriality of digital products, such as digital consumption (Belk 2013), valuable

information about scarce resources (Winterhalter et al. 2015), intangibility of services (Laroche et al. 2004), consumption practices (Magaudda 2011) and consumption experiences (van Boven 2005). Even though the understanding of sharing intangibles remains debated, a non-materialistic view criticizes the understanding of access rather than ownership because an intangible object cannot be transferred and owned exclusively (Ertz et al. 2016).

The dematerialization of tangible products, as well as the ownership or access discussion, is present in the product-service system (PSS) literature stream, with a slightly different focus. PSS deals with business models changing their value propositions from selling ownership-based tangible products to offering intangible services (Catulli et al. 2017; Baines et al. 2007). The PSS literature derives from the needs of traditional manufacturers recognizing that services in combination with products could provide higher profits (Annarelli et al. 2016). Thereby a marketable mixture of products and services capable of fulfilling user needs should be offered – in other words, a marketable value proposition should be found (Mont 2002).

Adapted to the outlined discussions on access rather than ownership, and tangible and intangible objects, Tukker 2004's classification of PSS business models provides a major dimension for categorization of value propositions of sharing economy businesses. **Product-oriented** (PO) business models are geared towards sales of products, while some product-related services are added (for example a maintenance contract, a financing scheme, a take-back agreement or advisory services). The customer assumes ownership of a tangible object, with only minor intangible service agreements (Tukker 2004; van Ostaeyen et al. 2013). In contrast to Tukker 2004, consumption patterns dominated by long-term object use and taking possession of an object where *de jure* ownership is close to irrelevant for the consumer, are also included.

In **use-oriented** (UO) business models, the product is owned by the provider, who is selling the use of the product or parts of its functionality to customers. The product/service mix is

shifted to the functionality of or access to the product. Services fulfilled by the provider ensure the functionality, maintenance, repair and control of the tangible object, and additionally organize the timespan various consumers are allowed to use the whole or part of the product (Tukker 2004). Even though services are playing an important role, the utility of the use of the product is still extracted by the consumer, offering the consumer usage rights of the tangible product (Mont 2002; van Ostaeyen et al. 2013).

In **result-oriented** (RO) business models, the provider is selling a result or competence without including a pre-determined product in the contract nor an exact way to deliver the result. Providers offer a mix of services and maintain the ownership of the used product to fulfill the agreed result (Tukker 2004). Unlike the UO models, the utility is extracted by the provider for the consumer, delivering functional results to the consumer (Mont 2002; van Ostaeyen et al. 2013).

There is a continuum here, with PO on the one side and RO on the other side. Going from PO to RO value propositions the reliance on the product as a core component is decreasing, whereas services become more important, as well as the potential of environmental improvement (Tukker 2015). As a result, value propositions as well as customer wishes get more and more abstract and therefore are more difficult to translate into concrete performance indicators. This makes it more difficult for providers to determine what they have to supply, and for consumers to know whether they got what they asked for (Tukker 2004).

3.2 Value creations and deliveries in the Sharing Economy

Scholars describe the value creation and delivery of sharing economy business models by defining what kind of actors are related to each other in creating (supply side) and receiving (demand side) value propositions. Authors differentiate between peers (or consumers), businesses and government actors, who can take demand and/or supply sides in any combination (Ertz et al. 2017; Plewnia and Guenther 2018). Most attention is given to community driven markets, which are defined by peer-to-peer (p2p) relationships on demand

and supply sides (Andersson et al. 2013; Frenken and Schor 2017; Rivera et al. 2017). The concepts of sharing, peers and community have been intertwined since early enthusiasts framed the sharing economy, as a wide network of person-to-person relationships that form transparent, decentralized communities of familiar strangers able to create marketplaces without middlemen, supported by a trust-building environment and decentralized conflict management tools (Botsman and Rogers 2010; Gansky 2010).

Scholars from an anthropological perspective attack the idea of loose community, built on a vast network of equals in a society of strangers. They approach the phenomenon by looking backward in the early history of mankind and describe sharing as an old practice (e.g. food sharing, sharing pleasures) that always existed and still exists in most parts of the world (Bala and Schuldzinski 2016; Belk 2007, 2010; Eckhardt and Bardhi 2016; Lamberton 2016; Martin 2016). Sharing is understood as a third distribution mechanism, next to market exchange and gift giving, that supports social bonding amongst participants and is defined by non-reciprocal, pro-social and altruistic characteristics (Belk 2007, 2010, 2014c; Benkler 2004). Pro-social is understood as socially interested in others, guided by an altruistic mindset that not only cares about one's own utility but takes into account the utility of others (Arnould and Rose 2016; Benkler 2004; Frey and Meier 2002). Whereas the characteristic of non-reciprocal behaviors is only present if attendees are not calculating a non-monetary or monetary debt (Belk 2007, 2010, 2014b). Sharing is thus seen as a communal act that creates feelings of solidarity and bonding with kin and relatively close community members (Belk 2010, 2014b) guided by face-to-face interactions (Huber 2017). Consequently sharing economy is seen as a misnomer (Hira and Reilly 2017), as for most business models discussed as sharing these characteristics are not fulfilled. Hence, practices built on access without creating social bonds between attendees and lack a sense of community are named “pseudo-sharing” (Belk 2014b).

Another string of literature is less restrictive in its understanding of community and can be described as technology optimistic. Modern sharing via the Internet is seen as a different

practice than traditional offline sharing because, for the first time in history, sharing is possible with trusted strangers, supported by reputation systems (Frenken 2017; Parente et al. 2018; Schor and Fitzmaurice 2015). The new life form — *homo collaborans* — is thriving, described as a networked individualist (Heinrichs 2013) who supplements tight connections with “on-demand” connections, understanding that collectivism and individualism are deeply connected to each other. Besides using the network to fulfill consumer wishes, *homo collaborans* is searching for connections with other collaborators (Stampfl 2015). This view refers to the community building element as initiatives that coordinate through non-contractual, non-hierarchical or non-monetized forms of interaction with the mission to foster social bonding and support community projects (Acquier et al. 2017). This understanding of sharing as a non-reciprocal and altruistic distribution mechanism is criticized as suffering from platonic idealism of the perfect gift because mutuality is expected in future acts by the receiving party (Arnould and Rose 2016). Consequently, non-reciprocal and tight social bonding are not descriptive for sharing economy practices. Affective relationships based on joint experiences and interests, as well as equality between participants without monetary interactions, are sufficient to describe sharing economy schemes (Acquier et al. 2017; Martin 2016).

These ideas of equality between participants and shared similarities or interests are visible in the naming of participants as peers (Acquier et al. 2017; Constantiou et al. 2017; Frenken and Schor 2017). Peers are typically described as *prosumers* (Ertz et al. 2016; Scaraboto 2015), alternating in their role as consumers or producers of goods and services (Ritzer and Jurgenson 2010), co-creating the value proposition (Oliveira and Cortimiglia 2017; Prahalad and Ramaswamy 2004). Occurrences can be observed in supplier-consumer relationships, like in car-sharing schemes where the consumer picks up, delivers and cleans the car, fills it up with gas and reports damage, almost acting as an employee (Bardhi and Eckhardt 2012). In platform business models the peer is responsible for large parts of the value creation, acting as a micro-entrepreneur in suppling goods and services to the platform's customers (Eckhardt and Bardhi 2016; Frenken 2017). As a result, the difference between types of

actors becomes blurred and often ends in a situation where an intermediary is connecting (micro-) businesses and casual providers with customers in a joint marketplace (Kumar et al. 2018; Perren and Kozinets 2018; Stampfl 2016).

This situation leads to judicial struggles if peers are actually outsourced workers (e.g. Uber) or if privately rented rooms are professional illegal hotels (e.g. Airbnb) (Denning 2014; Loske 2015; Scholz 2016; Schor and Attwood-Charles 2017). From a business model perspective these conflicts are described as entrepreneurial decisions to enable or employ (from a consumer perspective, empower or delegate) professionals or independent contractors that create and deliver the value proposition (Ertz et al. 2016; Hagiu and Wright 2015).

Enable (empower) business models are built on triadic or polyadic relationships (rather than dyadic as the wording p2p suggests) between provider, intermediary and customer and facilitate contractual relationships between buyers and providers to which the focal company is not a party. Multi-sided market literature describes enable business models in contrast to dyadic business models of typical resellers, classical manufacturers, rental and service companies (Benoit et al. 2017; Hagiu and Wright 2015; Kumar et al. 2018; Rochet and Tirole 2003). Multi-sided markets are governed by self-reinforcing network effects on both sides of the triadic relationship, leading to strong first-mover advantages and market concentration effects (Parente et al. 2018). Intermediaries hence have a strong incentive to be active in community building and management (Constantiou et al. 2017). Multi-sided markets are able to offer an almost unlimited variety of product/service bundles tailored to customers' specific needs. The intermediary acts as a broker by overcoming informational or geographical obstacles between parties— matching activities, rating systems, micro-insurances, standardizing and controlling aspects of interaction (e.g. prizing, service quality), as well as mediating payment transactions and conflicts (Constantiou et al. 2017; Finck and Ranchordás 2016)—thereby significantly reducing transaction costs (Parente et al. 2018; Stampfl 2016). Although control over the value creation process is decentralized amongst peers, the power of evaluative infrastructures continues to lie with the intermediary, who sets

the rules of participation (Kornberger et al. 2017). The level of control over the participation asserted by the intermediary varies. Control is tight when the intermediary specifies, monitors and standardizes aspects used to minimize transaction costs (e.g. prices, quality, certificates). The control is loose when the intermediary only formulates guiding principles (Constantiou et al. 2017).

In **employ** (delegate) business models, no intermediary is active between provider and customer. In contrast to the asset-light, enable business models, dyadic business models are mainly focused on owning unique and difficult-to-imitate assets, marketing them according to specific target preferences, thereby offering a limited scope of standardized products and services. Because dyadic business models are mostly asset-heavy, expansion costs to other markets are comparatively high (Davies et al. 2017; Ferrell et al. 2017). Dyadic business models are not dependent on indirect and direct network effects to create and market their value proposition. Quality and prices of the product-service bundle are controlled directly through strict standardization of work processes, outputs, skill and norms, as well as supervision and mutual adjustment (Mintzberg 1989, p. 101). Control is centralized in the focal company, whether or not they actually “make” or “buy” (parts of) the value proposition (Hagiu and Wright 2015). Although some employ-companies do put their customers to work, thereby giving up some control over the value creation and delivery process, described by Ritzer and Jurgenson 2010 as *McDonaldization*.

In sum, organizational boundaries remain rigid in dyadic business models, strictly demarcating the internal workings of an organization from the external environment, thereby centralizing control over the value creation and delivery process. In polyadic business models, boundaries are fluid and coordination mechanisms are applied on casually engaged private individuals or businesses that create and deliver the promised value proposition to the customer through decentralized control (Constantiou et al. 2017; Parente et al. 2018).

3.3 Value captures in the Sharing Economy

Every organization that creates and delivers value must at least generate enough revenue to cover its expenses. This requirement must be met even if 'business' is not used as a descriptor (Osterwalder and Pigneur 2010). However, in sharing literature, organizations are often divided into for-profit or non-profit (Ghisellini et al. 2016; Mair and Reischauer 2017; Park and Armstrong 2017); alternatively, commercial or non-commercial (Belk 2014c; Haase and Pick 2016), monetary or non-monetary (Acquier et al. 2017; Martin 2016). A for-profit motive is understood as market-mediated business models that utilize pricing mechanisms and nurture revenue streams for its collaborators via monetary incentives. In contrast, a non-profit motive is discussed as community-driven business models fueled by ecological or social missions, sometimes guided by political consumerism (Bardhi and Eckhardt 2012; Eckhardt and Bardhi 2016; Laurell and Sandström 2017). The profit motive is seen to harm social cohesion and hamper pro-social behavior. The apprehension is that money incentives on idle products and services will raise opportunity cost arises for asset owners. This could decrease the viability of non-monetized sharing within networks as people prefer owning money instead of sharing their assets for free with peers. Commercializing sharing could lead to an expansion of capitalist markets into areas it could not reach before (Belk 2014b; Martin 2016).

Surprisingly, while most scholars claim to take a business model position, revenue streams of sharing economy businesses are not focused, rather, the relationship amongst peers is given attention (Plewnia and Guenther 2018; Schnur and Günter 2014). In sharing literature the understanding of value capture of sharing economy businesses remain dim, even though business model literature is quite diverse regarding the role of revenue streams. Revenue streams and their role in business models were particularly discussed in the mid-1990s (Richardson 2008), producing lists of different revenue models (Mahadevan 2000; Rappa 2010; Timmers 1998). These can be sorted with the help of two characteristics of revenue streams — an idea presented in a discussion about financial sources of media businesses, which we adapt slightly and amplify for our purposes here (Knyphausen-Aufseß et al. 2011; Wirtz 2010).

Firstly, revenue streams from direct or indirect sources. In direct revenue models the consumer is subsidizing himself and paying the cost of the organization. An example are bundled mobile phones with service contracts that are sold to consumers who are paying for their consumption to the service operator. In indirect revenue models a third group is subsidizing the consumer. A classic offline example is a free-of-charge newspaper that is carried by advertisement (Zerdick et al. 2001, pp. 24–30). By definition indirect revenue models are multi-sided markets because at least triadic relationships are needed to keep the organization running (Knyphausen-Aufseß et al. 2011). Examples for such revenue streams include commissions connecting consumers and providers or premium payers paying platform fees for the majority of users needed to create content.

Secondly, revenue streams can be utility bound or unbound. Characteristics of a utility bound transaction are one-time monetary compensations, often connected to a period of time or quantity of usage (e.g. fee per operational hour). Examples are telephone fees for a distinct timespan of usage per call, data volumes or billing measured in short time units, as well as one-time transactions for a consumption good. Revenue is utility unbound if the created value is not in direct relation to the economic benefit and has a tendency to be paid periodical. An example is a flat fee charged at the end of a month, no matter how much utility was extracted by its customer. The fixed fee is paid for the availability of the product or service (Knyphausen-Aufseß et al. 2011; van Ostaeyen et al. 2013; Zerdick et al. 2001, pp. 24–30). Similarly, donors or public funding finance an organization without expecting direct economic benefits from their transaction (Bauwens and Pantazis 2018; Osterwalder and Pigneur 2010), even though they expect reports of progression – filled with arguments supporting their financial investments. Revenue streams in the value capture can be classified along a spectrum from transactions bounded to utility to transaction unbounded to utility (Knyphausen-Aufseß et al. 2011; Wirtz 2010, pp. 215–217): **Bounded** to utility are direct revenue sources encompassing one-time transaction revenues or usage fees connected to parameters of use, whereas indirect sources of revenues relate to commissions, which are paid only if a transaction of utility took place. **Unbounded** to utility

are direct revenue sources like set-up or subscription fees, whereas advertisements (e.g. banners, affiliates, listings), data mining, sponsorship, donations, premium user arrangements and public or private funds account for indirect sources of revenues. Most business models are built on multiple revenue streams. For example, business models that take commissions and place advertisements as an additional income source combine utility-bound and utility-unbound transactions (Knyphausen-Aufseß et al. 2011). In multi-sided markets some business models treat providers and consumers as different revenue sources, whose surplus are skimmed separately with different pricing strategies. However, in most cases the more price sensitive side of the market is subsidized by the other (Parker and van Alstyne 2005), so that the intermediary is generating the majority of its income with the side which has a lower elasticity of demand and is profiting stronger by the indirect network effects (Haucap et al. 2012, p. 79).Even if multiple revenue streams are present in a business model, an entrepreneur needs to optimize revenue sources by deciding the combination and emphasis that is put on a revenue source (Wirtz 2010, p. 216). The main revenue source is easily identifiable on webpages, offerings and in business reports (van Ostaeyen et al. 2013).

4. Comprehensive Conceptual Framework of the Sharing Economy

Combining the decisive dimensions of value propositions (PO, UO, RO), value creations and deliveries (employ, enable) and value captures (bound, unbound) encompasses the variety of business models in a comprehensive framework of the sharing economy. Based on value creation and delivery, and value capture, a four-field matrix is derived, distinguishing four ideal-type market segments of the sharing economy: Singular Transaction Models, Subscription-Based Models, Commission-Based Platforms and Unlimited Platforms (Fig.2).

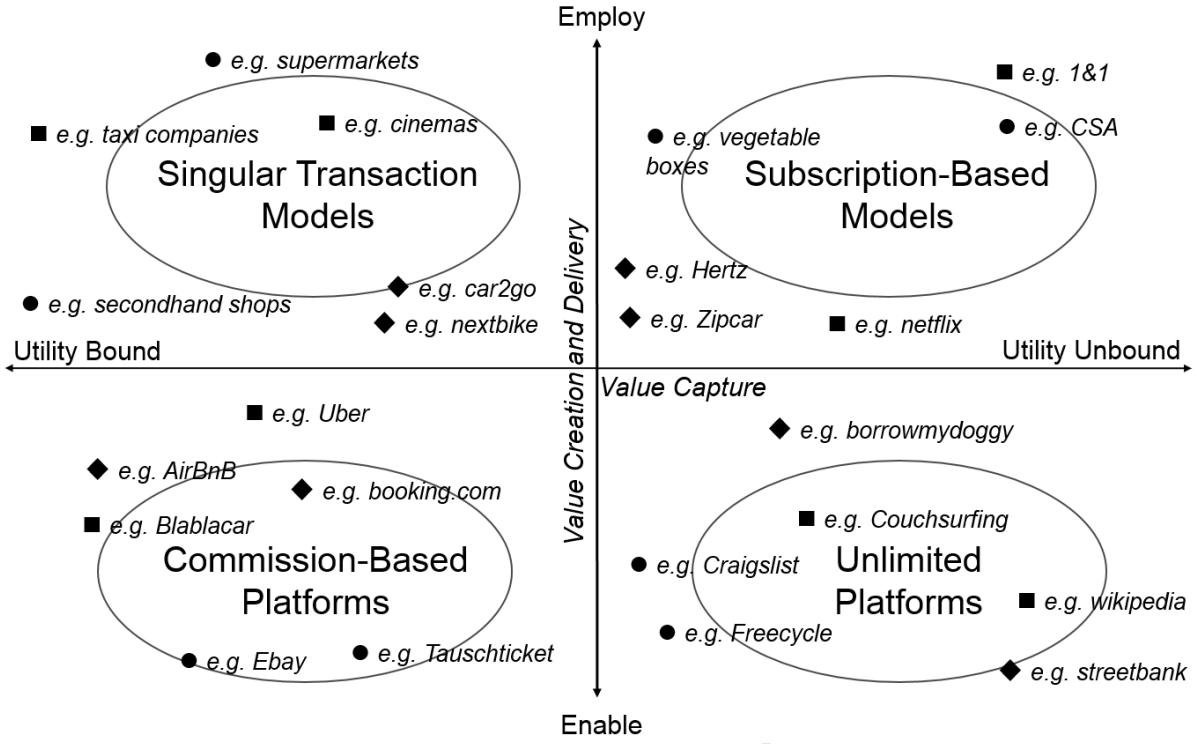


Fig. 2 Market segments in the Sharing Economy based on Value Creation and Delivery (y-axis) and Value Capture (x-axis), ● = product-oriented / ◆ = use-oriented/ ■ = result-oriented Value Proposition (own depiction).

Singular Transaction Models are dominated by dyadic relationships between supply and demand, with a utility-bound revenue stream. These models employ employees (insourcing) or instruct other companies (outsourcing) to create and deliver the value. The value proposition is standardized and limited in its variety, prices are normed and quality is controlled (Hagiu and Wright 2015; Mintzberg 1989, p. 101). The consumers delegate the creation of value to the organizations and perform conventional consumption exclusively, providing only minimal input (e.g. reporting damages, minimal cleaning) to the value proposition (Ertz et al. 2016; Humphreys and Grayson 2008). Depending on the orientation of the value proposition, a need is satisfied by transferring a good via a one-time transaction (e.g. secondhand shops, supermarkets), transferring an exact amount of needed utility (e.g. nextbike, car2go) or purchasing a service via a one-time transaction (e.g. cinema) or user fee with parameters of use (e.g. taxi company). Most business models that fall under singular transactions models are not counted in the sharing economy; they are seen as the "normal market," from which the sharing economy is confined. Exceptions are "Singular UO

Transactions" and business models that redistribute material objects, acknowledged by authors who center around the idle capacity argument (Heinrichs 2013; Andersson et al. 2013). Aside from the fact the object is handed down, the business model is quite similar to those of retailers like supermarkets. Singular Transaction Markets have a high need of binding consumers via brands, prices, advertisement, logos, trademarks and other communication cues to convince them to purchase in the future (Ertz et al. 2016). Another tactic is to design clever lock-ins, like in a "bait-and-hook model", where a cheap base product only functions with a relatively expensive complementary product (e.g. coffee machines with capsules or pads) (Osterwalder and Pigneur 2010).

Subscription-Based Models are dominated by dyadic relationships between supply and demand with utility-unbound revenue streams. Similar to singular transactions models, Subscription-Based Models are designed under the employ condition and execute a high level of control over creation processes of the value proposition. Depending on the value proposition orientation, contracts are provided that ensure a certain amount of product (e.g. vegetable subscription boxes, CSA), unlimited use of a defined product (e.g. zipcar, Hertz) or an unlimited amount of a service by one supplier (e.g. Netflix, 1&1) in a given timespan. UO Subscription-Based Models are counted in sharing economy business models by authors that center on the idle capacity argument (Andersson et al. 2013; Heinrichs 2013). PO and RO Subscription-Based Models are seldom counted in sharing economy activities. Exceptions can be found if a material object is digitalized or if the business model promises a community-building element (Belk 2007; Plewnia and Guenther 2018; Schor et al. 2016). Subscription represents a commitment mechanism by the consumer, who, after forging this bond, needs to regain his investment by using the value proposition frequently (Grewal et al. 2010). Subscribers seldom change their providers and are baited into contracts with a notice period through preferential prices or free usage in the initial period. Sometimes limited versions of the product are offered for free or for a low price, with the aim to have the user sign a contract later. These business models have a tendency to lock-in their customers via contractual arrangements or high switching costs (Knyphausen-Aufseß et al. 2011).

Commission-Based Platforms are dominated by (at least) triadic relationships amongst providers, intermediaries and consumers with a utility-bound revenue stream. These business models enable their customers to switch between provider and consumer roles by creating and delivering the value proposition. Only a few employees work for the intermediary and the value creation and delivery is externalized (Hagiu and Wright 2015; Kornberger et al. 2017). From a consumer perspective, consumers are empowered to collaborate with each other and to design the collaboration terms by negotiating the terms and conditions of the content, creation, distribution and consumption of the value proposition (Ertz et al. 2016). Depending on the orientation of the value proposition, consumers purchase commodities (Tauschticket, ebay), access commodities in a defined timespan (booking.com, Airbnb) or buy services (uber, blablacar) from occasional and professional providers found via an intermediary. The intermediary mainly focuses on nurturing a community feeling and reducing exchange insecurity by incorporating rating systems, micro-assurances and standardizations of payment and delivery into the platform. The platform mainly takes commissions for successful matching and executing trade (Constantiou et al. 2017; Finck and Ranchordás 2016). The value that providers and customers could potentially extract via the matching abilities of the platform is influenced by strong indirect network effects. In other words, the potential value of consumers depends on the size of the provider's side and vice versa (Armstrong 2006). Thus the platform has to solve a typical “chicken and egg” problem (Caillaud and Jullien 2003), where one side has to be attracted without the ability of the platform to demonstrate that the other side is using the platform. The “chicken and egg” problem is solved by subsidizing the side of the market that offers higher indirect network effects and is more price sensitive towards the other side of the market. Often the price-sensitive side is allowed to use the services of the intermediary without additional charges (Haucap et al. 2012). As a result, strong network effects prevent multi-homing and support the creation of monopolies. If a platform is launched successfully and manages to outgrow its opponents, it is especially costly for regular providers and customers

to switch to other platforms because they would lose rating histories and are bound by network externalities (Breidbach and Brodie 2017; Rochet and Tirole 2003).

Unlimited Platforms are dominated by (at least) triadic relationships between providers, intermediary and consumers with a utility-unbound revenue stream. Similar to Commission-Based Platforms, Unlimited Platforms enable their customers instead of hiring employees (insourcing) or other companies (outsourcing) (Hagiu and Wright 2015; Kornberger et al. 2017). Depending on the orientation of the value proposition, consumers acquire listed products from several sources (craigslist, freecycle), access unlimited commodity use offered by a third group (streetbank, borrowmydoggy) or access unlimited services offered by multiple suppliers (couchsurfing, wikipedia). Platforms thereby capture revenue streams from indirect sources. All revenue sources have in common that they require a large mass of non-paying regular users – creating content, clicks or data in exchange for the mediation by the intermediary. The intermediary organizes third parties to subsidize regular users. Common third parties are advertisers, buyers of user data, donators, public or private funding sources or premium users. Even though revenue is flowing primarily from third parties, the platform needs to keep non-paying users happy because without their contribution, the platform would not have a valuable value proposition to offer that is sellable to third parties (Enders et al. 2008; Wirtz 2010, p. 217). In contrast, in Subscription-Based Models the utility of subscribers is independent of free users – there is mostly only limited contact amongst different user groups. Like Commission-Based Platforms, Unlimited Platforms are governed by strong network effects on both sides of the market (Rochet and Tirole 2003). Intermediaries are actively engaged in community building and try to outgrow their opponents. Depending on the indirect source, the importance of, and attention required for, the ecological or social mission statements and legitimation pressures vary (Acquier et al. 2017).

5. Discussion

Examples of sharing economy business models that fit into broad definitions of sharing can be found in most business branches and in all development states. They are start-ups and

unicorns (e.g. Uber, Airbnb, couchsurfing), celebrated as the innovations of tomorrow, or they are established companies (e.g. Hertz, the cinema), still following their basic business model logic. Others are new sharing branches (e.g. car2go), opened by multinationals to exploit internal knowledge spillover effects (Simard and West 2006). Through the breakthrough in digital technologies, as well as the wide spread of smartphones (Schor and Fitzmaurice 2015), costs are relatively low to build up infrastructure that enables customers to contact providers or to expand the employ business model onto the Internet.

Unsurprisingly, a high start-up activity in the sharing economy can be observed, leading to the high attention of its business models (Cheng 2016; Dreyer et al. 2017; Eckhardt and Bardhi 2016). Commission-Based Platforms are in the center of attention and are regularly named by consumers as sharing platforms (Laurell and Sandström 2017). The criticism here is that these platforms are only masquerading as sharing—supporting social cohesion or environmental issues—when in fact this promise of community building boils down to advertisement (Constantiou et al. 2017; Belk 2014b).

In comparison, Unlimited Platforms are often seen as virtue-driven businesses of the sharing economy, especially if they choose a refinancing mechanism built on community support and donations and try to construct non-monetary relationships amongst platform users (Acquier et al. 2017; Belk 2014c; Haase and Pick 2016). Nevertheless, the critical mass needed to skim indirect revenue sources is a strong barrier (Oliveira and Cortimiglia 2017), leading to situations where platforms try to “monetize” the community after being a dominant player in the market (Constantiou et al. 2017). The need of a growth strategy leads to risks like loss of community feeling and declined ability to forge close connections between users (Frenken and Schor 2017; Parigi and State 2014) or user uprising as the intermediary tries to monetize, as happened with Couchsurfing and carpooling.com (Johnson 2011; Strathmann 2016).

Singular Transaction and Subscription-Based Models are market segments that profit from technological breakthroughs in that they are able to create new marketing and distribution

channels to their customers. Start-up activity seems to be lower than in Unlimited and Commission-Based Platform market segments. The main reason is the comparably high investment cost to develop an asset heavy value proposition, which is difficult to imitate and tailored to specific consumer groups, whereas in enabling business models, assets are mainly owned by prosumers. Cost of expansion into neighboring markets are high and network effects are limited (Davies et al. 2017; Ferrell et al. 2017), leading to niches on local markets and less concentration effects than enabling business models.

6. Implications for theory and practice on sustainability

The framework categorizes sharing economy business models and supports scientists, entrepreneurs and policy makers in evaluating business models according to their theoretical impacts, detached from the ongoing normative sharing or non-sharing debate.

Entrepreneurs can use the ideal-type market segments in market assessment to find gaps in untapped opportunities in a sector. Changes in the business model landscape occurring in the digitalization process of a sector can be tracked down and addressed beforehand – by overcoming cognitive and structural barriers of business model innovation (Massa and Tucci 2014). The business model conceptualization offers a reference language that enables dialogue, common understanding and collective sense making (Amit and Zott 2012). Additionally, offering simplified representations of business models allows graphical representations that simplify cognition, offering the possibility to virtually experiment (Osterwalder and Pigneur 2010). Lastly, they allow entrepreneurs to articulate the value of their venture and to raise support from external audiences to gain legitimacy, additional resources and to foster action (Massa and Tucci 2014). Paired with an abstract general narrative, templates can help to transfer experiences between sectors (Baden-Fuller and Winter 2007) and to utilize first-mover advantages and concentration effects.

Scientists may use the proposed categorization in a market analysis of a sector to track business model innovation and the level of innovation. Radical business model innovations can be tracked if business models switch categories, compared to incremental innovations

that do not lead to major changes in the practiced business model. Secondly, the framework helps to differentiate between innovations in value proposition, value creation and delivery, and value capture. Furthermore, the categorization of sharing economy business models in a market sector could be used to compare market situations by setting different reference units in time, using different perspectives (e.g. company internal perspective, consumer perspective or competitor perspective, see Schallmo 2014) and focus on different business model innovation entrances (start-up, transformation, diversification and acquisition, see Geissdoerfer et al. 2018). Beside radical business model innovations have an innate ecological sustainability potential (Boons et al. 2013), innovations in the value proposition are of special interest, as they often implicate the necessity of a redesign in value creation and value capture of an established business model (Schaltegger et al. 2012).

Closely connected to the question of innovation for business models, ecological and social sustainability performances can be evaluated. Each business model template has different theoretical ecological and social consequences and business model innovation opportunities, whose value is currently uncaptured (Yang et al. 2017). For example, dematerialization efforts in innovating the value proposition by mixing in more intangible services have the potential to coin ecological benefits. These benefits are described as breaking links between profit and production volume, reducing resource consumption, giving new opportunities and motivations for producers to deal with through-life and end-of-life issues of a product, fostering the reuse of materials and enhancing efficiency in product use, longevity and durability (Bocken et al. 2014). Further investigation is needed to evaluate other theoretical ecological and social sustainability implications in the value proposition, value creation and delivery, and value capture of the business model, as well as how different settings in the elements lead to different coaction in practice. Thus, pitfalls of ecological advantages of sharing need to be incorporated into the equation. Typical pitfalls connected to the sharing economy and its ecological sustainability impacts, are different degrees of rebound effects, moral hazards, Jevons Paradox, paradox of openness and distinction, scaling problematics, as well as, political and market power of intermediaries, leading to inefficient optimization

efforts or negative externalities (Acquier et al. 2017; Frenken and Schor 2017; Reim et al. 2015). In addition, business models have to be robust and scalable, if ventures should have a systemic impact and a transition potential (Täuscher and Abdelkafi 2018).Theoretically guided research results on ecological sustainability impacts could be further enhanced by case studies measuring systemic impacts in practice and contrasting them against widespread theoretical assumptions.

Policy makers profit from the framework because it is critical towards the positive peculation of the word sharing (Theurl et al. 2015) and centers around the debate on the basics of business model theory. Policy makers will be able to identify business models that are not discussed as sharing economy but have similarities in their structure. As a result, the framework fosters critical reflection and could support city councils to track sharing economy businesses that use illegality as a method (Scholz 2016), clocked as innovative and supportive, especially for the socially deprived (Coldwell 2014). Through the ability to unmask rent-seeking activities (Tollison 2012), better informed policies could loosen their detachment to the normative sharing discussion and turn to the economic, social and ecological impacts of the observed business models.

As always with conceptualizations based on literature reviews, there are limitations to the present study that should be taken into account. Firstly, the taken approach is reflective, based on historical examples of discussed sharing economy boundaries and current understandings of business model literature. It cannot predict entirely new and radical business models that might be established in the future. As such, the framework should be revisited from time to time to ensure its practicality and to follow the further development of the phenomenon sharing economy. Secondly, as the sharing economy literature is still a relatively new research area and is developing at vast speeds, there is no assurance that all synonyms of sharing were included via the iterative research process. It is possible that unknown similar descriptions were missed that are not connected to the initial key words “sharing economy” and “share economy,” which were the vantage point of this study.

7. Conclusion

The sharing economy literature is vast but fragmented in several research traditions, currently entangled in a normative debate about the true nature of sharing. This research proposes a comprehensive conceptual framework for the sharing economy based on a literature analysis of sharing economy business models, definitions or classifications of sharing activities. The conceptual framework captures the essence of sharing economy business models through three continuums. First, we differentiate business models according to the degree of service included in their value proposition (Tukker 2004), leading to the product oriented, use oriented and result oriented classification. Second, we differentiate business models by the level of control executed over the value creation and delivery by the focal company, leading to the decision to employ (high level of control, dyadic relationship) or enable (low level of control, polyadic relationship) (Ertz et al. 2016; Hagiu and Wright 2015). Third, we distinguish business models according to their mixture of revenue streams in their value capture. We use a continuum that varies depending to what extent the extracted use value by the customer is bound to the dominant revenue stream. Four ideal-type market segments provide a comprehensive framework to cover all business models related to the sharing economy (Fig. 2): Singular Transaction Models, Subscription-Based Models, Commission-Based Platforms and Unlimited Platforms. Subsequently we briefly discuss each market segment according to its business model behavior that we extracted from sharing economy, multi-sided market and organization literature.

In addition to these results, the paper defines a research agenda for sharing economy business models and paves the way for a better understanding of business model innovation as well as the degree of innovation in sharing economy market segments. The proposed categorization of sharing economy businesses can further help to classify and build up data about business models. By incorporating pitfalls and chances of theoretical environmental sustainability impacts, the framework will be able to test environmental effectiveness by comparing theoretical assumptions and collected data from business model case studies.

The environmental effectiveness of innovations can thus be evaluated, thereby supporting the information and formulation of policies. Similar efforts could be undertaken with the social facet of sharing, which is influenced by similar problematics. Future research may also look into the power relationships between agents in sharing models, as well as the wider political, economic and social changes that could make sharing business models mainstream.

Acknowledgements

We would like to thank Andrew Bonneau for the critical reflection of naming of the market segments. The Project was carried out under funding by the German Federal Ministry of Education and Research as part of the demography contests „Innovationen für Kommunen und Regionen im demografischen Wandel [Innovations for municipalities and regions in the demographic change]" (InnovaKomm).

References

Acquier, A., Daudigeos, T., Pinkse, J., 2017. Promises and paradoxes of the sharing economy: an organizing framework. Technol. Forecast. Soc. Chang. 125, 1–10. *https://doi.org/10.1016/j.techfore.2017.07.006*.

Amit, R., Zott, C., 2012. Creating value through business model innovation. MIT Sloan Manag. Rev. 53, 41–49.

Andersson, M., Hjalmarsson, A., Avital, M., 2013. Peer-to-peer service sharing platforms: Driving share and share alike on a mass-scale. 34th International Conference on Information Systems. Milan.

Annarelli, A., Battistella, C., Nonino, F., 2016. Product service system: a conceptual framework from a systematic review. J. Clean. Prod. 139, 1011–1032. *https://doi.org/10.1016/j.jclepro.2016.08.061*.

Armstrong, M., 2006. Competition in two-sided markets. Rand J. Econ. 37, 668–691. *https://doi.org/10.1111/j.1756-2171.2006.tb00037.x*.

Arnould, E.J., Rose, A.S., 2016. Mutuality: Critique and substitute for Belk's "sharing". Mark. Theory 16, 75–99. *https://doi.org/10.1177/1470593115572669*.

Baden-Fuller, C., Winter, S.G., 2007. Replicating organizational knowledge: principles or templates? SSRN. *https://doi.org/10.2139/ssrn.1118013*.

Baines, T.S., Lightfoot, H.W., Evans, S., Neely, A., Greenough, R., Peppard, J., Roy, R., Shehab, E., Braganza, A., Tiwari, A., Alcock, J.R., Angus, J.P., Bastl, M., Cousens, A., Irving, P., Johnson, M., Kingston, J., Lockett, H., Martinez, V., Michele, P., Tranfield, D., Walton, I.M., Wilson, H., 2007. State-of-the-art in product-service systems. Proc. Inst. Mech. Eng., Part B: J. Eng. Manuf. 221, 1543–1552. *https://doi.org/10.1243/09544054JEM858*.

Bala, C., Schuldzinski, W., 2016. Prosuming und Sharing – neuer sozialer Konsum. Aspekte kollaborativer Formen von Konsumtion und Produktion. Beitr. Verbraucherforschung 4.

Bardhi, F., Eckhardt, G.M., 2012. Access-based consumption: the case of car sharing. J. Consum. Res. 39, 881–898. *https://doi.org/10.1086/666376*.

Bardhi, F., Eckhardt, G.M., 2017. Liquid consumption. J. Consum. Res. 44, 582–597. *https://doi.org/10.1093/jcr/ucx050*.

Barquet, A.P.B., Oliveira, M.G. de, Amigo, C.R., Cunha, V.P., Rozenfeld, H., 2013. Employing the business model concept to support the adoption of product–service systems (PSS). Ind. Mark. Manag. 42, 693–704. *https://doi.org/10.1016/j.indmarman.2013.05.003*.

Bauwens, M., Pantazis, A., 2018. The ecosystem of commons-based peer production and its transformative dynamics. Sociol. Rev. 66, 302–319. *https://doi.org/10.1177/0038026118758532*.

Belk, R., 2007. Why not share rather than own? Ann. Am. Acad. Pol. Soc. Sci. 611, 126–140. *https://doi.org/10.1177/0002716206298483*.

Belk, R., 2010. Sharing. J. Consum. Res. 36, 715–734. *https://doi.org/10.1086/612649*.

Belk, R., 2014a. Ownership and collecting, in: Nathan, P.E. (Ed.), The Oxford handbook of hoarding and acquiring. Oxford University Press, New York, New York, pp. 33–42.

Belk, R., 2014b. Sharing versus pseudo-sharing in Web 2.0. Anthropologist 18. *https://doi.org/10.1080/09720073.2014.11891518*.

Belk, R., 2014c. You are what you can access: sharing and collaborative consumption online. J. Bus. Res. 67, 1595–1600. *https://doi.org/10.1016/j.jbusres.2013.10.001*.

Belk, R.W., 2013. Extended self in a digital world. J. Consum. Res. 40, 477–500. *https://doi.org/10.1086/671052*.

Belk, R.W., Wallendorf, M., Sherry, J.F., 1989. The sacred and the profane in consumer behavior: theodley on the odeyssey. J. Consum. Res. 16, 1–38. *https://doi.org/10.1086/209191*.

Benkler, Y., 2004. Sharing nicely: On shareable goods and the emergence of sharing as a modality of economic production. Yale Law J. 114. *https://doi.org/10.2307/4135731*.

Benoit, S., Baker, T.L., Bolton, R.N., Gruber, T., Kandampully, J., 2017. A triadic framework for collaborative consumption (CC): motives, activities and resources & capabilities of actors. J. Bus. Res. 79, 219–227. *https://doi.org/10.1016/j.jbusres.2017.05.004*.

Bocken, N.M.P., Short, S.W., Rana, P., Evans, S., 2014. A literature and practice review to develop sustainable business model archetypes. J. Clean. Prod. 65, 42–56. *https://doi.org/10.1016/j.jclepro.2013.11.039*.

Boons, F., Montalvo, C., Quist, J., Wagner, M., 2013. Sustainable innovation, business models and economic performance. An overview. J. Clean. Prod. 45, 1–8. *https://doi.org/10.1016/j.jclepro.2012.08.013*.

Botsman, R., Rogers, R., 2010. What's mine is yours. The rise of collaborative consumption, 1. ed. Harper Business, New York, NY.

Breidbach, C.F., Brodie, R.J., 2017. Engagement platforms in the sharing economy. J. Serv. Theory Practi. 27, 761–777. *https://doi.org/10.1108/JSTP-04-2016-0071*.

Caillaud, B., Jullien, B., 2003. Chicken & egg: competition among intermediation service providers. Rand J. Econ. 34, 309–328. *https://doi.org/10.2307/1593720*.

Catulli, M., Cook, M., Potter, S., 2017. Consuming use orientated product service systems: a consumer culture theory perspective. J. Clean. Prod. 141, 1186–1193. *https://doi.org/10.1016/j.jclepro.2016.09.187*.

Chen, Y., 2009. Possession and access: consumer desires and value perceptions regarding contemporary art collection and exhibit visits. J. Consum. Res. 35, 925–940. *https://doi.org/10.1086/593699*.

Cheng, M., 2016. Sharing economy. A review and agenda for future research. Int. J. Hosp. Manage. 57, 60–70. *https://doi.org/10.1016/j.ijhm.2016.06.003*.

Cherry, C.E., Pidgeon, N.F., 2018. Is sharing the solution? Exploring public acceptability of the sharing economy. J. Clean. Prod. 195, 939–948. *https://doi.org/10.1016/j.jclepro.2018.05.278*.

Chesbrough, H., 2007. Business model innovation: it's not just about technology anymore. Strateg. Leadersh. 35, 12–17. *https://doi.org/10.1108/10878570710833714*.

Coldwell, W., 2014. Airbnb's legal troubles: what are the issues? https://www.theguardian.com/travel/2014/jul/08/airbnb-legal-troubles-what-are-the-issues (accessed 26 July, 2018).

Constantiou, I., Marton, A., Tuunainen, V.K., 2017. Four models of sharing economy platforms. MIS Q. Exec. 16, 231–251.

Davies, A.R., Donald, B., Gray, M., Knox-Hayes, J., 2017. Sharing economies: moving beyond binaries in a digital age. Camb. J. Reg. Econ Soc. 10, 209–230. *https://doi.org/10.1093/cjres/rsx005*.

Demaily, D., Novel, A.-S., 2014. The sharing economy: make it sustainable. IDDRI Study 03/14, Paris, France.

Denning, S., 2014. An economy of access is opening for business: five strategies for success. Strateg. Leadersh. 42, 14–21. *https://doi.org/10.1108/SL-05-2014-0037*.

Doganova, L., Eyquem-Renault, M., 2009. What do business models do? Res. Policy 38, 1559–1570. *https://doi.org/10.1016/j.respol.2009.08.002*.

Dreyer, B., Lüdeke-Freund, F., Hamann, R., Faccer, K., 2017. Upsides and downsides of the sharing economy: collaborative consumption business models' stakeholder value impacts and their relationship to context. Technol. Forecast. Soc. Chang. 125, 87–104. *https://doi.org/10.1016/j.techfore.2017.03.036*.

Eckhardt, G.M., Bardhi, F., 2016. The relationship between access practices and economic systems. J. Assoc. Cons. Res. 1, 210–225. *https://doi.org/10.1086/684684*.

Enders, A., Hungenberg, H., Denker, H.-P., Mauch, S., 2008. The Long Tail of social networking. Revenue models of social networking sites. Eur. Manag. J. 26, 199–211. *https://doi.org/10.1016/j.emj.2008.02.002*.

Ertz, M., Durif, F., Arcand, M., 2016. Collaborative consumption: conceptual snapshot at a buzzword. J. Entrep. Educ. 19, 1–23. *https://doi.org/10.2139/ssrn.2799884*.

Ertz, M., Durif, F., Arcand, M., 2017. An analysis of the origins of collaborative consumption and its implications for marketing. Acad. Mark. Stud. J. 21, 1–17.

Ertz, M., Leblanc-Proulx, S., 2018. Sustainability in the collaborative economy: a bibliometric analysis reveals emerging interest. J. Clean. Prod. 196, 1073–1085. *https://doi.org/10.1016/j.jclepro.2018.06.095*.

Ferrell, O.C., Ferrell, L., Huggins, K., 2017. Seismic shifts in the sharing economy: shaking up marketing channels and supply chains. J. Mark. Channels 24, 3–12. *https://doi.org/10.1080/1046669X.2017.1346973*.

Finck, M., Ranchordás, S., 2016. Sharing and the city. Vand. J. Transnatl. L. 49, 1299–1369.

Frenken, K., 2017. Political economies and environmental futures for the sharing economy. Phil. Trans. R. Soc. A 375. *https://doi.org/10.1098/rsta.2016.0367*.

Frenken, K., Schor, J., 2017. Putting the sharing economy into perspective. Environ. Innov. Soc. Transit. 23, 3–10. *https://doi.org/10.1016/j.eist.2017.01.003*.

Frey, B.S., Meier, S., 2002. Pro-social behavior, reciprocity o bth. CESifo Working Paper 750. http://ssrn.com/abstract_id=303901 (accessed 25 May, 2018).

Gansky, L., 2010. The mesh. Why the future of business is sharing. Portfolio Penguin, New York, NY.

Gassmann, O., Frankenberger, K., 2016. Geschäftsmodelle entwickeln: Von der Kunst zum Handwerk, in: Granig, P., Hartlieb, E., Lingenhel, D. (Eds.), Geschäftsmodellinnovationen. Vom Trend zum Geschäftsmodell. Springer-Gabler, Wiesbaden, pp. 17–34.

Geissdoerfer, M., Vladimirova, D., Evans, S., 2018. Sustainable business model innovation: a review. J. Clean. Prod. 198, 401–416. *https://doi.org/10.1016/j.jclepro.2018.06.240*.

Ghisellini, P., Cialani, C., Ulgiati, S., 2016. A review on circular economy. The expected transition to a balanced interplay of environmental and economic systems. J. Clean. Prod. 114, 11–32. *https://doi.org/10.1016/j.jclepro.2015.09.007*.

Gorenflo, N., 2015. How patform coops can beat death stars like Uber or create a real sharing economy. http://www.shareable.net/blog/how-platform-coops-can-beat-death-stars-like-uber-to-create-a-real-sharing-economy (accessed 2 August, 2016).

Grewal, D., Janakiraman, R., Kalyanam, K., Kannan, P.K., Ratchford, B., Song, R., Tolerico, S., 2010. Strategic online and offline retail picing: a review and research agenda. J. Interact. Mark. 24, 138–154. *https://doi.org/10.1016/j.intmar.2010.02.007*.

Haase, M., Kleinaltenkamp, M., 2011. Property rights design and market process: implications for market theory, marketing theory, and S-D logic. J. Macromarket. 31, 148–159. *https://doi.org/10.1177/0276146710397662*.

Haase, M., Pick, D., 2016. Teilen, Sharing 1 und Sharing 2: Die Sharing Economy im Licht theoretischer Zugänge. Vierteljahresh. Wirtschaft. 85, 13–33. *https://doi.org/10.3790/vjh.85.2.13*.

Habibi, M.R., Davidson, A., Laroche, M., 2017. What managers should know about the sharing economy. Bus. Horiz. 60, 113–121. *https://doi.org/10.1016/j.bushor.2016.09.007*.

Hagiu, A., Wright, J., 2015. Multi-sided platforms. Int. J. Ind. Organ. 43, 162–174. *https://doi.org/10.1016/j.ijindorg.2015.03.003*.

Hamari, J., Sjöklint, M., Ukkonen, A., 2015. The sharing economy: why people participate in collaborative consumption. J. Assoc. Inf. Sci. Technol., 2047-2059. *https://doi.org/10.1002/asi.23552*.

Haucap, J., Heimeshoff, U., Wenzel, T., 2012. Konzentration und Wettbewerb von digitalen Plattformen: Besteht ein Regulierungsbedarf, Positionspapier zur digitalen Wirtschaft 2012. Informations- und Kommunikationstechnologie als Schlüssel für wirtschaftliche Modernisierung und Fortschritt in Deutschland und Nordrhein-Westfalen, pp. 77–88.

Heinrichs, H., 2013. Sharing economy: a potential new pathway to sustainability. GAIA 22, 228–231. *https://doi.org/10.14512/gaia.22.4.5*.

Heinrichs, H., 2014. Sharing Economy: Potenzial für eine nachhaltige Wirtschaft. ifo Schnelldienst 21.

Hira, A., Reilly, K., 2017. The emergence of the sharing economy: implications for development. J. Dev. Soc. 62, 0169796X1771007. *https://doi.org/10.1177/0169796X17710071*.

Huber, A., 2017. Theorising the dynamics of collaborative consumption practices: a comparison of peer-to-peer accommodation and cohousing. Environ. Innov. Soc. Transit. 23, 53–69. *https://doi.org/10.1016/j.eist.2016.12.001*.

Humphreys, A., Grayson, K., 2008. The intersecting roles of consumer and producer: a critical perspective on co-production, co-creation and prosumption. Sociol. Compass 2, 963–980. *https://doi.org/10.1111/j.1751-9020.2008.00112.x*.

i-share, 2018. i-share Atlas. https://www.i-share-economy.org/atlas (accessed 20 July, 2018).

John, N.A., 2012. Sharing and Web 2.0: the emergence of a keyword. New Media Soc. 15, 167–182. *https://doi.org/10.1177/1461444812450684*.

John, N.A., 2013. The social logics of sharing. Commun. Rev. 16, 113–131. *https://doi.org/10.1080/10714421.2013.807119*.

Johnson, B., 2011. After going for-profit, CouchSurfing faces user revolt. https://gigaom.com/2011/09/01/after-going-for-profit-couchsurfing-faces-user-revolt/ (accessed 30 May, 2018).

Knyphausen-Aufseß, D.z., Hettinga, E.v., Harren, H., Franke, T., 2011. Das Erlösmodell als Teilkomponente des Geschäftsmodells, in: Bieger, T., Knyphausen-Aufseß, D.z., Krys, C. (Eds.), Innovative Geschäftsmodelle. Konzeptionelle Grundlagen, Gestaltungsfelder und unternehmerische Praxis. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 163–184.

Kopytoff, I., 1986. The cultural biography of things: commoditization as process, in: Appadurai, A. (Ed.), The social life of things. Commodities in cultural perspective. Cambridge University Press, Cambridge, UK, pp. 64–91.

Kornberger, M., Pflueger, D., Mouritsen, J., 2017. Evaluative infrastructures: accounting for platform organization. Acc. Organ. Soc. 60, 79–95. *https://doi.org/10.1016/j.aos.2017.05.002*.

Kumar, V., Lahiri, A., Dogan, O.B., 2018. A strategic framework for a profitable business model in the sharing economy. Ind. Mark. Manag. 69, 147–160. *https://doi.org/10.1016/j.indmarman.2017.08.021*.

Lamberton, C., 2016. Collaborative consumption: a goal-based framework. Cur. Opin. Psychol. 10, 55–59. *https://doi.org/10.1016/j.copsyc.2015.12.004*.

Laroche, M., McDougall, G.H.G., Bergeron, J., Yang, Z., 2004. Exploring how intangibility affects perceived risk. J. Serv. Res. 6, 373–389. *https://doi.org/10.1177/1094670503262955*.

Laurell, C., Sandström, C., 2017. The sharing economy in social media: analyzing tensions between market and non-market logics. Technol. Forecast. Soc. Chang. 125, 58–65. *https://doi.org/10.1016/j.techfore.2017.05.038*.

Loske, R., 2015. Sharing Economy: Gutes Teilen, schlechtes Teilen? Blätter für deutsche und internationale Politik 11.

Magaudda, P., 2011. When materiality 'bites back': digital music consumption practices in the age of dematerialization. J. Consum. Cult. 11, 15–36. *https://doi.org/10.1177/1469540510390499*.

Magretta, J., 2002. Why business models matter. Harv. Bus. Rev. 80, 86–92.

Mahadevan, B., 2000. Business models for internet-based e-commerce: an anatomy. Calif. Manag. Rev. 42, 55–69. *https://doi.org/10.2307/41166053*.

Mair, J., Reischauer, G., 2017. Capturing the dynamics of the sharing economy: institutional research on the plural forms and practices of sharing economy organizations. Technol. Forecast. Soc. Chang. 125, 11–20. *https://doi.org/10.1016/j.techfore.2017.05.023*.

Martin, C.J., 2016. The sharing economy: a pathway to sustainability or a nightmarish form of neoliberal capitalism? Ecol. Econ. 121, 149–159. *https://doi.org/10.1016/j.ecolecon.2015.11.027*.

Mason, P., 2015. The end of capitalism has begun. http://www.theguardian.com/books/2015/jul/17/postcapitalism-end-of-capitalism-begun (accessed 20 April, 2016).

Massa, L., Tucci, C.L., 2014. Business model innovation, in: Dodgson, M., Gann, D.M., Phillips, N. (Eds.), The Oxford handbook of innovation management. Oxford Univ. Press, Oxford, pp. 420–441.

Matzler, K., Veider, V., Kathan, W., 2016. Collaborative Consumption: Teilen statt Besitzen. Wie Unternehmen das Phänomen der Sharing Economy für sich nutzen können, in: Granig, P., Hartlieb, E., Lingenhel, D. (Eds.), Geschäftsmodellinnovationen. Vom Trend zum Geschäftsmodell. Springer-Gabler, Wiesbaden, pp. 119–132.

McCracken, G., 1986. Culture and consumption: a theoretical account of the structure and movement of the cultural meaning of consumer goods. J. Consum. Res. 13, 71. *https://doi.org/10.1086/209048*.

Mintzberg, H., 1989. Mintzberg on management. Inside our strange world of organizations. Free Press, New York.

Mont, O.K., 2002. Clarifying the concept of product–service system. J. Clean. Prod. 10, 237–245. *https://doi.org/10.1016/S0959-6526(01)00039-7*.

Muñoz, P., Cohen, B., 2017. Mapping out the sharing economy: a configurational approach to sharing business modeling. Technol. Forecast. Soc. Chang. 125, 21–37. *https://doi.org/10.1016/j.techfore.2017.03.035*.

Nußholz, J., 2017. Circular business models: defining a concept and framing an emerging research field. Sustain. 9, 1810. *https://doi.org/10.3390/su9101810*.

Oliveira, D.T. de, Cortimiglia, M.N., 2017. Value co-creation in web-based multisided platforms: a conceptual framework and implications for business model design. Bus. Horiz. 60, 747–758. *https://doi.org/10.1016/j.bushor.2017.07.002*.

Osterwalder, A., Pigneur, Y., 2010. Business model generation. A handbook for visionaries, game changers, and challengers. Wiley, Hoboken, NJ.

Osterwalder, A., Pigneur, Y., Tucci, C.L., 2005. Clarifying business models: origins, present, and future of the concept. Commun. Assoc. Inf. Syst. 16, 1–25. *https://doi.org/10.17705/1CAIS.01601*.

Owyang, J., 2016. Collaborative economy honeycomb. Version 3.0. http://www.web-strategist.com/blog/2016/03/10/honeycomb-3-0-the-collaborative-economy-market-expansion-sxsw/ (accessed 23 July, 2018).

Parente, R.C., Geleilate, J.-M.G., Rong, K., 2018. The sharing economy globalization phenomenon: a research agenda. J. Int. Manag. 24, 52–64. *https://doi.org/10.1016/j.intman.2017.10.001*.

Parigi, P., State, B., 2014. Disenchanting the world: the impact of technology and relationship, in: Aiello, L.M., McFarland, D. (Eds.), Social informatics. 6th international conference, SocInfo 2014, Barcelona, Spain, November 11-13, 2014 proceedings. Springer, Cham, pp. 166–182.

Park, H., Armstrong, C.M.J., 2017. Collaborative apparel consumption in the digital sharing economy: an agenda for academic inquiry. Int. J. Consum. Stud. 41, 465–474. *https://doi.org/10.1111/ijcs.12354*.

Parker, G.G., van Alstyne, W.M., 2005. Two-sided network effects: a theory of information product design. Manag. Sci. 51, 1494–1504. *https://doi.org/10.1287/mnsc.1050.0400*.

Peck, J., Shu, S.B., 2009. The Effect of mere touch on perceived ownership. J. Consum. Res. 36, 434–447. *https://doi.org/10.1086/598614*.

Perren, R., Kozinets, R.V., 2018. Lateral exchange markets: how social platforms operate in a networked economy. J. Mark. 82, 20–36. *https://doi.org/10.1509/jm.14.0250*.

Plewnia, F., Guenther, E., 2018. Mapping the sharing economy for sustainability research. Manag. Decis. 56, 570–583. *https://doi.org/10.1108/MD-11-2016-0766*.

Prahalad, C.K., Ramaswamy, V., 2004. Co-creation experiences: the next practice in value creation. J. Interact. Mark. 18, 5–14. *https://doi.org/10.1002/dir.20015*.

Puschmann, T., Alt, R., 2016. Sharing Economy. Bus Inf Syst Eng 58, 93–99. *https://doi.org/10.1007/s12599-015-0420-2*.

PwC UK, 2016. Assessing the size and presence of the collaborative economy in Europe. ec.europa.eu/DocsRoom/documents/16952/attachments/1/translations/en/renditions/native (accessed 20 August, 2018).

Rappa, M., 2010. Business Models on the Web. http://digitalenterprise.org/models/models.html (accessed 20 April, 2018).

Reim, W., Parida, V., Örtqvist, D., 2015. Product–Service Systems (PSS) business models and tactics – a systematic literature review. J. Clean. Prod. 97, 61–75. *https://doi.org/10.1016/j.jclepro.2014.07.003*.

Richardson, J., 2008. The business model: an integrative framework for strategy execution. Strat. Chang. 17, 133–144. *https://doi.org/10.1002/jsc.821*.

Richardson, L., 2015. Performing the sharing economy. Geoforum 67, 121–129. *https://doi.org/10.1016/j.geoforum.2015.11.004*.

Ritzer, G., Jurgenson, N., 2010. Production, consumption, prosumption. J. Consum. Cult. 10, 13–36. *https://doi.org/10.1177/1469540509354673*.

Rivera, J. de, Gordo, Á., Cassidy, P., Apesteguía, A., 2017. A netnographic study of P2P collaborative consumption platforms' user interface and design. Environ. Innov. Soc. Transit. 23, 11–27. *https://doi.org/10.1016/j.eist.2016.09.003*.

Rochet, J.-C., Tirole, J., 2003. Platform competition in two-sided markets. J. Eur. Econ. Assoc. 1, 990–1029. *https://doi.org/10.1162/154247603322493212*.

Scaraboto, D., 2015. Selling, sharing, and everything in between: the hybrid economies of collaborative networks. J. Consum. Res. 42, 152–176. *https://doi.org/10.1093/jcr/ucv004*.

Schallmo, D., 2014. Theoretische Grundlagen der Geschäftsmodell-Innovation - Definitionen, Ansätze, Beschreibungsraster und Leitfragen, in: Schallmo, D. (Ed.), Kompendium Geschäftsmodell-Innovation. Grundlagen, aktuelle Ansätze und Fallbeispiele zur erfolgreichen Geschäftsmodell-Innovation. Springer Gabler, Wiesbaden, pp. 1–30.

Schaltegger, S., Lüdeke-Freund, F., Hansen, E., 2012. Business cases for sustainability: the role of business model innovation for corporate sustainability. Int. J. Innov. Sustain. Dev. 6, 95–119. *https://doi.org/10.1504/IJISD.2012.046944*.

Schnur, O., Günter, H., 2014. Collaborative Consumption, Sozialkapital und Quartier. Eine Annäherung. Raumforsch. Raumordn. 72, 401–413. *https://doi.org/10.1007/s13147-014-0304-9*.

Scholz, T., 2016. Platform cooperativisim. Challenging the corporate sharing economy, New York. http://www.rosalux-nyc.org/wp-content/files_mf/scholz_platformcoop_5.9.2016.pdf (accessed 20 August, 2018).

Schor, J., Fitzmaurice, C.J., 2015. Collaborating and connecting: the emergence of the sharing economy, in: Reisch, L., Thogersen, J. (Eds.), Handbook on research on sustainable consumption. Edward Elgar Publishing, Cheltenham, U.K, pp. 410–425.

Schor, J.B., Attwood-Charles, W., 2017. The "sharing" economy: labor, inequality, and social connection on for-profit platforms. Sociol. Compass 11, 1-16. *https://doi.org/10.1111/soc4.12493*.

Schor, J.B., Fitzmaurice, C., Carfagna, L.B., Attwood-Charles, W., Poteat, E.D., 2016. Paradoxes of openness and distinction in the sharing economy. Poet. 54, 66–81. *https://doi.org/10.1016/j.poetic.2015.11.001*.

shareable, 2018. #Mapjam. Put sharing on the map. https://www.shareable.net/community-maps (accessed 20 July, 2018).

Simard, C., West, J., 2006. Knowledge networks and the geographic locus of innovation, in: Chesbrough, H.W., Vanhaverbeke, W., West, J. (Eds.), Open innovation. Researching a new paradigm. Oxford University Press, Oxford, pp. 220–241.

Stampfl, N.S., 2015. Homo collaborans - Neue Konsummuster in der Sharing Economy. Mark. Rev. St. Gallen 4, 16–22. *https://doi.org/10.1007/s11621-015-0559-8*.

Stampfl, N.S., 2016. Arbeiten in der Sharing Economy: die "Uberisierung" der Arbeitswelt? Vierteljahresh. Wirtschaft. 85, 37–49. *https://doi.org/10.3790/vjh.85.3.37*.

Strathmann, M., 2016. Gegen die Wand gefahren. https://www.zeit.de/digital/internet/2016-03/mitfahrgelegenheit-31-maerz-blablacar/komplettansicht (accessed 30 May, 2018).

Täuscher, K., Abdelkafi, N., 2018. Scalability and robustness of business models for sustainability: a simulation experiment. J. Clean. Prod. 170, 654–664. *https://doi.org/10.1016/j.jclepro.2017.09.023*.

Teece, D.J., 2010. Business models, business strategy and innovation. Long Range Plan. 43, 172–194. *https://doi.org/10.1016/j.lrp.2009.07.003*.

Theurl, T., Haucap, J., Demary, V., Priddat, B.P., Paech, N., 2015. Ökonomie des Teilens — nachhaltig und innovativ? Wirtschaftsdienst 95, 87–105. *https://doi.org/10.1007/s10273-015-1785-z*.

Timmers, P., 1998. Business models for electronic markets. Elec. Mark. 8, 3–8. *https://doi.org/10.1080/10196789800000016*.

Tollison, R.D., 2012. The economic theory of rent seeking. Public Choice 152, 73–82. *https://doi.org/10.1007/s11127-011-9852-5*.

Tukker, A., 2004. Eight types of product–service system: eight ways to sustainability? Experiences from SusProNet. Bus. Strat. Env. 13, 246–260. *https://doi.org/10.1002/bse.414*.

Tukker, A., 2015. Product services for a resource-efficient and circular economy - a review. J. Clean. Prod. 97, 76–91. *https://doi.org/10.1016/j.jclepro.2013.11.049*.

van Boven, L., 2005. Experientialism, materialism, and the pursuit of happiness. Rev. Gen. Psychol. 9, 132–142. *https://doi.org/10.1037/1089-2680.9.2.132*.

van Ostaeyen, J., van Horenbeek, A., Pintelon, L., Duflou, J.R., 2013. A refined typology of product–service systems based on functional hierarchy modeling. J. Clean. Prod. 51, 261–276. *https://doi.org/10.1016/j.jclepro.2013.01.036*.

Watkins, R.D., Denegri-Knott, J., Molesworth, M., 2016. The relationship between ownership and possession: observations from the context of digital virtual goods. J. Mark. Manag. 32, 44–70. *https://doi.org/10.1080/0267257X.2015.1089308*.

Winterhalter, S., Wecht, C.H., Krieg, L., 2015. Keeping reins on the sharing economy: strategies and business models for incumbents. Mark. Rev. St. Gallen 4, 32–39. *https://doi.org/10.1007/s11621-015-0555-z*.

Wirtz, B.W., 2010. Electronic Business, third ed. Gabler, Wiesbaden.

Yang, M., Evans, S., Vladimirova, D., Rana, P., 2017. Value uncaptured perspective for sustainable business model innovation. J. Clean. Prod. 140, 1794–1804. *https://doi.org/10.1016/j.jclepro.2016.07.102*.

Zerdick, A., Picot, A., Schrape, K., Artopé, A., Goldhammer, K., Heger, D.K., Lange, U.T., Vierkant, E., López-Escobar, E., Silverstone, R., 2001. Die Internet-Ökonomie. Strategien für die digitale Wirtschaft, third ed. Springer, Berlin.

Zollenkop, M., 2014. Management des Geschäftsmodell-Portfolios - Konzept, Fallbeispiele, Erfolgsfaktoren, in: Schallmo, D. (Ed.), Kompendium Geschäftsmodell-Innovation. Grundlagen, aktuelle Ansätze und Fallbeispiele zur erfolgreichen Geschäftsmodell-Innovation. Springer Gabler, Wiesbaden, pp. 137–178.

Zott, C., Amit, R., 2010. Business model design: an activity system perspective. Long Range Plan. 43, 216–226. *https://doi.org/10.1016/j.lrp.2009.07.004*.

Highlights:

- The literature on sharing economy business models is abundant though fragmented
- This research reviews the literature on sharing economy business models
- Analyze sharing literature through Value Proposition, Value Creation, Value Capture
- This work proposes a comprehensive framework of sharing economy business models
- Present four market segments, covering all business models of sharing economies