

The Consumer Production Journey

Marketing to Consumers as Co- Producers in the Sharing Economy

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Abstract

New digital technologies not only support consumers in better fulfilling their own consumption needs, but also enable them to create greater value for other consumers. These new consumer co-production activities, collectively referred to as the sharing economy, require firms to rethink their role in the marketing value creation process. In particular, firms need to find new ways to create value for consumers who are also becoming producers. To address this challenge, we propose a two-layered conceptual framework of consumer co-production networks and the individual consumer production journeys therein. These concepts expand the traditional production model and consumer journey, respectively, explicitly taking into account consumer co-production activities in the value creation process. Within this framework, we draw on institutional design theory and household production theory to analyze how marketing functions can support consumers' co-production activities. We conclude with a discussion of managerial and consumer welfare implications, and of new opportunities for further research.

Keywords

Consumer Journey, , Consumer Co-Production, Consumer Co-Production Networks, Household Economics, Sharing Economy

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Abstract

New digital technologies not only support consumers in better fulfilling their own consumption needs, but also enable them to create greater value for other consumers. These new consumer co-production activities, collectively referred to as the sharing economy, require firms to rethink their role in the marketing value creation process. In particular, firms need to find new ways to create value for consumers who are also becoming producers. To address this challenge, we propose a two-layered conceptual framework of consumer co-production networks and the individual consumer production journeys therein. These concepts expand the traditional production model and consumer journey, respectively, explicitly taking into account consumer co-production activities in the value creation process. Within this framework, we draw on institutional design theory and household production theory to analyze how marketing functions can support consumers' co-production activities. We conclude with a discussion of managerial and consumer welfare implications, and of new opportunities for further research.

Introduction

With the uptake of digitization, technology is empowering consumers more than ever and putting them in charge of how they search, purchase, experience, and evaluate products (Goldfarb and Tucker 2017; Labrecque et al. 2013; Simonson and Rosen 2014; Thaler and Tucker 2013). It is predicted that, over the next few decades, further advances in technology such as artificial intelligence, robotization, and 3D printing will enhance consumers' capabilities further still (Brynjolfsson and McAfee 2014; Kumar et al. 2016; Rust and Huang 2014). Importantly, the advances in digital technology not only support consumers in better fulfilling their own consumption needs, but also enable them in creating new value for *other* consumers (Grönroos and Voima 2013; Ritzer and Jurgenson 2010; Telles 2016).

Digitization also allows for restructuring and a greater level of disintermediation in supply chains. Thus, it supports new collaborative structures and business models in the marketplace that incorporate consumers as active partners in the value creation process (Botsman and Rogers 2010; Bloom et al. 2014; Lusch and Nambisan 2015; Sundararajan 2016). For example, online retail platforms such as Etsy are empowering consumers to directly sell their self-created products to other consumers, firms such as Airbnb and Uber are allowing consumers to directly produce value for other consumers by using their own homes and cars, and review websites such as Yelp are boosting the impact of consumers' opinions on other consumers' purchase decisions. These new business initiatives that involve digitally enhanced consumer co-production through online platforms are often collectively referred to as the sharing economy (Hamari et al. 2016; Narasimhan et al. 2017; Schor and Attwood-Charles 2017; Sundararajan 2016).

In the sharing economy, value creation activities are undertaken partly by consumers and partly by firms and in a variety of constellations. While research on household production theory traditionally has already underlined the active role of consumers in creating value for themselves and their direct circle of family and friends (Becker 1965; Da et al. 2015; Greenwood 2005; Muth 1966), two prominent shifts arise in the sharing economy: 1) Other consumers also benefit from consumers' production activities, which often happens through commercial transactions, and 2) Consumer production and consumer-to-consumer value exchanges are facilitated by digital technology and online matching platforms (Frenken and Schor 2017; Narasimhan et al. 2017; Sundararajan 2016; Telles 2016). In the sharing economy, connections typically occur between many consumers and multiple firms that operate together in networks where they each take on different production activities (Achrol and Kotler 1999, 2012; Scaraboto 2015; Vargo and Lusch 2016). To reflect the fact that the consumers themselves are also important value co-producers along with firms, we refer to these new platform-based collaborative structures as *consumer co-production networks*.

The emergence of consumer co-production networks puts the traditional strengths of manufacturers and service firms under pressure and creates new challenges for marketing. In particular, firms need to develop new ways to create value for consumers (Achrol and Kotler 2012; McAfee and Brynjolfsson 2017; Muñiz and Schau 2011). In this paper, we propose that, in line with its traditional objective of creating greater value for consumers, marketing should focus on developing new functions that can achieve this goal in the ongoing market transition toward co-production (Piskorski 2011; Ranjan and Read 2016; Ritzer and Jurgenson 2010). More specifically, our aim is to develop a framework for analyzing how firms can assist consumers who are also themselves becoming producers of value. We develop a conceptualization

consisting of two layers, one at the network level and one at the individual consumer level, that expand the traditional production model and consumer journey, respectively, to explicitly take into account consumer co-production activities in the value creation process. Drawing on institutional design theory and household production theory, we then analyze how marketing functions can support consumers in their co-production activities in each layer. This approach allows us to propose specific opportunities for consumer-based marketing strategies that focus on the new consumer new role in the sharing economy (Hamilton 2016).

First, at the individual consumer level, marketing can create value in a consumer co-production network by assisting individual consumers in different steps of their co-production process. To analyze the potential for marketing value creation in this process, we introduce the *consumer production journey*. The consumer production journey describes the consumer's co-production process rather than the traditional consumption process and expands the consumer journey concept to explicitly take into account the fact that consumers create value for other consumers. Thus, this new concept allows us to bridge between analyses of consumer co-production in various stages of the value chain (e.g., peer-to-peer sales, service production, consumer reviews). At the individual level, we draw on household production theory to investigate how marketing can improve the costs and benefits that co-production brings to consumers (Becker 1965; Lancaster 1966; Priem 2007). Within this theory, we propose to apply a broad concept of utility and that integrates behavioral and emotional components. Most importantly, we draw on Kahneman (1994) to propose consumer utility shifts depending on a consumers' temporal position in the consumer production journey relative to the consumption experience.

Second, at the network level, marketing can strengthen the value that consumer co-production brings to consumers collectively. More specifically, we analyze marketing value creation opportunities when consumer production journeys are combined and integrated into networks involving multiple consumers and firms. This analysis focuses on marketing activities that can increase consumers' collective payoff (over and above the support that can be given to each consumer individually) or address the challenge of making the transition to consumer co-production networks from more traditional marketing arrangements (Carson et al. 1999; Wernerfelt 1994).

Finally, the paper discusses the proposed framework addressing management and consumer welfare implications, such as promising marketing resources for firms that co-produce value with consumers and potential downsides of consumer co-production networks. We conclude with some limitations of the proposed framework and several new research opportunities that it suggests.

Consumer co-production networks

Consumer co-production networks in the sharing economy bring together consumers and firms to take on different production activities in the value chain. This paper aims to analyze how marketing can assist consumers who are active as co-producers in these networks. In this section, we first briefly review recent definitions of the sharing economy from a general perspective. We then provide a more detailed conceptualization of consumer co-production networks within the context of the sharing economy.

Over the past decade, different authors have placed different emphases in defining sharing economy value creation systems. Early on, several authors emphasized non-commercial variants of sharing economy systems. They highlighted the potential of sharing capital goods and

the provision of peer labor by consumers as an alternative to traditional market economy-based value creation models (Belk 2007, 2010; Benkler 2002; Botsman and Rogers 2010; Thomas et al. 2013). Typical, non-commercial examples of sharing include activities such as the development of open source software (e.g., Linux) and the (unpaid) community sharing of tools (e.g., peerby.com) or residential spaces (e.g., couchsurfing.com). More recently, authors have also recognized the role of commercial transactions in sharing economy systems. These commercial systems are still such that consumers are actively producing value for other consumers, but the value exchange is facilitated by online commercial platforms. Some researchers (Frenken and Schor 2017; Jiang and Tian 2016) have focused exclusively on capital good sharing or collaborative consumption (e.g., Airbnb, where consumers share their home), while excluding peer-to-peer exchanges of consumer labor (e.g., Uber, where consumers offer the service of driving others to certain destinations). Others have developed a broader conceptualization of the sharing economy that allows for a wider range of consumer co-production activities that also include consumer services, comprising most of the well-known sharing economy examples (Narasimhan et al. 2017; Sundararajan 2016). Finally, a relatively distinct stream of research has focused on the role of digital technology and online matching platforms as key facilitators of the sharing economy and the co-production of goods and services by consumers (Evans and Schmalensee 2016; Gansky 2010; Telles 2016).

In this paper, we adhere to the broader definition of the sharing economy to address the role of marketing in consumer co-production networks. In line with Sundararajan (2016), we view sharing economy systems as value creation systems in which part of the supply of labor and capital goods is provided by individuals rather than firms. Consequently, the lines between personal and professional activities, leisure and work, and the independent and dependent

employment of the individuals participating in the value creation systems are blurred.

Importantly and in line with the recent market-oriented perspective on the sharing economy, we address those sharing economy systems in which an exchange of goods and services takes place that involves both consumers and firms and that is facilitated by digital technology provided by the firms, such as on online matching platforms (Sundararajan 2016; Telles 2016).

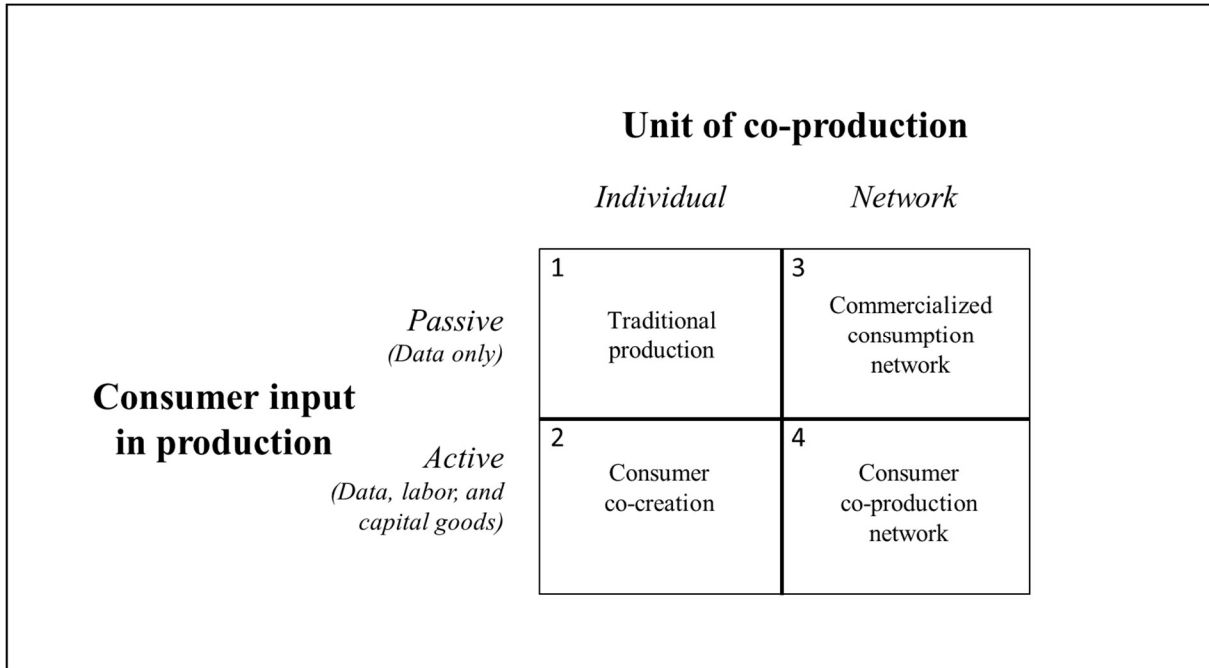
Within these sharing economy systems, we focus on the consumer role as co-producer in the system. Conceptually, we propose two dimensions to capture consumer co-production in a sharing economy value creation process and how it is enabled by digital technology (see Figure 1). The first dimension describes the level of consumer input in the production process. It highlights the difference between the typically low level of consumer input in traditional consumption activities (passive consumer input) and the high level of consumer input in consumer co-production activities (active consumer input). The transition from passive to active consumer input in the first dimension is facilitated by digital technology that, for example, supports direct online interactions between consumers and firms in different stages of the value creation process or that allows consumers to take control of certain aspects of the production process, such as in-home 3D printing technology. The second dimension represents the unit level at which consumer co-production takes place. Here, we distinguish between consumer co-production that takes place at the individual level (individual-level co-production)¹ and co-production that takes place at the network level and in which multiple consumers collaborate (network-level co-production). This second dimension is facilitated, for example, by digital technology that supports complex communications and transactions between multiple agents in

¹ For brevity, we speak of individual-level consumption, although this type of consumption also includes consumption by the consumer's close circle of family and friends (such as when a family member purchases groceries or other products for their household).

the value creation process or by large-scale data analytics that combine market-level insights across multiple consumers. Together the two dimensions can represent four prototypical value creation models with varying degrees of consumer involvement in the production process. Note that, since the dimensions are continuous, intermediate value creation models also exist, for example, depending on the specific level of active consumer involvement in the production process.

When we look at this framework in more detail, the first, upper left quadrant (passive consumer input, individual level co-production) of Figure 1 represents the *traditional production* model in which consumer and producer roles are clearly separated. In this model, manufacturers, retailers, and services providers take on the vast majority of production activities and consumers consume. Typical examples of value creation processes in this quadrant are restaurants, where a consumer walks in and enjoys a meal, or furniture stores, where a consumer purchases a couch that is then delivered directly to the home. Even in the traditional production model, consumers and firms benefit considerably from recent advances in digital technology, because they provide new possibilities to create additional value for consumers. Developments in virtual reality and augmented reality enhance consumers' shopping and consumption experiences. Products can also be more easily personalized using the consumer's own data and other digitized information. These technologies combine, for example, when consumers receive personalized advice based on their own preferences matched with a digitized set of product options (e.g., when virtually showcasing furniture in the consumer's own home).

Figure 1
From traditional production to a consumer co-production network



The second, lower left quadrant (active consumer input, individual level co-production) of Figure 1 represents value creation systems where the consumer is actively involved in co-production activities but these activities do not benefit others. We refer to this as the *co-creation* model, because it is a value creation model in which consumer and firm work together interactively to create value for the consumer. This model includes many traditional types of household production, such as consumers cooking a meal in their own home, consumers using hardware tools in a do-it-yourself project, or consumers assembling in their own home a product they bought from a store. Over the years, retailers and manufacturers have developed a wide range of co-creation models involving different levels of consumer input. For example, salads and meals in a supermarket can be purchased at multiple levels of pre-preparedness (ranging from basic ingredients to ready to eat) and products such as furniture can be bought in various

degrees of construction (ranging from IKEA-style product packages to fully completed furniture). These co-creation models provide a fluent transition from the traditional production model to the co-creation model.

Interestingly, depending on the level of consumer input and the design of the consumer-firm interaction process, consumer evaluations of the co-created product can differ (Buechel and Janiszewski 2014; Dahl and Moreau 2007; Mochon et al. 2012). Digital technology has allowed for very flexible interactions and collaborations between a consumer and a firm compared to what was previously possible and this shift has generated many new types of individual co-creation processes (Etgar 2008; Payne et al. 2008). In particular, co-creation processes in which consumers are empowered to design their own products and services online have led to innovations in how consumers interact with a firm's production process (Dellaert and Stremersch 2015; Franke et al. 2010; Hildebrand et al. 2014). Examples include individuals' customization of their own shoes on NikeID or of their new car on a manufacturer's website, such as Audi's.

In the third, upper right quadrant (passive consumer input, network level co-production) of Figure 1 are those production processes that do not require consumers to play an active role as co-producers but which expand traditional production by integrating the consumption activities of multiple consumers at the same time. We refer to this as the *commercialized consumption network* model. This model is also increasingly relevant with digital innovation. One important reason is that even passive consumers who do not provide labor or capital goods in the production process can still bring considerable value to other consumers and firms if they are willing to provide access to their data, such as their relevant personal and sales data (Acquisti et al. 2016; Chung et al. 2009; Evans 2017; Prahalad and Ramaswamy 2004). For example, simply by agreeing to allow a search engine or an online retailer to trace what they search for online,

consumers provide valuable data that can be used to provide recommendations to other consumers. The reason we refer to this model as the commercialized consumption model is that the consumer only needs to consume but firms can still commercialize the consumer's consumption activities because other consumers of firms benefit from them. In a digitized setting, firms can generate valuable analytics for other consumers using each consumer's (passively provided) data as input. This is the case, for example, when firms such as Netflix and Spotify leverage consumers' viewing and listening behavior to provide better recommendations to other consumers. These online platform firms benefit from consumers' consumption activities as input in their business model of providing recommendations to other consumers.

Furthermore, to the extent that one is willing to regard social media posting and online interactions by consumers as consumption activities, firms such as Facebook and Instagram also constitute examples of the commercialized consumption model in a digital world. These social media platforms benefit from bringing together consumers' (social media) consumption to generate value for other consumers and firms that wish to target their advertising. Thus, the online matching and interaction on these platforms provide value for consumers and firms without requiring active co-production by consumers. Some researchers have argued that consumer social media activities are not purely a type of consumption but should be seen as a more active mix of consumer production and consumption in which consumers are actively producing value for firms through their consumption activities (Cova and Dall'Aglio 2009; Ritzer 2014; Ritzer and Jurgenson 2010). These activities thus constitute an intermediate level co-production model between the network models represented by the third and fourth quadrants in the framework (see Figure 1).

This brings us to the final and fourth, lower right quadrant (active consumer input, network level co-production) in Figure 1, which represents the case in which the consumer's active involvement as a co-producer benefits other consumers. We refer to this case as the *consumer co-production network* model and it is most typical for many of the well-known examples in the sharing economy (Humphreys and Grayson 2008; Sundararajan 2016; Telles 2016). More formally, a consumer co-production network can be defined as a system of multiple consumers and firms that actively collaborate to fulfill a certain consumer need, often involving commercial interactions. Digital technology is an important enabler of this value creation model because it supports disentangling complex value creation systems into smaller activities and a rapid and accurate matching of supply and demand of these activities across many different consumers and firm(s) participating in the system. Uber, Airbnb, and Etsy are examples of firms operating with such a model; they have developed advanced online interfaces to allow consumers as buyers and sellers to find a match for their transportation, hospitality, and craft product offerings and needs, respectively.

To illustrate the properties and boundaries of consumer co-production networks compared to the other three value systems, we take a closer look at the example of a consumer transportation need and how it would be met in each of the four value creation models. Consider a consumer who needs to travel by car between two locations in a major urban area. In the first, traditional production model, the consumer can use a taxi service for the trip or can rely on family or friends to get to the destination. In this case, the consumer only consumes and does not need to be involved in production activities. Then, when we shift toward the second, co-creation model, the consumer needs to become more actively involved in the value creation process. This is the case, for example, when the consumer uses her own car to drive to the destination herself

or if she rents a car or uses a car-sharing system such as Zipcar to do so. In the co-creation model, consumers are active as producers, but only to their own benefit. It is worth noting that some of the business models that rely on sharing between consumers, such as Zipcar, do not qualify as consumer co-production at the network level in our conceptual model because the consumers themselves do not create value for other consumers in these sharing systems. In these instances, the firm is providing the capital goods as well as the services. In the third, commercialized consumption model, the consumer would again take a taxi or drive with family or friends, since she acts purely as a consumer. However, the person driving the consumer would be able to benefit from traffic information from other consumers who allow their travel information to be shared through an online system that helps optimize the driver's travel route. Google Traffic is an example of such a service that relies on drivers sharing their driving information, but that does not require consumers to be actively sharing their cars or to operate as a driver for other consumers. Finally, in the fourth, consumer co-production network model, the consumer would actively collaborate with other consumers to organize her trip. This could imply that the consumer would make the trip herself and take along other consumers who need to go to the same location. Alternatively, the consumer could look for other consumers making the same trip that the consumer is planning to make and catch a ride with them. An example of an online platform that fits within this model is BlaBlaCar, a firm that allows consumers to coordinate long-distance ridesharing when they need to go to the same destination. However, Uber and Lyft are also examples of the consumer co-production model. On these platforms, consumers actively operate as drivers for other consumers using their own car, even when they themselves do not need to go to a given location.

Institutional design perspective on consumer co-production networks

Our paper aims to analyze how marketing can help create value in consumer co-production networks using consumer-based strategies, that is, organizational strategies that are based on insights about consumers (Hamilton 2016). More specifically, we aim to investigate how marketing can support consumers in their role as producers in consumer co-production networks. As the starting point for this analysis, we adopt an institutional design perspective on marketing value systems (Carson et al. 1999; Vargo and Lusch 2016). A marketing value system design (marketing design for short) comprises the total set of activities (e.g., distribution), agents (e.g., consumers and firms), and institutional arrangements (e.g., contracts) that are used to fulfill a certain consumer need. Consumer co-production networks constitute such a marketing design.

The remediable efficiency criterion for marketing design, developed within institutional design theory, provides a strong basis for this analysis (Carson et al. 1999; Wernerfelt 1994). The criterion is rooted in the concept of economic efficiency and proposes that, under two conditions of feasibility, those marketing designs that *maximize the joint payoff* across all agents involved in a marketing value system are most likely to survive in the market in the long term. The reason is that for other (non-efficient) marketing designs, over time, market agents (i.e., consumers and firms) will prefer to switch away, toward the marketing design that provides them with the highest payoff. In this paper, we focus on the *consumer* perspective on the payoff of a marketing design and therefore we analyze how marketing can increase consumers' payoff in consumer co-production networks. Note that this payoff is still flexibly defined and need not be restricted to, for example, monetary or utilitarian terms. The payoff can also include behavioral and emotional aspects of consumer preferences and in the following section we propose a specific analysis of the consumer production journey that is built on behavioral decision making theory.

In addition, two feasibility conditions are important qualifiers for the joint payoff logic of a marketing design: *reallocation feasibility* and *switchover feasibility*. Reallocation feasibility implies that, in case not all agents in an existing value system benefit from switching to a new, more efficient marketing design, it must be feasible within the system to create an institutional arrangement that sufficiently compensates those agents that lose out in the transition. This compensation is necessary to persuade them to switch to the new marketing design. For example, consumers who do not enjoy sharing their car with strangers on BlaBlaCar may not be willing to do so unless they are compensated somehow (monetarily or otherwise). If this compensation is not feasible (e.g., due to legal contracting constraints), the new marketing design will not succeed. Switchover feasibility implies that path dependence and switching costs to transition from an existing marketing design to the new design must be sufficiently low so that they can be overcome by the benefits of the new marketing design. For example, for a new car sharing system to be attractive, some consumers may need to purchase new or different types of cars to be able to drive other consumers and to generate a sufficient number of car-sharing opportunities in the system for it to be feasible. Thus, from the consumer perspective, a new car-sharing system may or may not remedially efficient, depending on if it can generate greater total consumption utility and income for the consumers involved when they participate in the new system (as passengers or as drivers), in comparison to other transportation options that are already available to them. Furthermore, the design of an institutional arrangement, such as a set of contracts, must be feasible to reallocate the gains of the new system (if needed) to induce individual consumers (as passengers and as drivers) to switch to the new system and for them to be able to actually switch if they wish to do so.

In the following sections, we develop our analysis of the consumer's payoff in a consumer co-production network and the feasibility conditions that they face, in three steps. First, we propose a consumer decision making-based conceptualization of the consumer production journey. This conceptualization starts from a generic view of how an individual consumer progresses in the evaluation of alternatives and actions when resolving a consumption need. Based on this generic view, we discuss the co-production contributions that consumers can make in resolving other consumer needs at each step of the process. Taken together, these co-productions steps constitute the new consumer production journey. Second, we investigate how marketing activities by firms participating in a consumer co-production network can increase the individual-level payoff at the different stages of their consumer production journey for a consumer who is active as a co-producer in a consumer co-production network. Third, we investigate how marketing activities can support co-producing consumers' joint payoff at the network level when multiple consumers collaborate in a consumer co-production network. In this part of the analysis, we also address the feasibility conditions that consumers face when switching to a consumer co-production network.

The consumer production journey

We propose a generic conceptualization of the consumer journey based on consumer decision making to investigate the individual consumer's payoff of participating in a consumer co-production network. The conceptualization builds on Kahneman's (1994) theory that individuals' use of decision weights and decision rules may shift depending on the temporal position of their decision relative to the consumption experience. In particular, Kahneman et al. (1997) introduced four types of utility: predicted utility, decision utility, instant utility, and remembered utility. These different types of utility reflect individuals' different evaluations of alternatives when they

need to 1) predict their consumption experience (e.g., when searching for a suitable product), 2) decide on which consumption experience to select (e.g., when making a purchase), 3) actually experience the consumption of a certain product, and 4) reflect on a consumption experience, respectively. The conceptualization of the consumer journey that we propose is closely aligned with the four different consumer utility types introduced by Kahneman et al. (1997) and reflects four corresponding stages in the individual's decision making progress.

It is worth noting that the concept of utility in this classification is very broad and is not confined to the classical normative concept of utility. First, inherently, Kahneman's theory recognizes that consumer utility shifts depending on the temporal perspective of the consumer in the decision making process. Second, even within the four temporal perspectives, there is room to include behavioral aspects (such as myopia or loss aversion in the utility function) and emotional aspects (such as enjoyment, sense of autonomy, and anxiety contributing to consumer utility). For example, both normative and behavioral considerations (such as expected economic returns and myopic evaluations of returns) can drive utility, as well as hedonic and utilitarian considerations (e.g., the enjoyment and usefulness of a co-production process).

In alignment with the four decision making utility perspectives, we distinguish four different generic steps in the consumer journey: 1) search, 2) purchase, 3) experience, and 4) reflect (see Table 1). These four consumer journey steps provide a theoretically grounded approach to incorporating potential differences in consumer trade-offs in the various steps in the consumer journey. They also allow us to bridge between the traditional consumer journey that reflects the traditional production model with a passive consumer role and a newly proposed consumer production journey in which consumers are active co-producers of value. In addition, the classification matches well with the broader marketing literature on consumer journeys,

where similar consumer journey steps have been proposed (Anderl et al. 2016; Li and Kannan 2014; Norton and Pine 2013; Wiesel et al. 2011).

In the first step of the traditional consumer journey, consumers search the market for products to satisfy their (latent) consumption needs. Consumers can also explore what products are available in the market to develop a better understanding of product features and possibilities. Thus, from a decision making perspective, the consumer's traditional journey task is to search for information and to predict the level of consumption utility different products will provide them with upon consumption. In response, firms present consumers with (new) products and provide them product information. They do so through various channels, such as (online and offline) advertising, retail outlets, and other forms of product communication and interaction. In the consumer production journey, the consumer role shifts and consumers take on part of the firm's traditional production role. For example, consumers actively promote brands and recruit new consumers for firms (Keller and Fay 2012; Kumar et al. 2010). When consumers are further advanced in understanding other consumers' product needs and the product innovations that respond to such needs, they also provide recommendations and are active in co-designing new product options and innovations for other consumers, for example, on an online platform such as Threadless, where they design T-shirts for others (Franke and Piller 2004; von Hippel 1986).

Next, in the second step of the traditional consumer journey, consumers purchase the goods and services that they prefer for their consumption experience. This step involves consumer activities such as driving to the store or ordering products online, deciding on which products to buy, and then paying for them (Messinger and Narasimhan 1997). From a decision making perspective, the consumer's task is to compare between various products available in the market that appear suitable for consumption and then decide on the most attractive alternatives to

purchase. Firms present products in their (online) retail outlets, distribute physical products to warehouses and stores, facilitate payment transactions, and may deliver products to the consumer's home. When consumers become active as co-producers, they themselves become sellers and distributors. For example, consumers can engage in social commerce and sell or distribute products through online platforms such as eBay or Etsy (Stephen and Toubia 2012).

Table 1
The consumer's role in the traditional consumer journey and the consumer production journey

<i>Journey step</i>	<i>Utility type</i>	<i>Traditional consumer journey</i>		<i>Consumer production journey</i>
		<i>Consumer role</i>	<i>Firm role</i>	<i>Consumer role</i>
1. Search	Predicted utility	Explore market and one's own needs	Advertise and design products	Co-design and recommend products
2. Purchase	Decision utility	Buy products	Distribute and sell products	Participate in distribution and sales of products
3. Experience	Instant utility	Consumption experience	Create (product) experiences	Co-produce and share experiences
4. Reflect	Remembered utility	Reflect on and care for products	After-sales services and research and development	Offer peer support, review, and innovate

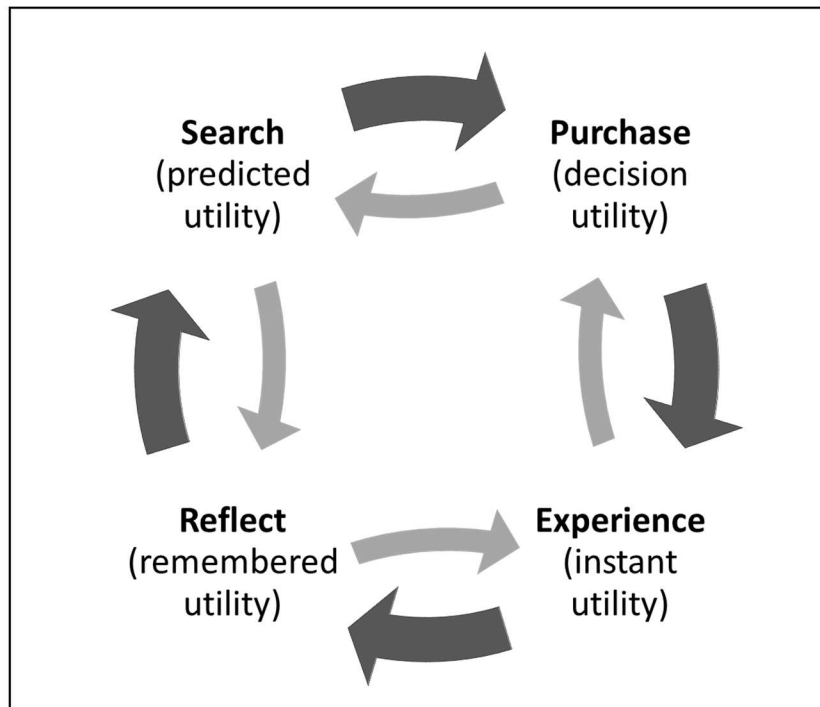
The third step in the traditional consumer journey represents the actual consumption experience. In this step, consumers use goods and services to generate experienced consumption utility. Firms are traditionally mostly involved in the consumption step when production and consumption are closely interrelated, such as in many service environments (e.g., restaurants, hospitals, hotels). The challenge for firms to generate high-value consumer experiences has received considerable attention in the literature (Pine and Gilmore 1998; Schmitt 2011). When consumers are active as producers in the consumption step, they co-produce experiences for other consumers. For example, consumers can be actively involved in sharing their capital goods with others, for example, when driving their own car to transport other consumers, such as with Uber, or when sharing their own home with tourists through Airbnb (Zervas et al. 2017).

Finally, the fourth step in the consumer journey involves reflection on the consumption experience. Consumers typically evaluate the quality of their consumption and could undertake actions to improve or adjust their experiences. From a consumer decision making perspective, remembered utility can be an important input for subsequent consumption decisions (Wirtz et al. 2003). Firms also play an important role in this consumer journey step because they assist consumers with after-sales services. Furthermore, firms often actively evaluate consumption experience successes and failures and conduct research and development as input for new product development. When they become co-producers, consumers assume part of these activities. For example, consumers review their consumption experiences to the benefit of other consumers on online platforms such as Yelp or they provide input in online peer-to-peer consumer support networks (Mathwick et al. 2008).

When considering the four steps in the consumer production journey in conjunction, there can be partial reiterations between the subsequent journey steps. For example, back-and-forth

transitions between utility orientations can occur between the search and purchase steps when a consumer first searches for a suitable product, then makes the decision to buy it or not, and, if not buying it, reverts back to searching for another product (predicted utility shifts to decision utility and then back to predicted utility). Back-and-forth transitions can also occur between the experience and reflect steps, such as when multiple consumption experiences immediately follow one another, and, afterward, multiple experienced utilities are merged into one remembered utility (instant utility of multiple experiences shifts to remembered utility) (Kahneman et al. 1997). The consumer production journey can also circulate back from the last step to the first step from one consumption occasion to the next. In particular, the consumer role of evaluating consumption experiences and reviewing products (remembered utility) quite naturally evolves into the consumer role as idea generator for product innovations (predicted utility). When consumers provide reviews, they draw on the remembered utility of their experiences. Then, based on these past experiences, their orientation shifts toward predicted utility when they generate new ideas for products that will fulfill consumers' needs in future consumption experiences. Figure 2 illustrates the interconnectedness between consumer journey steps as a cyclical process with back-and-forth transitions. Notwithstanding the interconnectedness of the steps in the consumer production journey, distinguishing these different steps allows us to connect to different cognitive evaluation processes, levels of consumer expertise, and levels of consumer engagement in each step. In particular, the prototypical steps support differences in marketing focus and differences in marketing activities for each step that we discuss in the following section.

Figure 2
Interconnectedness of consumer production journey steps



Marketing to the consumer production journey

Consumers face various trade-offs when they become co-producers in the value creation process. In this section, we first discuss how the costs and benefits of co-production can be structured in terms of household production theory (Becker 1965; Lancaster 1966; Muth 1966) and how the theory can serve as a useful and productive lens to analyze consumer value creation (Priem 2007). Then, based on this structure, we propose potential roles for marketing to help increase the benefits and reduce the costs that consumers experience in the consumer production journey.

Household production theory offers a framework in which to analyze consumers' consumption decisions from an economic perspective. It has been previously applied to analyze

marketing-related topics such as consumers' use of retail formats (Betancourt and Gautschi 1990), the impact of new electrical household appliances on female labor force participation (Greenwood et al. 2005), and consumers' accumulation of product and consumption knowledge (Luo et al. 2013; Ratchford 2001). The framework highlights the fact that consumers use products and their own (unpaid) labor to generate consumption experiences (Becker 1965; Lancaster 1966; Muth 1966). This conceptualization suggests that one can think of consumption decisions as an optimization process in which consumers allocate scarce time and monetary resources to different products and activities so that these resources generate the highest possible utility outcome. Traditional household production theory explains, for example, that consumers buy electronic appliances such as dishwashers or laundry machines if these save time that can be more effectively spent performing paid labor or more pleasantly on leisure activities that provide greater utility than if the money were spent otherwise.

We propose using household production theory to analyze consumers' individual payoff in consumer co-production networks and how marketing can improve the cost-benefit balance for consumers when they become more actively involved in the production process (Priem 2007). Typically, decision utility is used as a measure for consumer utility outcomes in household production theory (Small and Rosen 1981), since consumer decision utility can be observed more readily than other utility types. However, other utility outcomes can also be incorporated. As highlighted in the previous section, the concept of utility is very flexible. Besides the temporal perspective introduced by Kahneman's theory that we introduced in the consumer production journey, various other behavioral and emotional factors can also determine a consumer's utility, which need not be strictly normative. For example, consumer happiness has been investigated as an important alternative outcome for policy making purposes (Frey 2008)

and as a concept is more strongly related to experienced utility than to decision utility. Similar behavioral and emotional considerations can also apply to consumers' evaluations of labor efforts and monetary costs and benefits (e.g., myopia with respect to future monetary gains).

Therefore we propose using household production theory as a structure to guide the analysis of consumer co-production activities, that fits well with the notion of payoff in institutional design theory, while also allowing for behavioral and emotional drivers of consumers' decisions in the consumer optimization process. At the individual consumer level, household production theory allows for investigating when consumers choose to become active as co-producers in different steps of the consumer production journey, and how marketing can support their individual activities. At the network level, household production theory, when combined with institutional design theory, allows for analyses of how marketing can support co-production by collectives of consumers that jointly create value in a given consumer co-production network.

More specifically, the theory provides three main components that marketing can target to create greater consumer value (see Table 2): 1) increasing consumers' utility derived from the goods and services that they consume, for example, by enriching the consumption experience; 2) increasing the effectiveness of consumers' time budget spending, such as by increasing the convenience of making product purchases; and 3) increasing the effectiveness of consumers' money budget spending, for instance, by lowering the prices of some products to free up budget for other spending. For each of these three components, major shifts occur when consumers become co-producers that open up new opportunities and challenges for marketing.

Table 2
Marketing to the consumer production journey

<i>Household production theory component</i>	<i>Marketing action</i>	<i>Consumers' improved outcome</i>	
		<i>Traditional consumer journey</i>	<i>Consumer production journey</i>
Utility	Increase fit between product and consumer needs	Greater consumption utility	Positive utility obtained from the co-production process
Time budget (labor)	Increase fit between product, channels, and consumer needs	Greater consumption convenience	Lower co-production effort
	Promote individual transformation	Greater consumption skills	Greater co-production skills
Monetary budget	Increase consumer surplus	Lower price	Commercial gains from consumer activities and assets

Consumer utility

Concerning consumer utility, traditionally, marketing can increase value for consumers by matching products as closely as possible to their needs. Much of marketing's activities are aimed at effectively meeting heterogeneity in consumer demand to maximize consumer utility (Allenby and Rossi 1998). The closer a product matches consumer needs in a specific consumption situation, the greater its value for the consumer. A related objective of marketing is to increase consumers' utility by intensifying the utility they obtain per hour spent, for example, by meeting

multiple consumption needs at the same time or by improving the consumer experience (Pine and Gilmore 1998; Schmitt 2011).

When we expand this perspective to co-production-oriented consumer activities, marketing plays a similar role, but focused on the new setting. First, marketing can make activities traditionally seen as more production oriented more attractive and engaging for consumers. Individuals place a higher value on their labor activities than just the payment they receive and marketing can help increase the utility that consumers derive from a co-production activity itself. Consumers may enjoy the creativity involved in co-designing new products, appreciate the feeling of empowerment that it brings, and value the social interaction and public recognition benefits that co-production can bring (Buechel and Janiszewski 2014; Fuchs et al. 2010; Mathwick and Mosteller 2017). Thus, a potential benefit of co-production is that consumers can also enjoy the process of co-production itself. Consumers may also find it enjoyable to interact with others on social media or to perform activities that benefit other consumers. Marketing activities to increase the enjoyment of co-production apply across all four consumer production journey steps. For example, a firm such as Airbnb provides an online environment in which hosts and guests can socially interact before and after their stay and suggests to potential hosts that they will not only make extra money when they rent out their home, but also (and especially) have great experiences interacting with their guests.

Second, marketing can activate and engage consumers to further improve products and consumption experiences so that they are even more closely in line with other consumers' preferences. This role of marketing is already well established in the search step of the consumer production journey. In this step, firms often do not have the knowledge, ability, or incentives to differentiate and distribute their supply according to individual customers' needs, but some (lead

user) consumers may still be able to predict other consumers' needs and see how these other consumers can benefit from improving a product (Baldwin and von Hippel 2011; Franke et al. 2006; von Hippel 1994). Similarly, in the purchase step, consumers who are knowledgeable about a product and see its potential value for other consumers are likely to be successful at distributing or selling this product to those other consumers. In the experience and reflect steps, activating consumers with expertise and engagement is also relevant, since consumers who are more likely to be effective at improving other consumers' experiences or at providing valuable feedback or peer-to-peer support to other consumers create greater utility for other consumers (Brodie et al. 2013; Kumar et al. 2010; Mathwick and Mosteller 2017; Wiertz and De Ruyter 2007). Consequently, activating expert and engaged consumers to become co-producers increases the marketing value chain's ability to provide products and experiences that specifically meet individual consumers' needs. This leads to our first two propositions on the new role of marketing in co-production networks.

Proposition 1: Co-production networks that design consumers' co-production activities to be more like attractive and engaging consumption activities are more likely to be successful in the long run.

Proposition 2: Co-production networks that selectively activate, for each of the four consumer production journey steps, those consumers who are most successful at meeting other consumers' needs are more likely to be successful in the long run.

Consumers' time budget

Next, when we consider consumers' time budget, a similar extension of the traditional marketing perspective applies. Traditionally, marketing has placed great emphasis on creating convenience for consumers by offering new products and channels that help lower the amount of labor involved in purchasing and using products (e.g., by developing retail channels and providing ready-made products in food preparation or by developing media technologies to bring entertainment into the consumer home). These marketing innovations have greatly improved consumer welfare by lowering their personal labor costs related to consumption (Bronnenberg 2015). A second traditional labor-related marketing role is that of enhancing and guiding consumers' consumption skills, for example, through advertising or training (John 1999; Luo et al. 2013; Schor 2014), or, in other words, that of assisting consumers in a transformational learning process which creates greater value for the individual over time (Pine and Gilmore 1998).

In the context of the consumer production journey, similar marketing innovations can be developed. The consumer's own labor costs increase with co-production and marketing can support consumers in becoming more efficient as co-producers in the value chain by offering new channel options and services. Consumers who are more efficient in their co-production tasks can extract greater monetary benefits from their labor. In addition, consumer learning is also important in a co-production setting as it can help consumers create greater value. Marketing can assist in the co-production learning process, for example, by sharing best practice examples with consumers or general insights and training on how to co-produce.

In the search and purchase steps, co-producing consumers who struggle with the complexities of the co-production process can be assisted by marketing activities by the firm. For example, online platforms assist consumers in making their production activities more accessible

to others (Stephen and Toubia 2010). Firms such as Amazon and Etsy provide extensive support services to facilitate and teach consumers who are active as sellers on their online platform. Increasingly, there are also other (non-platform) firms catering to consumers who are active as co-producers. For example, firms such as KeyNest and GuestReady provide services to Airbnb hosts to manage co-production activities such as handing over the property key and cleaning the rental property. In the experience step, firms' support services are less central, since this step focuses on the consumption experience itself, but firms still promote consumer learning to enhance the utility that co-producers and their consumers extract from the co-production experience. In this spirit, Airbnb offers online guidance to hosts on how to create a great experience not only in their home but also around the neighborhood as part of their guests' visits. In the reflect step, consumer co-production activities are supported similarly as in the search stage and firms offer easy-to-use online support to consumers who wish to actively provide evaluations to other consumers. This brings us to our third proposition.

Proposition 3: Co-production networks that provide tools and services and that teach consumers to be more efficient and effective as co-producers are more likely to be successful in the long run.

Consumers' monetary budget

Finally, with respect to consumers' monetary budget, there are also opportunities for new marketing roles. Traditionally, marketing has emphasized the role of pricing as a way to increase consumer value. For example, discounting and promotions allow consumers to lower the costs per product and hence spend their money on a greater number of products, which increases their

overall utility. Marketing may push for more efficient production processes to lower costs, thereby creating room for price reductions. This has notably occurred in many of the manufacturing domains over the past decades and new digital technologies extend this trend as they further reduce the cost of production (Agrawal et al. 2017).

In consumer co-production processes, consumers can also benefit from lower prices in the purchase step with respect to the products they buy. However, there is a different additional role for marketing in co-production that is not to negotiate lower prices on behalf of the consumer but, rather, to increase consumer *income* from co-production activities. Assisting consumers in increasing their co-production income can help them overcome two main income-generating challenges in their co-production role. First, many consumers have a relative lack of experience in commercializing (the outcomes of) their co-production activities and, second, consumers as co-producers have a relatively weak position in the labor market. Both may lower their capacity to receive financial compensation for their co-production activities.

This new marketing role is relevant to all four consumer production journey steps. For example, in the search step, consumers can receive payment for sharing their ideas about product improvements, such as in crowd-sourcing initiatives (Bayus 2013; Kleemann, et al. 2008). In the experience step, consumers can be paid for shared activities, such as when they rent out their apartment on websites such as Airbnb (Fraiberger and Sundararajan 2015). In the reflect step, consumers can receive financial compensation for communicating about their consumption experience on social media (Bertini and Aydinli 2017).

The importance of the monetary aspect is also reflected in the criticisms of co-production that highlight the fact that consumer co-production could be thought of as labor for which consumers are undercompensated in relation to its profit-generating potential for firms, which

may make consumers less well off (Cova and Dalli 2009; Ritzer and Jurgenson 2010). An example are consumers trading off only a small discount in price against privacy, such as when they agree to share their online browsing data or posts with a website to be able to use it free (Acquisti et al. 2016). Another example are drivers for firms such as Uber and Deliveroo who have complained about payment and contract terms that provide relatively little job security compared to traditional jobs. In response, a new competitor named Fasten has countered this dissatisfaction by actively promoting a more attractive (flat fee) payment model for drivers. This response illustrates the new marketing perspective of targeting consumers who are also co-producers in terms of their monetary budget and leads us to the fourth proposition.

Proposition 4: Co-production networks that assist consumers in extracting greater monetary value from their co-production activities are more likely to be successful in the long run.

Marketing to consumer co-production networks

In this section, we investigate how marketing activities can support consumers at the network level when multiple consumers collaborate in a consumer co-production network. Some marketing activities do not operate at the level of the individual consumer production journey but do support consumer co-production activities at the collective level. These activities also include marketing support for network-level activities that help meet the feasibility conditions for switching to a consumer co-production network from a traditional production setting.

Increasing consumers' joint payoff

One important way to increase collective value in a consumer co-production network is by integrating and combining data across all individual consumer production journeys in the

network. Each individual consumer has access only to very limited information about consumer demand and supply in the network, whereas platforms on which co-production exchanges take place are able to collect and analyze such data across all consumers (Sridhar et al. 2011; Wu 2015). Large-scale data handling and analytics can provide additional value for consumers if shared by marketers across the network and can assist consumers in gaining greater utility and lowering their (labor and monetary) costs as co-producers. For example, supply and demand models for transportation or accommodation can assist consumers in deciding when to become active as co-producers, thus reducing their labor time and increasing their monetary returns.

Provided that there is a net gain from co-production in the network, then a second way for marketing to increase consumers' joint payoff at the network level is by encouraging them to become more active as contributors in the consumer co-production network (Chu and Manchanda 2016; Stephen and Toubia 2010). Within a consumer co-production network, a higher level of consumer co-production activity will create greater utility for the total network (compared to when fewer consumers contribute). Therefore, greater activity will benefit the collective of consumers in the network. For example, increased co-production can lead to a wider range of different products that are available in the market for consumers to choose from, if these products that are being designed or produced by consumers also become available for other consumers (Zervas et al. 2017). The latter then allows consumers to find products that more closely match their needs.

Marketing can further assist consumers by lowering the costs of co-production at the network level because some costs are more efficiently borne at the network level than at the individual level. Typical instances of such network-level costs include branding and communications about the network (collective advertising), collective insurance across all

consumers in the network, and other collective services, such as information technology systems whose costs can be shared across the network. The lower the costs of many of the platform services, the better off consumers in this network are.

At the network level, marketing can also help overcome the costs related to some of the potential darker sides of consumer co-production. Firms can assist co-producing consumers collectively by establishing clear and fair rules of engagement. Such rules can help consumers as co-producers (by avoiding unfair market practices), as well as increase consumer confidence for those purchasing on the online marketplaces. For example, in markets such as transportation or hospitality, traditionally well-established legal regulations exist to protect consumer rights and safeguard product quality, but these types of regulations are much less well established for co-production in these markets (cf. taxis with Uber and hotels with Airbnb). Marketing functions that are particularly helpful in overcoming this difficulty are those that allow consumers to make more informed decisions about the quality of products and co-production activities in the market (Telles 2016). Firms can develop mechanisms to build co-producer reputations (such as peer review systems) and to exclude poorly performing co-producers from the market, which can be particularly helpful to consumers (Biglaiser and Friedman 1994).

Increasing consumers' reallocation and switchover feasibility

A number of specific challenges arise regarding the network-level institutional arrangements related to reallocation and switchover feasibility when consumers become co-producers in the marketing value chain. We highlight several challenges and discuss how marketing functions could be used to help lower the consumer's costs that arise due to these challenges.

One challenge related to the reallocation of value in the context of consumer co-production is that consumer knowledge and expertise are often tacit, which implies that it is hard

to measure or value consumers' (potential) contributions before they are actually implemented (Spann et al. 2009). This valuation challenge increase uncertainty for consumers and firms and makes it difficult to trade and pay for consumer co-production activities upfront with an aim to stimulate consumers into becoming co-producers. It is hard for other consumers and firms to know what the value of a co-producing consumer's actions will be and to contract on a payment for consumer co-production (Henkel et al. 2013). This uncertainty can restrict consumers' and firms' willingness to engage in co-production. Agreement on the modularization of production tasks within a network level can be a way to overcome this challenge if it allows for trading to take place at the module level within a larger platform structure. In such a flexible, modularized structure, certain tasks can be co-produced by consumers, whereas other tasks can be offered by the firm (Baldwin 2007).

In addition, consumers' preferences are also often uncertain and hard to predict, even for the consumers themselves (Simonson 2005). This unpredictability implies that value creation in a co-production process may be more difficult than in a traditional marketing process, where consumers can typically make decisions between finished products (Syam et al. 2008). Predictive analytics can be used as a basis for marketing functions that include recommendation and matching systems which help consumers develop insights into their own and others' future needs and hence lowering the costs and risks of finding a match between co-production activities and consumer demand (Telles 2016). Early commitment mechanisms can also be introduced that require specific pricing structures or process designs which guarantee consumer buy-in earlier in the process than is traditionally the case (Ogawa and Piller 2006).

The challenges and costs of measuring, matching, and pricing co-production are especially relevant in cases in which consumer co-production may require value redistribution

across the network. As in traditional markets where specialization occurs, different agents in consumer co-production networks will take on different roles and not all value creation activities may be equally impactful or labor intensive. Therefore, reallocation between consumers may be necessary and marketing functions that involve consumer reward mechanisms can be introduced. These mechanisms can be based on payments, but other types of personal recognition (e.g., community status symbols) are also important (Mathwick and Mosteller 2017). These marketing functions can more be offered less costly at the network level than at the individual level.

When we turn to switchover feasibility, a further aspect stands out, which is the fact that current market and legal structures may be challenged by co-production structures (Dyal-Chand 2015; Gonzalez-Padron 2017). In many markets, such as transportation, hospitality, and health, there are strict regulations and traditions on how services need to be provided. It is very difficult and costly for individual consumers to try and overcome legal restrictions and social norms that restrict consumer co-production activities. Marketing functions at the consumer co-production network level can take on lobbying and legal services that may benefit individual consumers in terms of being allowed to participate in the production process.

In summary, the various aspects of network-level marketing activities that increase utility and lower costs for co-producing consumers can be grouped into two main areas.. First, there are operational aspects that can be organized more efficiently at the network level than at the individual consumer production journey level. These aspects include traditional marketing services such as branding and promoting activity on the network, as well as services that are more specific to consumer co-production, such as the provision of matching algorithms and legal services to support the new business models. Second, there are aspects related to rules about the operations within the network and that define how co-producers should interact with their

customers and how network income is distributed among the participating firms and consumers. We summarize these various aspects into two propositions specific to marketing activities at the consumer co-production network level.

Proposition 5: Co-production networks that offer collective services to consumers that are less costly to provide at the network level (i.e., matching algorithms, network promotion and branding, insurances, legal services) than at the individual level are more likely to be successful in the long run.

Proposition 6: Co-production networks that establish clear rules of engagement to promote fair market behavior within the network and allow for an equitable redistribution of network level income are more likely to be successful in the long run.

Conclusion and discussion

We have proposed a new framework, based on institutional design theory and household production theory, to systematically analyze new ways in which marketing can create value for consumers, now that they themselves are also becoming co-producers of value in consumer markets. In this framework, we propose consumer co-production networks as value creation systems in which multiple consumers and firms actively collaborate to fulfill a certain consumer need. We first analyze the relations between the traditional, consumption-oriented consumer journey and the new consumer production journey. Four focal areas for marketing activity stand out in this transition: 1) helping generate greater utility from the consumer co-production process itself (e.g., by increasing the enjoyment of co-production), 2) helping lower the co-production

effort, also by increasing consumer co-production skills (e.g., by offering training and production convenience), 3) helping increase the consumer income from co-production (e.g., by helping consumers commercialize their co-production efforts), and 4) selectively activating, for each of the four consumer journey steps, those consumers who are most successful at meeting other consumers' needs. Next, we analyze how the integration of multiple consumer production journeys into consumer co-production networks can offer additional opportunities for marketing. Here, firms focal areas for supporting consumer co-production are to: 1) offer collective services that are less costly to provide at the network level (e.g., by providing matching algorithms, network branding, insurances, and legal support) and 2) establish clear rules of engagement to promote fair market behavior within the network and allow for an equitable redistribution of network level income are more likely to be successful in the long run. (e.g., by providing consumer co-production quality measures and reward mechanisms).

Managerial implications

Based on our analysis, we conclude that the consumer production journey presents challenges for marketing but also promises new opportunities for consumer-based strategies. In particular, firms may need to target different consumer activities and different consumers and focus on different marketing resources than they traditionally have been to create a sustainable strategic advantage (Priem 2007; Wernerfelt 2014).

We propose that, as a first marketing resource for consumer co-production, firms can effectively leverage (big) data through advanced analytics to provide consumers with insights and support. Consumer and market data skills and analytics have a strong multiplier effect. Developing insights from the collective of consumers is a particularly powerful way for firms to generate knowledge that each individual consumer finds hard to obtain. It is difficult for each

separate individual to review the entire market and what other consumers do. Firms that can empower and support consumers as co-production partners by using advanced analytics are ideally placed to generate and then share market-level insights with the community (Chung et al. 2016). The same data analytics skills should also be helpful for firms to identify, for each consumer production journey step, which consumers are most valuable in terms of creating value for other consumers. These consumers can be targeted with specific marketing actions and services to facilitate and enhance their co-production activities. In terms of data analytics, firms that can position themselves at the center of consumer co-production networks are likely to be the most successful. These firms have the largest access to data regarding the network's activities and are therefore able to provide the most valuable insights based on data analytics (Evans and Schmalensee 2016).

However, the use of information technology and consumer analytics also has inherent boundaries that restrict their potential to create value for consumers. First, even the best-run analyses can result in flawed predictions when only scant consumer data are available or when consumption is highly unpredictable (Simonson 2005). Second, co-producing consumers may not be interested in obtaining the firms' assistance to begin with, for example because they do not trust the firm's intentions to help. Thus, even if a firm's analysis is technically correct, its resulting recommendations and marketing actions may not reach the consumer unless this consumer is willing to actively engage with the firm.

Therefore, a second resource for firms is their ability to activate and engage consumers in the value creation process (Atakan et al. 2014; Haumann et al. 2015; Ranjan and Read 2016). Achieving such consumer activation is especially important for firms in markets with highly heterogeneous and fluid consumer needs, where consumers may quickly change their preferences

over time and across contexts and can easily switch between firms. Firms that achieve a high level of consumer activation and engagement to become value creators using the firm's goods and services have a much greater potential to then also leverage the active consumer input in the value creation process to the benefit of other consumers. Creating co-production environments that are attractive to consumers and that promote transformational learning can help engage consumers in the co-production process (Pine and Gilmore 1998; Schmitt 2011). Furthermore, collective marketing services such as the provision of matching algorithms, insurance, and legal services to support consumers who are co-producers, and the establishment of clear rules about the operations and reallocations within the consumer co-production network should help increase the active participation of co-producing consumers.

The growing importance of consumer co-production also implies that firms' consumer valuation models need to be extended to capture a wider range of consumer activities. Although recently the literature on consumer engagement has proposed extensions of earlier consumer valuation models to include such aspects as social media activities and word of mouth (Kumar et al. 2010), our analysis shows that, in all four steps of the consumer production journey, consumers can provide valuable contributions to other consumers' utility. Thus, we propose that consumer lifetime models should be expanded to also capture those different contributions. For example, in the search step, consumers can contribute by providing recommendations to other consumers and, in the purchase step, they can contribute by participating in the sales and distribution of products. This updated consumer valuation model then also has implications for firm valuation models, since the value of a firm's customer base driven by the co-production activities of its customers becomes an important component of the total firm value. This

approach is similar in spirit to recent research that aims to quantify the employee base as a part of firm valuations (Fulmer and Ployhart 2014).

Finally, like consumers who are becoming co-producers, firms need to trade-off the costs and benefits of participating in consumer co-production networks, and if they do so, determine the most cost-effective ways of assisting co-producing consumers. Different marketing activities are not be equally impactful in assisting consumers and their costs also differ. Firms need to carefully consider which network level services create the greatest additional value for consumers and also if they can be provided at a positive net return for the firm. For example, developing an online matching system is a costly investment, but one that is likely to be necessary to support a successful consumer co-production network (Telles 2016), while investing in branding and advertising may be scaled as the consumer co-production network grows.

Consumer welfare effects of consumer co-production networks

In recent years, there has been strong growth in sharing economy-type firms, which suggests that consumer co-production networks can offer sustainable economic benefits over other types of marketing value chains, at least in some industries (Kathan et al. 2016; Lamberton and Rose 2012; Sundararajan 2016). However, relatively little is known about when consumer co-production networks may emerge, the potential downsides of these networks, and the extent to which they can be consumer welfare enhancing compared to traditional marketing value system designs. While, in this paper, we were primarily concerned with the question of how marketing can create value for consumers within existing consumer co-production networks, it is also worth briefly discussing these other more general questions.

On the positive side, consumer co-production networks can create greater economic value than traditional value chains when they lead to a better matching of supply and demand. They

allow for greater numbers of and more diverse products being offered in the market, which benefits consumers in their roles as both buyers and sellers (Eckhardt and Bardhi 2015; Fraiberger and Sundararajan 2015; Zervas et al. 2017). This increased flexibility and diversity can lead to a more efficient allocation of assets and resources in society (i.e., leading to fewer unused apartments and unused cars and to more consumers being able to use the services they wish to purchase). Furthermore, when consumers also enjoy the co-production activities they undertake in their own right, such as when they interact with guests when renting out a room on Airbnb, the economic value that is being generated increases further.

In addition, there are benefits related to the commercialization of previously non-commercialized consumer activities. While there is considerable debate on whether this trend is beneficial for consumers (Cova and Dalli 2009; Ritzer and Jurgenson 2010), in principle, both consumers and firms can benefit economically from a greater number of commercial transactions, provided that the gains are distributed across all agents. For example, if consumers are empowered to commercialize the activities that they previously undertook for free, this shift could create new income streams for them. Firms can benefit from consumer co-production in various ways, such as commercializing the focused attention that co-production generates with consumers for advertisers or by taking a percentage of the income that is generated by consumers who are co-producers (Lambrecht et al. 2014; Matzler et al. 2015; Sundararajan 2016).

On the negative side, there are clearly also costs affiliated with consumer co-production networks that can lower their economic efficiency compared to traditional supply chains (Benkler 2002; Coase 1960). Many of these costs have come up in our investigation of labor and monetary costs at the individual level production journey and of collective costs at the network level. First, at the individual consumer production journey level, consumers face potential costs

related to the additional effort they need to put in the value creation process when they become active as co-producers. If the monetary compensation they receive for this effort is insufficient, this will lower consumer welfare. It is not self-evident that consumers are sufficiently compensated for the role as co-producers by online platform firms (Ritzer and Jurgenson 2010). Consumers often also need to invest in new or higher-quality capital goods if they become active as co-producers. Consumers also face less tangible costs associated with co-production. In particular, the value creation process can become more uncertain and complex compared to traditional value creation processes, which lowers the utility consumers obtain from the process. For example, consumers' anxiety can increase due to their greater uncertainty about the returns they receive or about the personal reputation damage they may incur when becoming active as co-producers. The greater degree of commercialization, of what traditionally were informal activities for family and friends, can also lower the utility of these activities and create role function stress for consumers. Second, at the network level, the costs of co-production include the production costs of the various services that firms provide to consumers, including information technology, branding, and marketing communications. There are also less tangible aspects such as coordination costs needed to allow the many different agents in the network to collaborate and to reallocate payments, complexity costs affiliated with doing business in a new and changing network setting, and transition and learning costs for consumers and firms to switch to the network-based co-production process. We hope the analysis provided in this paper can help firms in overcoming or alleviating some of these costs and further improve the consumer welfare impact of consumer co-production networks.

Limitations and future research

An inherent limitation of a conceptual analysis such as this paper's is that empirical support for the proposed theorizing is provided only indirectly by findings in the literature. Therefore, it would be interesting and relevant to test (sections of) the proposed relations and structures in subsequent empirical research. For example, the effectiveness of different marketing actions in the four steps of the consumer production journey or system-level interventions in consumer co-production networks could be evaluated. It would also be worth studying the empirical impact of possible moderating variables that could affect the likely impact of marketing actions to support consumer co-production. At the consumer level, the consumer's mindset in the co-production process (e.g., commercial vs. non-commercial) is likely to shift the relative impact of the (positive) utility of co-production compared to labor and monetary gains or losses. In addition, uncertainty is also likely to moderate the impact of these components at the consumer level. Risk aversion will make consumer less likely to participate in co-production when the returns of doing co-production activities are uncertain. At the market level, the potential supply and flexibility of consumers that can be co-producers and of firms that offer competing services to those that are being co-produced are likely to moderate the impact of the costs of labor and capital goods on co-coproduction activities. A greater supply (by either consumers or firms) will typically lead to lower prices, and hence a smaller effect of the underlying costs on market transactions. Table 3 provides an overview these moderating factors.

A related but more general question is that of the most welfare-enhancing level of commercialization in consumer co-production settings. While the power of platforms such as Facebook, Airbnb, and Uber to generate change and commercialize consumer activities in today's markets is very clear (Sundararajan 2016), some argue there are new opportunities for collaborative consumption that are non-market based and which directly draw on voluntary

exchanges between consumers (Rifkin 2014). It would be interesting to study such competing institutional designs empirically and to see the conditions under which the various models might prevail.

Table 3
Potential moderators of consumer co-production activity

<i>Moderators</i>		<i>Potential impact</i>
Consumer mindset	Commercial vs. non-commercial focus in co-production activities	Commercial co-production is likely to shift consumer trade-offs, increasing the focus on monetary payoffs and labor effort, relative to utility.
Consumer uncertainty	Certain vs. uncertain returns of co-production activities	Uncertainty of the returns of co-production is likely to lower consumer co-production activity due to risk aversion.
	Sensitivity of consumer reputation as co-producer	Greater consumer reputation sensitivity is likely to lower co-production by consumers in general, but to increase high-quality consumer co-production when measurable.
Consumer supply	Total number of potential co-producing consumers and availability of capital goods with consumers	A greater pool of potential co-producing consumers who own the appropriate capital goods is likely to lower the impact of the costs of labor and capital goods on co-production.
	Flexibility of potential co-producing consumers labor supply	Greater labor flexibility in the pool of potential co-producing consumers is likely to lower the impact of the costs of labor on co-production activity.
Firm supply	Number of firm-based suppliers competing with co-production activities	A greater number of firms that compete with consumers that co-produce is likely to lower the impact of the costs of labor and capital goods on co-production.

An additional institutional design question worth investigating is whether consumer co-production over time can lead to greater monopolistic power for the platform firms that facilitate

this type of production model most effectively (Langley and Leyshon 2016). Scale is likely to be an important driver of platform success, which may imply that, despite the greatly dispersed co-production process at the consumer level, the resulting market structure could still be highly concentrated at the firm level.

From the perspective of how (digital) technology influences marketing (Huang and Rust 2017; Rust and Huang 2014), it would be interesting to study—both conceptually and empirically—the impact of yet further advances in digital technology, such as artificial intelligence, robotics, and 3D printing, on the consumer production journey. The rapid developments in these areas could empower consumers even more in terms of being able to take on production roles that have traditionally been provided by firms. For example, products and software could communicate directly on behalf of the consumer without human intervention (Hoffman and Novak 2016) or services could be provided by robots directly in the consumers' homes. These developments can empower consumers to become co-producers of services that have typically been provided by firms on a larger centralized scale and that can now be delivered in a decentralized manner. An interesting and far-reaching example is the shift in the energy market, where in-home technology such as solar panels now allows households to supply electricity to the electricity network in a decentralized fashion (Allan et al. 2015).

At the individual consumer level, especially consumers' mindsets and perceptions in connection with consumption- versus production-oriented activities offer a promising avenue for further research (see Table 3). The literature on hedonic versus utilitarian consumption can perhaps serve as a starting point of such an analysis (Babin et al. 1994) and could be extended and adapted to capture the fact that, nowadays, consumers not only are consumers for utilitarian purposes (as opposed to hedonic purposes) but also have begun to produce for commercial

markets and receive payments for their labor and products, which could influence their decisions (Gasiorowska et al. 2016). Recent research has begun to address a number of related topics in investigating what attracts different consumers to become active as co-producers and how this may differ between different contexts (Habibi et al. 2016; Martineau and Arsel 2017; Xie et al. 2008).

In a similar vein, it would be worth developing a deeper understanding of the network-level processes by which consumers co-produce value in commercial consumer markets. While there is a literature on topics such as consumer (brand) communities (Muniz and O’Guinn 2001) and consumer group-level consumption (Ariely and Levav 2000), there is still relatively little empirical research on how consumers collaborate as co-producers, both among themselves and with firms (Sundararajan 2016).

Finally, we hope that the analysis in this paper has highlighted the relevance of rethinking the role of marketing in new value creation systems where consumers become value producers in their own right. With the growth of the sharing economy, pressure is increasing on some of the firm’s traditional marketing functions, but there are also many new opportunities for consumer-based strategies that focus on supporting consumers in their new role. Firms that can assist and activate consumers in creating value for other consumers through a mix of hard analytics and “soft” motivation-based marketing resources are likely to be well placed to be successful in the emerging new market structures that rely on consumer co-production.

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