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Platforms in the peer-to-peer sharing economy

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Abstract

Purpose – The purpose of this paper is to examine peer-to-peer sharing platform business models, their sources of competitive advantage, and the roles, motivations and behaviors of key actors in their ecosystems.

Design/methodology/approach – This paper uses a conceptual approach that is rooted in the service, tourism and hospitality, and strategy literature.

Findings – First, this paper defines key types of platform business models in the sharing economy anddescribes their characteristics. In particular, the authors propose the differentiation between sharing platforms of capacity-constrained vs capacity-unconstrained assets and advance five core properties of the former. Second, the authors contrast platform business models with their pipeline business model counterparts to understand the fundamental differences between them. One important conclusion is that platforms cater to vastly more heterogeneous assets and consumer needs and, therefore, require liquidity and analytics for high-quality matching. Third, the authors examine the competitive position of platforms and conclude that their widely taken "winner takes it all" assumption is not valid. Primary network effects are less important once a critical level of liquidity has been reached and may even turn negative if increased listings raise friction in the form of search costs. Once a critical level of liquidity has been reached, a platform's competitive position depends on stakeholder trust and service provider and user loyalty. Fourth, the authors integrate and synthesize the literature on key platform stakeholders of platform businesses (i.e. users, service providers, and regulators) and their roles and motivations. Finally, directions for further research are advanced.

Practical implications – This paper helps platform owners, service providers and users understand better the implications of sharing platform business models and how to position themselves in such ecosystems.

Originality/value – This paper integrates the extant literature on sharing platforms, takes a novel approach in delineating their key properties and dimensions, and provides insights into the evolving and dynamic forms of sharing platforms including converging business models.

Keywords Business model, Network effects, Sharing economy, Platforms, Ecosystem, Peer-to-peer

Paper type Conceptual paper

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Introduction

The growth of platform businesses has been fueled by the internet and mobile technologies, and rapid advances in analytics, artificial intelligence (AI) and Big Data together with changing consumer preferences and consumption patterns. Platform business models in general, and the sharing economy in particular, have produced disintermediated industries. Often, sharing economy business models facilitate people to transact directly with one another by connecting individuals in unprecedented ways (Caldieraro *et al.*, 2018). These developments have resulted in an explosive growth of the peer-to-peer economy.

Platform businesses emerged as a viable alternative to fulfilling a range of customer needs, including transportation, accommodation, meals, and even investments and personal loans. They include Airbnb, HomeAway, XiaoZhu and onefinestay that are embraced by travelers ranging from budget-conscious students and families to luxury consumers and even business travelers. Uber, Lyft, Didi, BlaBlacCar, Grab and Ola are fast growing ride-sharing platforms that have disrupted often sleepy, sloppy and expensive taxi markets around the world. EatWith and MealSharing delight foodies with the opportunity for experiencing delicious homemade food with local hosts. RentMyWardrobe and DesignerShare facilitate sharing your wardrobe with fashion enthusiasts near you. These services were previously provided primarily by established firms in traditional industries such as hotels, taxi companies, restaurants and wardrobe rental businesses, which we refer to as pipeline businesses. Other platform services created completely new markets, such as BorrowMyDoggy which connects dog lovers who share the care for their canines. Evidence is gathering that the sharing economy and platform business models are significantly changing ecosystems, markets and consumption patterns (Caldieraro *et al.*, 2018; Lamberton and Rose, 2012; Zervas *et al.*, 2017).

Sharing platform business models are celebrated not only by consumers but also by investors who are optimistic about their profit potential, resulting in valuations that often match or even exceed their much larger and more established incumbent competitors. For example, by early 2019, Uber had a higher valuation (US$72bn; based on the most recent private equity fund raising) than the market capitalization of America's largest car companies (e.g. US$56bn for General Motors) and Airbnb (US$31bn; based on the most recent private equity fund raising) was valued almost as much as the world's largest hotel chain Marriot (US$44bn). These high valuations show that investors believe that platform players will be able to capture large markets, become highly profitable and remain so for a prolonged period of time. Furthermore, the high valuations imply that financial markets assume these platform players have significant competitive advantages that block new entrants and incumbents alike to enter and drive price competition. If these assumptions are correct, platforms can potentially generate astronomical returns on assets once they reach scale as they tend to be asset-light. This paper examines what makes platform business models potentially so valuable (i.e. what protects their competitive edge), and where perhaps financial markets may be overly optimistic.

There are many types of platform business models, including search, communication, social media, matching, content and review, booking aggregator, retail, payment, crowdsourcing and crowdfunding, and development platforms in addition to those that exist in the sharing economy (see Figure 1 for examples of these different types of platform business models). Of course, these "pure" platform types can be combined. For example, a social media platform can integrate communications, contents, retail and payment functions.

In this paper, we focus on peer-to-peer sharing economy platform business models that match capacity-constrained assets and resources with consumer demand for the

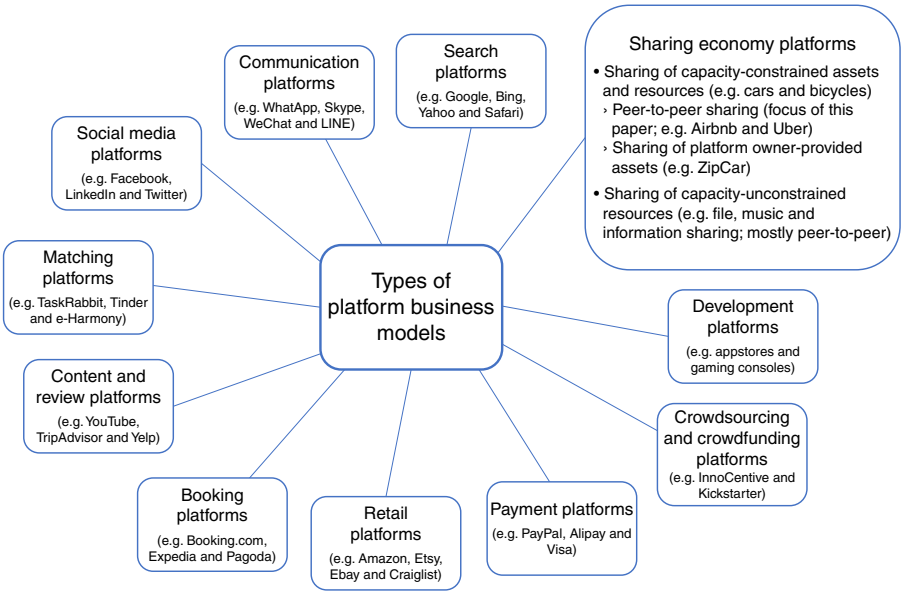

Figure 1.
Types of platform-based business models

following reasons. First, sharing platforms for capacity-constrained and unconstrained assets (see Figure 1) have fundamentally different management challenges (e.g. the former involve physical assets with all their related operations and supply-demand matching issues). Second, peer-to-peer platforms differ significantly from platforms that own the provided assets as they do not need to manage two-sided markets with issues such as signing up, rewarding and managing service providers, or deal with their typically highly heterogeneous assets (e.g. Airbnb postings differ widely on key attributes). Third, there is keen interest in understanding better peer-to-peer asset-sharing platforms as they are often portrayed as being ecological given that the same assets can be used by many people. This can democratize services by bringing down prices, allowing lower-income consumers to enter the market, and offering income opportunities all at the same time. Finally, we concentrate on business models with a for-profit motive to sharpen our focus and allow us to better contrast them with their traditional pipeline business model counterparts.

This paper makes five important contributions: First, we define key types of platform business models in the sharing economy and describe their characteristics and properties. In particular, we propose the differentiation between sharing platforms of capacity-constrained vs capacity-unconstrained assets and advance five core properties of the former. Second, we contrast peer-to-peer sharing platform business models with their pipeline business model counterparts to understand the fundamental differences between them. One important conclusion is that platforms cater to vastly more heterogeneous assets and consumer needs, and therefore require liquidity and analytics for high-quality matching and resultant value creation. Third, we examine the competitive position of platforms and their widely assumed "winner takes it all" characteristic and reject it. Primary network effects are less important once a critical level of liquidity has been reached and may even turn negative if increased listings raise friction in the form of search costs through information and choice overload for both customers and service providers. Once a critical level of liquidity has been reached, a platform's competitive position depends on stakeholder trust, and service provider and user loyalty. Fourth, we integrate and synthesize the literature on key platform

stakeholders of platform business models (i.e. consumers, service providers and regulators), and their roles and motivations. Finally, directions for further research are drawn from each of these sections.

Defining and characterizing sharing platform businesses models

The academic literature and popular press use various terms, often interchangeably, for platform business models in the sharing economy. This paper aims to clarify the confusion surrounding this nomenclature and characterizes platforms in the sharing economy. Before discussing the definitions, we delineate the important dimensions of capacity-constrained vs capacity-unconstrained assets to be shared, access provision vs transfer of ownership, peer-to-peer vs platform-provided assets, and direct and indirect network effects.

Capacity-constrained vs unconstrained assets

The term sharing economy implies an increased utilization of assets with spare capacity (e.g. Benoit *et al.*, 2017; Frenken and Schor, 2017; Hamari *et al.*, 2016) and related reduced use of resources and ecological impact (e.g. Guttentag *et al.*, 2018; Tussyadiah and Pesonen, 2018). This means, the sharing economy implicitly refers to the sharing of capacity-constrained physical assets (e.g. cars, rooms, and bicycles) and the provision of performances and experiences that rely on shared assets and labor (e.g. a cooking or dining experience). To a lesser extent, it can also refer to intangible assets (e.g. capital for loans).

The sharing of capacity-unconstrained resources (e.g. sharing files, music and information) is fundamentally different from the sharing of capacity-constrained assets. Unlike capacity-constrained assets, music files and information can be simultaneously consumed by many people without capacity management implications. In contrast, sharing platforms of capacity-constrained assets and resources are particularly efficient in matching capacity and demand, asset features and user needs, and time and geography requirements, thereby enhancing value for all actors in the ecosystem. In short, the focus of the sharing economy literature is concerned predominantly with access-based sharing platforms that match capacity-constrained assets and resources with consumer demand (Cusumano, 2015; Hall and Pennington, 2016).

Access provision vs transfer of asset ownership

In our conceptualization, we consider the following two separate dimensions to be critical in delineating what constitutes the sharing economy platforms: first, whether temporary access or ownership transfer is at the core of the transaction, and, second, whether an asset or resource is provided by peers or by a platform (see Figure 2). Different types of platforms emerge based on these distinctions.

Peer-to-peer platforms that operate on transferring the ownership of products such as eBay and Etsy (e.g. top left quadrant in Figure 2; note that peer-to-peer can also include micro businesses) or Amazon and traditional e-retailing (e.g. bottom left quadrant in Figure 2) are generally not considered sharing economy platforms as assets are being sold instead of being shared. We therefore consider sharing economy platforms as only those that provide access to assets, resources and services without the transfer of ownership, which is consistent with much of the sharing economy literature (e.g. Benoit *et al.*, 2017; Hamari *et al.*, 2016; Kumar *et al.*, 2018; Schaefers *et al.*, 2016; Zervas *et al.*, 2017).

Peer-to-peer vs platform-provided assets

The literature frequently focuses on and equates the sharing economy with peer-to-peer provided assets (e.g. Benoit *et al.*, 2017; Cusumano, 2015; Zervas *et al.*, 2017; again, peers can be

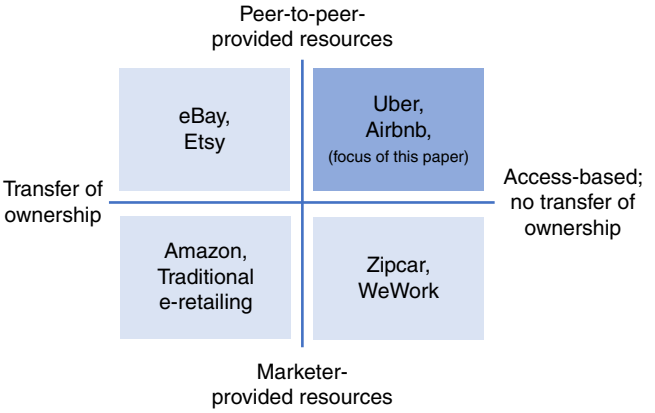

Figure 2.
Separating the platform dimensions of resource provider and asset provision vs ownership transfer

self-employed or operate micro businesses). However, there are also access-based platforms that rely predominantly on marketer-provided assets and resources such as Zipcar and bicycle sharing platforms (i.e. not peer-to-peer; bottom right quadrant in Figure 2). Unlike peer-to-peer sharing platforms, marketer-provided sharing platforms have their own inventory of assets. That is, these platforms players operate similarly to their traditional incumbents (e.g. Zipcar and Hertz both control a fleet of cars). A key difference is that marketer-provided asset platforms have, compared to incumbents, vastly improved technology with app interfaces that make locating assets and resources, reserving and using them, and making payment convenient and seamless. This, combined with location-specific analytics, allows by-the-minute access to assets and resources (e.g. cars or bicycles) and enables customers to pick up and drop these assets where and when convenient. They also require a higher degree of co-creation with users (e.g. filling petrol of cars and keeping them clean), which reduces the "turn-around" time of assets for the next user. As such, these business models allow the enhanced utilization of assets through improved sharing. For example, Zipcar automobiles are likely to be used more than Hertz cars as the latter are mostly rented by the day or longer and tend to have considerable idle time even when rented out. Given the intensified and flexible form of sharing, platforms with marketer-provided assets and resources, broadly speaking, should also be considered as part of the sharing economy.

Direct and indirect network effects

There are two types of network effects: direct network effects (also called same-side effects) and indirect network effects (also called cross-side effects). Direct network effects mean that the utility a user receives from a particular service increases as the number of other users increases (Duch-Brown, 2017). These effects are particularly pronounced for social media and communication platforms where the value to users tends to increase as family, friends and acquaintances join a network. That is, network size and resultant direct network effects can become an effective competitive barrier for competing smaller platforms (Duch-Brown, 2017; Johnson, 2018).

For capacity-constrained assets, however, direct network effects are less relevant and offer benefits only up to a threshold level at which the overall network size is sufficiently attractive for users or providers to join the platform. Beyond that, there is little benefit to a user or provider if more same-side actors join. The reason is that service providers have limited inventory to offer, that is, only a certain number of people can access a platform's available capacity at a given time (Moazed, 2017). For example, only so many people can take a specific ride using Uber or rent out a specific Airbnb apartment at a given time.

Once sufficient listings are available to make a platform attractive, further listings only add competition to existing service providers. The same logic applies to users who also have to compete for available service capacity (e.g. a particular room or ride).

In contrast, indirect network effects are critical for multi-sided platforms. Indirect network effects mean that the value of a service increases for one user group when a new user of a different user group joins (Johnson, 2018). For example, a new host joining Airbnb adds value to guests seeking accommodation since it provides them with more options to choose from. This attracts more guests to the platform, which, in turn, attracts more hosts. In other words, indirect rather than direct network effects serve as an effective means to scale the business.

Types of sharing economy platforms in the extant literature

Three main terms are used in the platform literature almost interchangeably depending on the focus of a particular study. They are access-based services, peer-to-peer sharing economy and sharing economy. As the following discussion shows, the literature has not converged to a common nomenclature (cf. Chen *et al.*, 2018; Kumar *et al.*, 2018); there are substantial commonalities yet important differences between these three related categories for which we propose differentiation and definitions.

The access-based services literature highlights the nature of the transaction not being centered on ownership transfer, but on providing temporary, short-term access to an asset, and thus includes examples of car and bicycle sharing. Specifically, access-based services "grant customers limited access to goods without any transfer of ownership" (Hazée *et al.*, 2017, p. 441) and facilitate transactions in which "multiple consumers successively gain temporary, short-term access to a good, while legal ownership remains with the service provider" (Schaefers *et al.*, 2016, p. 3). Access-based services are commercial sharing systems where marketer-managed systems "provide customers with the opportunity to enjoy product benefits without ownership" (Lamberton and Rose, 2012, p. 109). Implicit in these definitions is that access-based services relate to physical, capacity-constrained assets. That is, access-based services are concerned with both peer-to-peer and platform-provided capacity-constrained assets.

In contrast, the peer-to-peer sharing economy literature, sometimes also referred to as collaborative economy and collaborative consumption literature (e.g. Benoit *et al.*, 2017), focuses on the transaction entities (i.e. consumers and peer service providers) and community-based online services. These platforms orchestrate "peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services" (Hamari *et al.*, 2016, p. 2047) and link a consumer who "aims to temporarily utilize assets with a peer service provider who grants access to these assets and with this delivers the core service" (Benoit *et al.*, 2017, p. 220). They enable people to "collaboratively make use of underutilized inventory through fee-based sharing" (Zervas *et al.*, 2017, p. 687). Integrating these definitions, we advance that peer-to-peer sharing business models adopted in the literature are a subset of access-based platforms, and that peer-to-peer sharing business models are exclusively peer-to-peer and exclude platforms with marketer- or platform-provided assets (the latter are included in the wider access-based service platforms).

Interestingly, both access-based service platforms and peer-to-peer sharing economy are loosely referred to as the sharing economy. Current definitions of the sharing economy in the literature mostly refer to peer-to-peer sharing as the following examples illustrate: "Consumers granting each other temporary access to underutilized physical assets ("idle capacity"), possibly for money" (Frenken and Schor, 2017, pp. 4-5). The sharing economy activity is "centered around online platforms, based on sharing of underused assets or services between peers for free or for a fee" (Hall and Pennington, 2016), and is "a socioeconomic system that

allows for shared creation, production, distribution, and consumption of goods and other resources among individuals" (Tussyadiah and Pesonen, 2016, p. 1022).

However, we suggest that the term sharing economy also includes platforms that provide access to company- and platform-owned assets, resources and services. For example, ZipCar and bike sharing business models both allow highly effective sharing of assets (e.g. Hazée *et al.*, 2017) even though assets and resources are provided by platform owners. In sum, we define sharing economy as online-enabled sharing economy platforms offering short-term access to goods, services and other resources that are provided by peers or platform owners.

Definition and core properties of peer-to-peer sharing economy platforms

For the reasons outlined in the introduction (including the management challenges related to matching physical assets and managing two-sided markets), this paper focuses on online-enabled platform business models that share capacity-constraint assets and resources and are both access- and peer-to-peer-based (top right quadrant in Figure 2). The platforms explored in this paper thus include examples such as Uber and Airbnb which give peer customers access to unused or underutilized assets and resources, but do not cover platforms with marketer- or platform-provided assets (e.g. Zipcar and WeWork).

Synthesizing the preceding discussion, we define peer-to-peer sharing economy platforms, which are the focus of this paper, as two- or more-sided peer-to-peer online platforms through which people collaboratively provide and use capacity-constrained assets and resources. This definition and the discussion in the previous section allow us to derive the following core properties of these platforms: no transfer of ownership (i.e. access-based consumption); peer-to-peer exchange mediated through a digital platform; sharing relates to capacity-constrained tangible assets (e.g. cars, clothing and accommodation) that are sometimes enhanced by other resources (e.g. labor); indirect network effects and transaction volume (i.e. liquidity) enhance the matching quality of heterogeneous assets and resources of peer providers with the heterogeneous needs of users; and direct network effects are of less relevance once a threshold level has been reached, which allows high-quality matching (Table I).

The following section builds on these properties and contrasts peer-to-peer sharing economy platforms with pipeline businesses. As highlighted by Van Alstyne *et al.* (2016), "to understand how the rise of platforms is transforming competition, we need to examine how platforms differ from the conventional "pipeline" businesses that have dominated industry for decades" (p. 56).

Contrasting sharing platform with pipeline business models

We reviewed the literature to identify the characteristics that make peer-to-peer sharing platforms unique and contribute to their success *vis-à-vis* pipeline business models. The interrelationships between these characteristics alluded to three themes along which sharing platform and pipeline business models can be contrasted: market-level characteristics, market economics and firm-level characteristics. We drew characteristics of peer-to-peer sharing platforms and pipeline business models from the literature and derived key differences as synthesized in Table II.

Market-level characteristics

Traditional pipeline businesses emphasize a centralized exchange of value, focus on transactions with consumers, create value by controlling a linear series of activities from input to output, known as the value chain, and aim to leak minimum value to other members

Table I.
Core properties of peer-to-peer sharing economy platform business models

Core dimensions	Descriptions	Examples Airbnb	Uber
No transfer of ownership (i.e. access-based consumption)	Consumers gain temporary, short-term access to resources, while legal ownership remains with the service provider (e.g. Hazée *et al.*, 2017; Schaefers *et al.*, 2016)	Guests gain temporary access to rental space during their short-term stay	Riders gain temporary access to drivers' vehicle and service for a trip
Peer-to-peer exchange mediated through a digital platform	Peer-to-peer activities of providing, obtaining, and sharing the access to resources, mediated through an online technology-enabled platform (e.g. Hamari *et al.*, 2016; Andreassen *et al.*, 2018)	Airbnb does not own hotels but connects hosts (with underutilized capacity) and guests using an online platform	Uber does not own cars but matches drivers and their cars (with underutilized capacity) with riders using an online platform
Sharing relates to tangible assets	Consumers gain access to tangible assets (e.g. cars, bicycles, clothing, and accommodation) that are sometimes enhanced by other resources such as labor (e.g. providing a dining experience; Wittkowski *et al.*, 2013)	Hosts share tangible assets (i.e. accommodation) and experiences (e.g. breakfast) with guests	Drivers share tangible assets (i.e. cars) and services (i.e. driving service) with riders
Indirect network effects and transaction volume (i.e. liquidity) enhance matching quality	Indirect network effects (i.e. cross-side effects) are critical for two or more-sided platforms whereby the service value increases for one user group when a new user of a different user group joins the platform (Johnson, 2018) Value is added through higher transaction volume (liquidity) as it results in improved matching of capacity and demand, heterogeneous resource features with heterogeneous customer needs, and time and geography requirements. Liquidity combined with powerful matching analytics enhance value for all players	More Airbnb hosts (supply) add value to guests (demand), and vice versa. A larger network results in better matching of demand and capacity, and of user needs and product features	More riders (demand) means more drivers (supply), and vice versa. A larger network results in improved matching, especially in combination with surge pricing which allocates available capacity based on marginal utility
Limited direct network effects beyond a threshold level	Direct network effects (i.e. same-side network effects) offer benefits only until a threshold level at which the overall network size is sufficiently attractive for users (or providers) to join the platform. Beyond that, there is little benefit to a user (or provider) if more same-side actors join. Benefits translate mainly through indirect network effects	Once sufficient listings are available to make the platform attractive to users, further Airbnb hosts add competition to existing listings and do not offer direct benefits. The same logic applies to users	Once sufficient listings are available to make the platform attractive to users, further drivers add competition for rides and do not offer direct benefits. The same logic applies to riders

Table II.
Contrasting pipeline business models with sharing economy platform business models

Business model characteristics	Pipeline business	Sharing economy platform
Market-level characteristics		
Nature of markets	Usually one-sided; centralized exchange of value from pipeline business to customer	Multi-sided with two or more types of actors transacting on a platform; value co-creation by individuals scattered across an ecosystem
Focus of value creation	Focus on creating end-user (i.e. customer) value; pipeline businesses create transactions	Focus on co-creating value for actors across the ecosystem
Focus of value appropriation	Focus on extracting value from the value chain (incl. complementors), with minimum value leak to other members in the value chain	Typically focus on extracting a share of transaction value on the platform; other multi-sided revenue models (e.g. advertising or charging only one of the parties) are common
Actor roles	Well-defined and stable	Shifting, fluid; often multi-sided actors and "prosumers" (i.e. the same player can be provider and user on different occasions)
Market economics		
Cost structure	Fixed costs are typically high; assets ownership, brick-and-mortar presence and inventory cost Marginal cost is frequently high for goods manufacturers and low for service firms	Platform's fixed costs are typically low; asset-light and no inventory costs Platform's marginal cost is near-zero
Capacity constraints	Typically constrained (e.g. fixed assets and human resources)	Capacity can be scaled rapidly, esp. during periods of high demand Capacity is elastic (e.g. more capacity is brought online when prices are high; resources can be shared such as in ride sharing of Uber Pool); demand can be allocated according to utility during periods of high demand (incl. pushing users to shared use of resources such as Uber Pool)
Heterogeneity in product offering and customer needs	Largely standardized products; some supply-side heterogeneity is achieved through product lines (e.g. Marriott's many hotel brands and room types) that target different segments	Buyers and sellers are highly heterogeneous in terms of resource attribute preferences Uses highly sophisticated algorithms and analytics to match provider and user needs, and reduces search costs for both parties
Network effects, liquidity, and analytics	These tend to be of lesser importance to pipeline businesses; tend to target different customer segments for specific and relatively homogenous products that need to achieve sufficient utilization to amortize fixed costs (e.g. hotel inventory)	Indirect network effects and transaction volume (i.e. liquidity) of a platform are critically important, and the number actors on the platform need to be managed in tandem (e.g. number of drivers and riders need to grow in tandem) A sufficiently high level of liquidity is required for high-quality matching of heterogeneous resources with their specific attributes and time and location availability with the heterogeneous needs of users. A

(*continued*)

Business model characteristics	Pipeline business	Sharing economy platform
		sufficiently liquid platform enables high-quality matching through analytics and delivers high earnings to resource providers and high utility to users
Firm-level characteristics		
Leadership orientation	Leadership maintains tight control over internal processes, sourcing, production, distribution, sales and service, and focuses on building competitive advantage in the value chain Developing a competitive advantage usually involves focus on developing and controlling scarce and inimitable resources (incl. brands, intellectual property, and distribution), supply-side economies of scale, and achieving differentiation or cost leadership	Leadership often follows a "curator" style that emphasizes building a platform ecosystem to facilitate effective resource integration, resource orchestration and platform vibrancy to foster value co-creation A platform ecosystem can be a source of competitive advantage as quality matching of service providers' resources and user needs, their integration and orchestration, and trust in the platform can be difficult to copy
Innovation orientation	Internalized and controlled; innovation usually stems from within the firm and/or is controlled by the firm	Internal and external innovation; platforms innovate rapidly, plus are supported by innovation from players in its ecosystem which often include complementors Attracting and integrating complementors can increase the stickiness for all actors, making it harder to copy and thereby can build competitive advantage

Table II.

in the value chain (Porter, 1985). The roles of actors in the value chain tend to be stable. In contrast, sharing economy platforms mediate exchanges between providers and consumers using the key assets of liquidity (i.e. transaction volume or market thickness), data and analytics. Liquidity ensures transaction execution, and data and analytics (including peer-review systems) create value by decreasing information asymmetries between the peer groups and reducing search costs (cf. Chen *et al.*, 2018).

Physical platforms have existed for centuries (e.g. the local farmer's market); however, recent advances in information technology have enabled dramatically improved matching of capacity and demand and thus access to shared assets and resources that previously had to be owned or rented. These platforms thrive on circular, iterative and feedback-driven processes of value creation that emphasize the exchange of value produced by a decentralized network of individuals scattered across an ecosystem. As opposed to the one-sided revenue generation of pipeline businesses (i.e. selling to the customer), sharing platforms typically focus on extracting a share of transaction value on the platform through multi-sided revenue models (e.g. Airbnb charges hosts a 3 percent service fee and guests a service fee that ranges from 0 to 20 percent for facilitating the transaction). Moreover, in the platform ecosystem, consumers can also be providers (e.g. an Airbnb guest who goes on to become an Airbnb host in another situation), making them "prosumers."

Platforms are "visualized as resource integrators, involving consumers and business partners in a process of co-creation of value" (Muzellec *et al.*, 2015, p. 139). Value co-creation among the platform, providers, consumers and complementors is fundamental to the platform's value creation process (Andreassen *et al.*, 2018).

Market economics

Cost structure represents an important differentiator between platform and pipeline business models whereby a platform's fixed and marginal costs are typically lower compared to their pipeline business model counterparts (Zervas *et al.*, 2017). The latter tend to have high fixed costs as significant investments in production assets and stock are usually required. A lack of readily available resources like land, finance (low-cost debt), human resources and equipment, among others, can cause production bottlenecks, which, in turn, increase variable costs of production. In contrast, platform businesses have significantly lower fixed costs, mainly those pertaining to platform maintenance, and a near-zero marginal cost of production with the cost of serving one additional customer typically being close to zero. Moreover, platforms take such advantage one step further, whereby they extend zero marginal costs to the supply side of the business whereby the cost of adding one additional supplier is also close to zero (Johnson, 2017).

Compared to pipeline businesses that manage supply through the modulation of production capacity based on demand (e.g. a car rental company adjusts its fleet size based on predicted demand), sharing platforms can use highly sophisticated and dynamic supply- and demand-side pricing to equilibrate peer supply and demand, and thus manage capacity constraints more effectively than pipeline businesses. For example, Uber's surge pricing allows it to attract a higher supply of drivers onto the platform to meet increased demand in a particular geography at a particular time and at the same time allocate spare capacity to users with the highest utility (Hall *et al.*, 2015). This also means that capacity can be scaled rapidly, especially during periods of high and less price-sensitive demand (Zervas *et al.*, 2017). Furthermore, capacity constraints are often also malleable, as evidenced in Uber Pool, which allows the same vehicle to carry multiple passengers along a particular route and thus increases vehicle capacity and supply. Platform businesses therefore seem more flexible and can respond to changes on both the supply- and demand-side faster than pipeline businesses.

In comparison to pipeline businesses that offer largely standardized products and services to homogenous groups of customer segments, platforms have both highly heterogeneous peer-provided assets and user needs (Akbar and Tracogna, 2018; Dolnicar, 2018). For example, Airbnb hosts offer and guests seek a variety of accommodation options ranging from couches, rooms, and apartments to boats and treehouses. While heterogeneity can prove to be a challenge, platforms have demonstrated the ability to develop and use highly sophisticated algorithms and analytics that can mitigate the effects of capacity constraints caused by heterogeneity much more effectively than pipeline businesses (Duch-Brown, 2017). For example, Airbnb's large investment in data systems, AI and machine learning, has enabled genuine micro-segmentation, allowing guests to find the "perfect match" accommodation from thousands of unique options (Dolnicar, 2018). In traditional pipeline businesses, in contrast, guests are treated as the average member of an artificially created market segment that typifies the brand creation and differentiation efforts (Dolnicar, 2018).

Finally, indirect network effects are critical for multi-sided platforms but have little relevance for pipeline businesses. Platform businesses need to grow both asset supply and user demand to offer sufficient liquidity (i.e. transaction volume). Higher liquidity allows a platform to better match heterogeneous assets with heterogeneous user needs (i.e. improve match quality) and thereby increase value for both providers (through a better price) and users (through a better meeting of needs). That is, the required liquidity is higher on platforms with more heterogeneous assets and user needs to achieve high-quality matching.

Firm-level characteristics

The role and strategic focus of leadership provide another important point of differentiation between platform and pipeline business models. Consistent with pipeline businesses' orientation to value creation, leadership in such models involves achieving competitive advantage by maintaining control over scarce and inimitable resources that provide supply-side economies of scale and cost leadership, or those that enable differentiation in the marketplace (Porter, 1985). In contrast, platform business models typically require "curator" leadership practices that emphasize: resource integration whereby leaders design a platform architecture that facilitates building a strong network of service providers who bring their capacity-constrained assets to the platform; resource orchestration, which is based on efficient exchange mechanisms that match supply and demand, and thus improve a network's liquidity (Gawer and Cusumano, 2014); and platform vibrancy whereby asset providers and users co-create value, frequently enhanced by complementors (Hagiu and Wright, 2015). Leadership focuses on building a platform's ecosystem that includes liquidity and quality matching, and the integration and orchestration of service providers, users and complementors which are all critical for value creation.

Regarding innovation orientation, pipeline businesses are inclined to adopt internalized systems of innovation, whereby innovation is controlled by the firm and stems mainly from within the firm. In contrast, platform businesses tend to focus on rapid innovation on their platforms but, importantly, also have an external innovation focus. That is, in addition to the internalized system of innovation adopted by pipeline businesses, platforms leverage external innovation by players in a platform's ecosystem which often include complementors. In particular, attracting and integrating complementors to a sharing platform can increase the stickiness for all actors, make it harder to copy and therefore build competitive advantage and enhance value appropriation power. For example, Nielsen and Lund (2015) highlight how platform business models can have collaboration as a central focus through leveraging the concept of open innovation. Here, the role of the platform is to create an ecosystem that enables it to benefit from the investments of others in the platform (Chesbrough, 2012).

Furthermore, working and innovating with complementors can help platforms to find new markets (e.g. Airbnb's partnership with refugee relief organizations and medical

non-profits to offer free temporary housing to people who lost their home due to disasters, conflict or illness as part of its Open Homes program), enable brand extensions (e.g. Niido by Airbnb which offers a range of services to travelers) and overcome supply constraints (e.g. Uber's partnerships with Hertz, GetAround and Fair).

Value appropriation power of peer-to-peer sharing platforms

Financial markets celebrate peer-to-peer sharing platform business models under the assumption that they can capture value over a prolonged period of time. In fact, some feel that many of these markets will be dominated by one or two platforms in a "winner takes all or most" manner (Akbar and Tracogna, 2018; Johnson, 2017). However, recent developments suggest that rivalry among existing competitors in sharing economy platforms can be high. Typically, once a novel sharing platform gains traction, similar platforms tend to emerge quickly. For example, following Uber's initial success in New York City, numerous similar rideshare platforms were launched (e.g. Lyft, Gett, Juno, Curb and Via), which all compete for both drivers and riders. To better understand competition in sharing economy platform markets we examine potential sources of competitive advantage, starting with network effects and liquidity in the next section.

Network effects and liquidity

Peer-to-peer platforms that share capacity-constrained assets and resources face two-sided markets. One implication of this is that service providers (e.g. Airbnb hosts) place importance on asset and resource utilization (i.e. occupancy rates), whereas users are concerned with capacity availability. An added challenge to balancing capacity and demand on peer-to-peer platforms is that assets and resources tend to be heterogeneous (e.g. almost every listing on Airbnb is unique), and user needs can also differ widely, and are time- and location-specific. These characteristics require a minimum level of liquidity to allow quality matching. This minimum viable platform size is determined by the nature of the network effects linking the platform's two or more-sided markets, the heterogeneity of assets and "tastes" of the actors (Akbar and Tracogna, 2018; Evans and Schmalensee, 2010), and equilibrium dynamics between service providers and users that allow stakeholder utilities to be maximized at a given price (Evans and Schmalensee, 2010).

These requirements make liquidity an important value-creation mechanism for platforms. An increasing transaction volume on a platform adds value as long as it translates into better quality matching of available assets, resources and their attributes at a specific time and location with the heterogeneous needs of users. As such, a highly liquid platform will deliver both higher service provider earnings and higher user utility than a platform that operates below a level of liquidity required for optimum quality matching.

Evans and Schmalensee (2010) cite the critical mass constraint that prevents many platform businesses from succeeding. This is also described as a chicken-and-egg problem whereby "to attain a critical mass of buyers, you need a critical mass of suppliers – but to attract suppliers, you need a lot of buyers" (Hagiu and Rothman, 2016, p. 66). The critical mass constraint combined with value addition by complementors (who are also attracted to liquid platforms) means that liquidity, once achieved, can offer a platform some protection from smaller competitors and can be a source of competitive advantage as liquidity is hard to copy (cf. Wirtz and Ehret, 2019).

However, unlike for social media and communications platforms that thrive on direct network effects, there is a declining rate of incremental value of adding liquidity to capacity-constrained sharing platforms once a certain level offers sufficient matching quality. After all, the service provider and customer just need a single match for a particular transaction. This also means that with sufficient initial promotional investment

(e.g. incentives for providers to join and for users to try and make bookings), liquidity can be built if the challenger has access to sufficient funding. As such, the power of network effects is less for sharing platforms than for those that thrive on direct network effects, rendering the competitive advantage of sharing economy platforms less powerful than generally assumed.

Furthermore, the threat of new entrants and other alternative players seems high. The typically low fixed and marginal costs mean that sharing platforms have relatively low barriers to entry within an industry, and access to service providers tends to be easy (Van Alstyne *et al.*, 2016). While new platform concepts then to be differentiated initially (e.g. Onefinestay focused on luxury homes and was at first not in direct competition with Airbnb), over time, concept-copying commoditizes offerings. Furthermore, cross-listing of assets increases similarity across platforms and create direct competition (e.g. the same accommodation can be booked on two or more platforms). New entrants also frequently create price competition within the industry (e.g. Lyft launched with attractive promotions and generally lower prices than Uber). Thus, low barriers to entry can result in intense competition between sharing platforms.

Competitive responses of pipeline players

Traditional pipeline business models were disrupted by sharing platforms offering customers attractive and low-cost alternatives (Parker *et al.*, 2016; Evans and Schmalensee, 2016; Piscicelli *et al.*, 2018; Van Alstyne *et al.*, 2016). Incumbent players have responded in various ways to these challenges. Responses range from modifying their business models to focus on segments platforms cannot serve well (e.g. business travelers who need a range of value-add services) and adopting features of platforms (e.g. launching a booking app), to launching competing platforms (often one-sided platforms), and acquiring and integrating peer-to-peer platforms (e.g. Accor Hotel's acquisition of onefinestay).

Examples of competitive responses include MetroCab Boston's mobile app launch. Its app is, from the user perspectives, not significantly different from Uber's and Lyft's (An, 2018). The rider experience in Singapore is largely identical between sharing platforms and the incumbent taxi company's app-based service, except that the taxi company offers a more reliable service with virtually no cancellations, more predictable arrival times and trained drivers at marginally higher prices. Given the pipeline businesses' superior reliability and consistent qualities, it can be challenging for sharing platforms to convince consumers that the economic benefits outweigh the risks they are taking, while still making a profit (Wallenstein and Shelat, 2017).

Furthermore, some pipeline business models have also started listing peer providers on their own platforms. For example, BMW is taking on Uber and Lyft directly by launching a ride-sharing service named ReachNow. In the hotel industry, following the purchase and development of onefinestay, Accor added peer-provided rooms to their traditional distribution channels. While initially taken by surprise, traditional pipeline players have started responding by embracing platform technologies and innovation that leverage and strengthen their existing competencies and assets, which increasingly will intensify competition with peer-to-peer platforms.

In conclusion, the analysis of competitive intensity of peer-to-peer sharing platform markets shows that beyond an initial potential liquidity advantage, peer-to-peer sharing platforms can face intense competition from direct competitors, new entrants and even traditional pipeline players who are becoming more effective in their competitive responses. The question arises as to what else platform players can do to reduce competitive intensity. In this context, we discuss next platform governance and trust, and building service provider and customer loyalty.

Platform governance and trust

The platform specifies the "rules of engagement," including the information to be provided on listings, pricing schedules, search criteria and ratings for uses to search, interact and transact (Chen *et al.*, 2018), and stakeholder privacy protection and data security (cf. Lwin *et al.*, 2016; Wirtz and Lwin, 2009). Effective platform governance that cultivates stakeholder trust which, in turn, is important for reducing transaction costs (Ndubisi *et al.*, 2016; Wirtz and Ehret, 2019) and enables safe exchanges between strangers is seen as critical to a platform's success (Hagiu and Rothman, 2016). Furthermore, unethical behavior in peer-to-peer transactions is a risk in particular in one-off encounters between strangers (Hassan and Tovey, 2012). Here, risk and uncertainty are mitigated through instilling and managing trust via institutional and legal governance mechanisms (Akbar and Tracogna, 2018; Perren and Kozinets, 2018).

Effective platform governance fosters trust through "sociality management," and institutional and legal arrangements that enable exchange mediation (Perren and Kozinets, 2018). Governance mechanisms on sharing platforms include (Akbar and Tracogna, 2018): pre-selection of assets, other resources and complementors that can be accessed through the platform: the owner of the platform may decide to limit access to only specific assets and resources that meet predefined quality standards (e.g. accommodations offered on onefinestay); rating systems that enable feedback and build trust (e.g. Airbnb's guest and host ratings; Etzioni, 2017); establishment and administration of platform contracts among peers, including the management of payments (e.g. Airbnb's secure payment platform that protects hosts and guests); the formulation of rules and standards regarding service levels (e.g. Airbnb's "hosting standards" and "Airbnb Plus"); and legally-mandated or voluntary provision of insurance and guarantees to protect assets, resources and actors (e.g. Uber's $1m in third-party liability coverage for rideshare driver-partners).

Hartl *et al.* (2016) found that the majority of participants in sharing networks support a governance system and that good governance increases cooperation among members by reducing distrust. In a study of consumers on Chinese platforms, Chen *et al.* (2009) found that two types of trust are essential for building platform loyalty: mutual trust among members and members' trust in the platform itself (a number of further studies validated these findings; Abrate and Viglia, 2019; Ert *et al.*, 2016). Embedding trust in a platform and its brand takes time, which makes it harder for competitors to copy and reduces competitive intensity. For example, Teubner *et al.* (2017) demonstrated that trust-building mechanisms on Airbnb translated into tangible economic value by attracting more demand and enabling higher prices. Thus, we suggest that stakeholders' perceptions of effective governance and resulting trust in a platform can, in addition to liquidity, be an important source of competitive advantage.

Having examined the literature on platform governance and trust, the next three sections focus on key actors who orchestrate and co-create value in a platform ecosystem (Figure 3). Specifically, we explore the perceptions, motivations and behaviors of three key actors: users, service providers and policy makers, and, where appropriate, link this section back to the discussion on building a competitive edge for platform providers.

Customer behavior in the context of sharing platforms

A significant body of literature has examined various aspects of sharing platform-related consumer behaviors. We synthesize, integrate and structure this literature using the three-stage model of service consumption as organizing framework whereby we deconstruct the customer journey into the pre-purchase, service encounter (i.e. consumption) and post-encounter stages (Wirtz and Lovelock, 2016, p. 53; Tsiotsou and Wirtz, 2015). See also Benoit *et al.* (2017) for an excellent review for consumer motives and behaviors related to collaborative consumption, which includes peer-to-peer sharing.

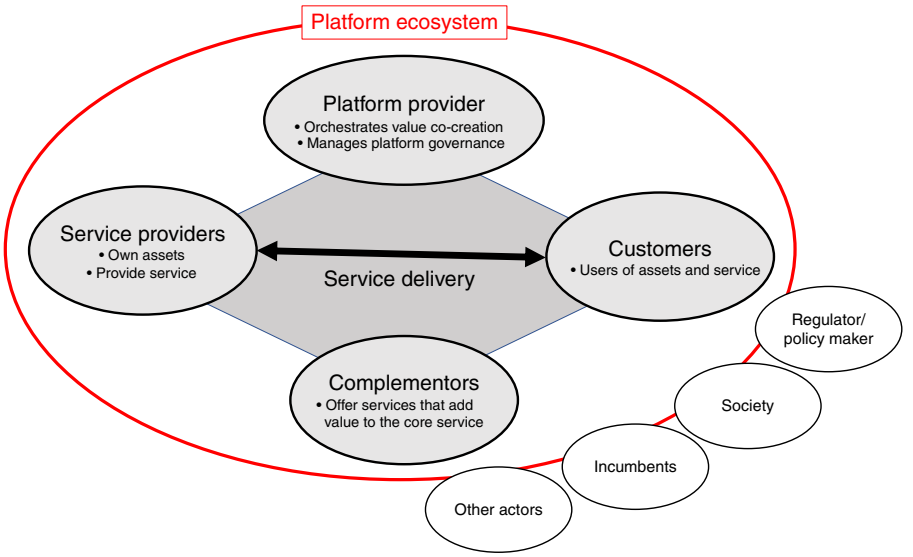

Figure 3.
Actors involved in the sharing economy platform ecosystem

Pre-purchase stage

Need awareness. While conventional wisdom in consumer behavior suggests that consumer journeys start with need arousal, for customers on sharing platforms such needs are often driven by unfulfilled needs for traditional offerings (e.g. a hotel room or taxi ride). Especially when the supply of traditional providers seems limited, unavailable, expensive and/or of poor quality, consumers extend their consideration set to include sharing platforms. Furthermore, instead of buying and owning things, consumers also increasingly prefer access and temporary use (i.e. experiences over possessions; Bardhi and Eckhardt, 2012). Need arousal can also be triggered by social influence, wanting to be part of the peer-to-peer sharing economy and trend affinity (Tussyadiah and Pesonen, 2016), and an experience "worth trying" (Yang and Ahn, 2016). For repeat customers, such need arousal is likely to be a habitual process.

Information search. Consumers tend to rely heavily on information provided by peers (e.g. online reviews and peer ratings) as it is viewed as credible and independent. Sharing platforms are relatively new and consumers who are not familiar with a particular platform may perceive increased levels of risk and incur added search costs (Mao and Lyu, 2017; Tussyadiah and Pesonen, 2016) as they need to deal with independent providers who are essentially "strangers" (Frenken and Schor, 2017). In addition, information search tends to be more elaborate compared to buying from traditional pipeline providers as offerings in the sharing economy can be highly heterogeneous and are provided by independent and equally heterogeneous service providers (i.e. peers). Furthermore, as services are provided by many independent providers, information search and need clarification involves more direct communication with peers rather than the platform.

Relatedly, as network liquidity increases beyond what is required for high-quality matching, provider and user search costs increase which can reduce the quality and number of transactions per provider. For example, Li and Netessine (2018) empirically demonstrated that as a platform's number of hosts and travelers doubled, search costs (i.e. search friction) increased through an increase of 18.3 percent of inquiries sent to hosts and 19.6 percent to travelers. As a result, traveler confirmation rates dropped by 15.4 percent and host

occupancy by 15.9 percent, and the platform lost 5.6 percent of potential transactions due to the increased search friction. Because of the larger number of hosts and users, both hosts and users need to spend time and effort to evaluate more options and both parties could communicate simultaneously with multiple potential matches and make comparisons. Being faced with too many options reduces decision making, and even when they are ready to make a reservation, their favorite option may no longer be available (Li and Netessine, 2018).

To assist in the search process, platforms should therefore alleviate the uncertainty and higher search costs that result from heterogeneity and invest in systems that reduce search friction and enable high-quality matching. These can include decision aids based on analytics and AI that filter, sort, compare and rank options, and to create customizable search tools and recommendation systems that cater better to individuals' preferences (Li and Netessine, 2018), and also to design better feedback and rating systems to reduce friction caused by information asymmetry (Tadelis, 2016). Additional approaches include making the matching process more instantaneous (e.g. Airbnb's instant booking function), limiting the number of options presented to travelers through a more refined search (Li and Netessine, 2018), and reducing risk perceptions by allowing users to challenge payment due to unsatisfactory service (Chen *et al.*, 2018).

Evaluation of alternatives. Platforms businesses often offer a lower price than pipeline businesses which constitutes a powerful decision factor for many consumers (Poon and Huang, 2017; So *et al.*, 2018; Tussyadiah and Pesonen, 2018; Yang and Ahn, 2016). Furthermore, platform businesses tend to be more innovative and have offerings that are perceived as new, interesting, attractive and novel (Guttentag *et al.*, 2018; Johnson and Neuhofer, 2017; Mao and Lyu, 2017; So *et al.*, 2018), and thereby create unique experience expectations (Mao and Lyu, 2017).

Some consumers are attracted to collaborative consumption due to sharing economy ethos which include consumers' belief that platforms provide income for locals and support a community's well-being, and that the offerings are more authentic (e.g. the benefits of a local home for Airbnb; Guttentag *et al.*, 2018; Johnson and Neuhofer, 2017; So *et al.*, 2018). Furthermore, many consumers believe that sharing assets and resources is environmentally friendly (Guttentag *et al.*, 2018) and supports sustainability (Hamari *et al.*, 2016; Yang and Ahn, 2016). However, these assumptions have been challenged as the sharing economy can increase overall load on the environment through higher consumption, such as added flights due to lower cost accommodation and more traffic due to convenient and lower cost ride sharing (e.g. Font Vivanco *et al.*, 2015; Frenken and Schor, 2017).

On the negative side, perceived risk can be increased due to the "new to the market" nature of many platforms (Mao and Lyu, 2017; Tussyadiah and Pesonen, 2016), using assets and resources of others in an unsupervised manner (Poon and Huang, 2017), and privacy concerns and insecurity caused by interacting with peers who are effectively strangers (So *et al.*, 2018; Yang and Ahn, 2016). These risks lead to a lower level of trust in platforms compared to pipeline providers (So *et al.*, 2018).

Making a booking decision. When making their first booking, consumers may encounter barriers, including learning and set-up costs, and have self-efficacy concerns as they need to learn how to navigate the platform regarding what is occurring, why, how, who and when (Zhu *et al.*, 2017). In contrast, repeat bookings are often seamless as the account, once set up, results in reduced transaction costs, increased convenience, and reduced risk. As such, the first transaction plays an important role as risk perceptions and nonmonetary costs are expected to diminish after the first trial. However, repeat users still may have difficulty making a booking decision if presented with too many options due to information overload and choice fatigue (Li and Netessine, 2018; cf. Kuksow and Villas-Boas, 2010).

Consumption stage

Core benefits consumers may derive from participating in peer-to-peer sharing platforms include functional, experiential and hedonic, and social value.

Functional value. One of the benefits users gain from participating in sharing platforms is perceived functional (and economic) value (Razli *et al.*, 2017; Zhu *et al.*, 2017; Eckhardt and Bardhi, 2015). The availability of a wide range of options combined with effective matching mechanisms frequently result in high matching quality with the heterogeneous needs of customers (Lalicic and Weismayer, 2017; Priporas *et al.*, 2017), which, in turn, leads to superior functional value (Razli *et al.*, 2017; Zhu *et al.*, 2017) at an attractive price.

Experiential and hedonic value. Novelty and experience heterogeneity can produce high levels of enjoyment (So *et al.*, 2018; Tussyadiah and Pesonen, 2018; Yang and Ahn, 2016). Platform businesses can also create experiencescapes that offer added dimensions such as entertainment, education, escapism, aesthetics, serendipity and personalization (Mody *et al.*, 2017).

Social value. Social interactions between actors can form an important part of the consumption experience and offer value (Mody *et al.*, 2017; So *et al.*, 2018; Zhu *et al.*, 2017), including authenticity (Guttentag *et al.*, 2018; Poon and Huang, 2017) and local cultural aspects (Poon and Huang, 2017). Here, Airbnb's idiosyncratic offerings that reflect each host's lifestyle, personality and culture provide a wider range of options to match user tastes and differentiate their travel experience (Liu and Mattila, 2017).

Increasingly, however, the consumer and the service provider may not need to meet in person. For example, a consumer can be given a code to enter an Airbnb apartment or to open a keylock box, rendering in-person service interactions unnecessary. This tends to be particularly the case for professional Airbnb hosts who have multiple listings as opposed to the more casual Airbnb hosts who deliver authentic experiences. While in the latter case social and authentic experiences may be diminished, accessibility and convenience are increased.

Post-consumption stage

Satisfaction. Customer satisfaction tends to be higher when a platform offers attractive pricing, and perceived ease of use and usefulness of the platform are high (Min *et al.*, 2018). The evaluation of the consumption experience also depends heavily on the quality of service provided by the service provider and perceived platform governance, based on which consumers ascribe attribution of responsibility for the outcome of service experiences. Furthermore (dis)satisfaction with the service provider performance may also carry over to customer (dis)satisfaction with the platform itself (Lalicic and Weismayer, 2017). Finally, customer experiential outcomes can include memorability and extraordinary experiential outcomes and well-being (Mody *et al.*, 2017).

Ratings and word-of-mouth (WOM). At the post-consumption stage, users are frequently prompted to provide ratings of the peer provider and post online reviews which exert an important influence on other users' booking behaviors. Furthermore, users generate online and offline WOM that has a powerful influence on the adoption behaviors of others (Liang, Schuckert and Law, 2017; Mao and Lyu, 2017).

Repurchase intentions and loyalty. After the initial use and set up, repurchase tends to be easy because it is a simple click repurchase with low learning and search costs. Repurchase intentions are formed in the initial transactions (Johnson and Neuhofer, 2017; Mao and Lyu, 2017; So *et al.*, 2018).

Consumers' post-consumption attitudes toward the platform depend on their personal consumption experiences, peer behaviors and platform governance (Mao and Lyu, 2017; So *et al.*, 2018). Furthermore, customers tend to develop commitment to a platform (e.g. Airbnb) rather than service providers (e.g. a host; Lalicic and Weismayer, 2017; Mody and Hanks,

2019; Yang *et al.*, 2017). That is, customers form post-consumption attitudes toward the platform (Mao and Lyu, 2017; So *et al.*, 2018), including platform brand perceptions and brand personality (Lee and Kim, 2018), brand loyalty (Lalicic and Weismayer, 2017; Mody and Hanks, 2019; Yang *et al.*, 2017) and willingness to pay a price premium (Zhang *et al.*, 2019). Moreover, rich and authentic experiences associated with a platform were found to contribute to creating brand love and loyalty (e.g. for Airbnb; Mody and Hanks, 2019).

If a platform can cover most customer needs at a competitive price, enabled by a large network and variety in offerings, switching becomes less likely. However, if price performance (e.g. surge pricing and temporary promotions) and matching quality (e.g. availability of a suitable family home) are perceived to vary, providers and users may sign up on several platforms (called multi-homing) and switch on a transaction-by-transaction basis. Once multi-homing is set up, the close to zero switching costs can make competition between platforms direct and intense. For example, both drivers and users can sign up with several platforms and switch on a case-by-case basis, depending on a platform's surge pricing strategies, the availability of temporary promotions, and quality matches (Chen *et al.*, 2018). As such, it can be difficult for platforms to lock in customers, which makes competition intense if two or more providers have sufficient liquidity to serve the product feature-, location- and time-specific user needs.

In addition, when peers repeatedly make transactions with one another (e.g. a traveler needs a daily ride to the office), they may choose to substitute the platform through user disintermediation (e.g. Hagiu and Rothman, 2016). After an initial successful transaction facilitated by the platform, the buyer and seller may agree to conduct subsequent transactions outside the platform to save fees. Platforms try to police such behaviors, for example, through temporarily suspending accounts if algorithms detect attempts to take transactions off a platform and prevent offline transactions such as Airbnb blocking the exchange of phone numbers or emails until a booking is confirmed. However, if incentives are sufficiently high, actors will find ways to circumvent a platform which reduces a platform's pricing power (Upbin, 2010).

As such, low switching costs, multi-homing and disintermediation can pose challenges to platforms. Potential responses are tools to build loyalty include evangelizing, milestoning, badging and documenting (Perren and Kozinets, 2018), and incentive systems for service providers to increase their activity on the platform (Chen *et al.*, 2018). For example, Airbnb's Superhost program rewards hosts for providing outstanding hospitality, as measured by guest reviews, for at least ten trips over a year; the badge enables hosts to charge higher prices for their listing (Liang, Schuckert, Law and Chen, 2017). Incentive systems can be developed to encourage increased transactions on a platform; both Uber and Lyft offer bonuses if drivers exceed a certain number of rides in a specified period of time, and Uber launched a rider loyalty program. Such strategies increase switching costs and provide incentives for providers and users to become more loyal to a platform (Chen *et al.*, 2018).

In sum, sharing platforms present their own unique characteristics, challenges and opportunities at each stage of the consumer journey in impacting consumers' perceptions, motivations, and behaviors. With constantly evolving ecosystems, markets and consumption patterns (e.g. Caldieraro *et al.*, 2018; Lamberton and Rose, 2012), sharing platforms need to understand the factors that draw and keep consumers with the platform. Building platform brand equity and loyalty can be effective in developing a competitive advantage.

Service provider motivations and behaviors

Much academic research has focused on demand-side consumer motivation, but relatively fewer studies investigated the motivations of peer service providers (Karlsson and

Dolnicar, 2016; Hall and Krueger, 2018). We consider service providers' main motivations and decision-making processes next.

Financial benefits and entrepreneurial freedom

One of the main draws of platform business models for providers is that platforms tend to offer flexibility to providers with low barriers to entry. This flexibility allows service providers to gain income for assets and resources they already own and are underutilized, and let them use these underutilized assets and resources when and how they wish rather than being restricted by traditional job positions (Benoit *et al.*, 2017). For example, Uber drivers can enter destinations for trips that are aligned with trips already intended (e.g. to/from work). Approximately two-thirds of Uber drivers use the platform as an additional income source over regular employment; Uber is the only source of personal income only for one-fifth of drivers (Hall and Krueger, 2018). Uber also provides a bridge for workers who are seeking another position in the labor market and offers higher earnings per hour than the traditional taxi businesses (Hall and Krueger, 2018). Overall, service providers participate in the sharing economy platforms for financial gain – driven either by the needs to cover basic necessities or to create additional income to afford the things that are normally unaffordable to them (Karlsson and Dolnicar, 2016).

Reduced set-up, distribution and transaction costs

Platform liquidity-enabled matching and process efficiencies reduce transaction costs. Platforms effectively enable providers to "distribute" highly unique services (e.g. a trip from near a service provider's home to near his work place). Furthermore, a convenient and effective technology interface with the platform lowers the barrier to entry for service providers and reduces their listing and distribution costs. That is, it is relatively easier and costs less to advertise one's assets and services on a platform compared to listing on websites or running one's own website, which tends to be expensive and ineffective as these channels typically lack in transaction liquidity (Bakos, 1997; Zervas *et al.*, 2017). In sum, platform models allow providers to bring their excess capacity to market at low cost and therefore significantly expand supply, even for short peak demand periods.

Social interaction and sharing

In addition to economic benefits, service providers in the sharing economy can be motivated by social needs (e.g. "cultural interaction") and genuine passion and excitement for meeting people (e.g. "meeting fun and interesting people"), and being welcoming and hospitable (e.g. in the context of Airbnb; Karlsson and Dolnicar, 2016; Liu and Mattila, 2017).

Relatedly, provider participation can be motivated by a perceived obligation to do good for others and for the environment (e.g. helping others, sharing and participating in sustainable behavior; Prothero *et al.*, 2011; Sacks, 2011), and by mutual respect, compassion, sympathy for others, and the feelings of fun and joy from sharing (Hellwig *et al.*, 2015).

Policy makers and society in the peer-to-peer sharing economy

The significant growth of the sharing economy has resulted in a new array of issues for regulators and policy makers. Sharing platforms can result in immediate tax revenue losses as demand is shifted away from traditional, tax paying, and regulated businesses, and taxing peer-to-peer platforms has proven to be a challenge (Zervas *et al.*, 2017). Competition may be distorted if regulation applies to traditional businesses such as hotels and taxi companies, which follow taxation codes, labor laws and safety regulations, but

may be circumvented by platforms players and their service providers. Furthermore, it has been suggested that home sharing platforms harm neighborhoods, distort the housing market and reduce the stock of affordable housing for residents. For these reasons, restrictive regulation on sharing platforms has been advocated by incumbent firms, workers for incumbent firms, and wary "neighbors" of sharing economy users (Rauch and Schleicher, 2015).

Advocates of the sharing economy highlight various benefits of sharing platforms, including increased tourist arrivals and spending (Boros *et al.*, 2018), extra incomes for local service providers, higher traveler well-being, and better asset and resource allocation and utilization for society at large. For example, Airbnb makes inexpensive accommodation available that can increase travel and tourism receipts overall through, for example, higher spending with restaurants, retailers, and tourist attractions. Furthermore, indirect revenues through the higher spending power of service providers (e.g. hosts) are also likely to boost the local economy. Together, these effects could lead to a net increase in economic activity and employment, and even an overall increase in tax revenue.

To embrace the benefits of the sharing economy while mitigating potential negative effects, policy makers need to address these challenges, for example, through effective laws, regulation, and norms to encourage actors to engage in positive behaviors, and, at the same time, discourage negative interactions (Tiwana, 2013). These may include effective systems of taxation and penalties (An, 2018) and maintaining overall a level playing field for competition (Gyódi, 2017).

Platform players themselves can also work on easing regulatory issues. For example, to overcome the stigma of home sharing among non-host property stakeholders, Airbnb started its Friendly Buildings Program to incentivize landlords, property managers and homeowner associations to let people in their buildings host on Airbnb by sharing information and revenue with these stakeholders. This program also underlies Airbnb's new Niido brand in which Airbnb is partnering with real estate developers to make entire buildings Airbnb-ready (Studach, 2017; Ting, 2018).

Finally, although celebrated by some as ecologically friendly, potential negative environmental outcomes of sharing platforms have been highlighted. For example, Font Vivanco *et al.* (2015) estimate that car-sharing services contribute to increasing emission rather than reducing it as lower prices can increase the miles traveled in cars and switch commuters from more environmental-friendly public transport. Tussyadiah and Pesonen (2016) also note that sharing platforms increase the overall travel frequency and length of stay, which likely leads to a negative environmental impact (e.g. through additional air travel).

Summary, conclusions and further research

Summary and conclusions

We suggest that the key differences between pipeline and platform business models lie in what they use to create value – one-sided transactions based on internally produced products vs multi-sided exchanges that leverage the assets and resources of network actors; how they create value – linear optimization of internal processes vs lowering transaction costs and enhancing value through high-quality matching, managing heterogeneity of supply and demand, fostering trust and ecosystem governance; intra-organizational dynamics that enable value creation – reliance on capacity-constrained assets vs lower capacity constraints due to lower costs of production and dynamic demand-based pricing; and in how they leverage ecosystem innovation – innovation from within the firm vs innovation from within the firm plus ecosystem-wide innovation. Integrating and channeling assets and resources, as opposed to accumulating and owning them, is the key to platform success.

Our competitive analysis suggests that peer-to-peer sharing platforms' competitive advantage is less powerful than widely assumed. Beyond a critical level of transaction liquidity, platforms have to look at other aspects of their business model to support value appropriation. These include the service provider experience (including user onboarding and interface design), developing an ecosystem of complementors, and platform governance to build trust of stakeholders and brand equity of the platform.

Directions for further research

Table III lists research questions that emerged throughout this paper. A few topics we are particularly excited about are elaborated next.

Success factors for different platform types. Our focus was on access-based, peer-to-peer sharing platforms that match capacity-constrained assets and resources. Future research should examine access-based platforms that rely on marketer-provided assets (not peer-to-peer) such as Zipcar, which owns and controls a fleet of cars (bottom right quadrant in Figure 2), and compare them to the peer-to-peer sharing platforms and traditional pipeline business models.

The sharing of the capacity-constrained assets and resources (e.g. cars, rooms and labor) examined in this paper is also fundamentally different from the sharing of capacity-unconstrained assets (e.g. files, music, information and ratings), which can be simultaneously consumed by many people without capacity restrictions. These include social media, communication, and content platforms (see Figure 1). Given their access to millions of user profiles, such platforms' revenue models rely largely on targeted advertising (Aguirre *et al.*, 2015). Contrasting core properties underlying the different platforms based on capacity-constrained vs unconstrained assets and resources, and their impact on sources of competitive advantage (e.g. direct vs indirect network effects) warrant further research.

Converging business models. Businesses know that the characteristics associated with their primary business model – pipeline or platform – need to be dynamic and malleable to remain competitive. Thus, while sharing platform businesses have flourished due to their ability to scale and indirect network effects, ignoring the potential benefits associated with pipeline business models would be limiting a platform's future growth trajectory. Uber is considering owning autonomous vehicles and Airbnb works on owning and controlling room inventory, effectively moving closer to sharing platform-provided assets and resources, and to their pipeline counterparts such as Hertz and Marriot, respectively.

Similarly, pipeline businesses have recognized that to starve off the threats to their positions as dominant incumbents, they can leverage the characteristics of platform business models (Hagiu, 2018). For example, Marriott International partnered with London-based home rental management company Hostmaker to offer homes via a new brand Tribute Portfolio Homes. Marriott's move is reflective of its platform-type ambitions, transitioning away from hotel ownership and operations towards a branded marketplace platform (Richard and Cleveland, 2016).

Value co-creation and sharing in the new economy have been fundamentally altered by the convergence of business models, which refers to the simultaneous integration of pipeline-like characteristics into platform business models (Akbar and Tracogna, 2018) or the hybridization of the platform business model characteristics into pipeline business models (Van Alstyne and Parker, 2017; Zhu and Furr, 2016). Value creation is not simply about a choice of the platform or pipeline business model, but rather a continuum (Andreassen *et al.*, 2018). Future research is needed to explore the nature, dynamics and

Future research topics	Research questions
Platform business models	
Other types of access-based platforms	What are the key differences between P2P, access-based sharing platforms that were discussed in this paper and access-based sharing platforms that rely on marketer-supplied assets (e.g. Zipcar) in terms of value creation, network effects, ecosystem dynamics and competitive advantage?
Capacity-constrained vs unconstrained assets	The sharing of supply-constrained assets (e.g. cars, rooms and scooters) is fundamentally different from sharing capacity-unconstrained assets (e.g. media content). What are the implications for revenue models, platform growth, network effects and ecosystem dynamics when sharing platforms do not have capacity constraints?
Convergence of business models	How does the convergence of business models (i.e. pipeline businesses adding platform components and platform businesses adding pipeline components) impact value creation, value capture, and the optimal assets mix provided by the platform owner/pipeline business and by a platform's peer providers?
Platform governance	
Governance mechanisms	What is the relative effectiveness of different types of institutional, community-based and legal governance mechanisms and incentives for creating ecosystem value and preventing user disintermediation?
Broader ecosystem	How are norms developed within a sharing platform also driven by other, related ecosystems (e.g. how do norms operative in a ride-sharing ecosystem influence those in a room sharing ecosystem; Benoit *et al.*, 2017)?
Consumer behavior	
Search friction	What drives search friction for providers and users of platforms? How can search friction be mitigated, especially related to choice overload and over-communication (Chen *et al.*, 2018)? How effective are decision aids that help users to filter, sort, compare and rank options? How effective are customized search tools and recommendation systems that cater to individuals' preferences? Can service robots or chat bots be developed to take on communications and decision making for both service provides and customers (cf. Wirtz *et al.*, 2018)? How can stakeholders be motivated to allow such robots to transact on their behalf and thereby significantly reduce search friction? How can feedback and rating system be designed to reduce friction caused by information asymmetry? How can the matching process be made more effective, including offering more instantaneous booking functions and limiting the number of options presented to travelers through a more refined search? What is the role in risk reduction and decision confidence of allowing users to challenge payment due to unsatisfactory service?
Consumer expectations	Are there fundamental differences in how consumers form expectations about service providers on sharing platforms vs traditional incumbent providers (Benoit *et al.*, 2017)?
Reviews and ratings	What are the consequences of a mutual rating system (i.e. the ability of consumers (e.g. Uber riders) to rate service providers (e.g. drivers) and vice versa (e.g. quality assurance vs strategic behaviors for both actors such as inflating review ratings)? How can providers and users be encouraged to provide more, more accurate and more detailed reviews? How can rating inflation be reduced (cf. Fradkin *et al.*, 2018; Pera *et al.*, 2019)? How can negative reviews be made less costly such as through reduced risk of retaliation and harassment (Tadelis, 2016)? How effective are controlled anonymity schemes (i.e. the platform conceals the identities of the raters but knows their identity and monitors their ratings; Dellarocas, 2000) and analytics (e.g. use analytics to correct biases to estimate unbiased rating estimates; Dellarocas and

Table III.
Potential further research questions

(*continued*)

Future research topics	Research questions
	Wood, 2008)? How can "bought" or outright fake reviews be reduced? Overall, how can the gap between rating and reality be minimized (Masum and Zhang, 2004)?
Trust building	How does the trust-building process between consumers and providers evolve over time at different stages of the consumer journey (which can involve both online and in-person components)? How can trust be built with the platform and between players in a platform's ecosystem (Chen *et al.*, 2009)? How do trust in the platform and trust in peers interact with each other? Can blockchain technology offer a powerful alternative to verify and authenticate the true identify of parties, ensure traceable recording of transactions and in the process build trust? Will the parties on a platform feel more secure if their transactions are secured by blockchain technology (Chen *et al.*, 2018)?
Platform communities	How can stakeholders be motivated to engage in platform brand communities that provide information, support and other value-add (cf. Wirtz *et al.*, 2013)
Transformative experience	In what ways does exchange on sharing economy platforms become transformative and self-expansive (extended self; Belk, 2013) beyond creating experiential, hedonic and social values?
Service failure and recovery	What is the attribution process in the event of service failure and recovery? That is, which party do consumers blame – the platform, provider or complementor – and who do they expect provide recovery and in what form?
Role of brand	How does branding of platforms differ from branding pipeline businesses (e.g. promoting differentiation in the case of pipeline models vs signaling trust, reducing risk perceptions with platforms)? How can brands be developed to be multi-sided whereby branding to service providers, consumers and complementors offer different value propositions? How can service providers differentiate themselves from others on the same platform (Benoit *et al.*, 2017)?
Service providers as brand ambassadors	How can peer service providers be motivated to act as brand ambassadors with little or no formal training (Benoit *et al.*, 2017)?
Platform loyalty	What causes consumers to be on more than one competing platform (e.g. multi-homing on Uber and Lyft), and what are the consequences on their switching behavior, loyalty, emotional connection and bargaining power with their platform providers? How can platforms build loyalty, engagement and related behaviors through evangelizing, milestoning, badging and documenting (Perren and Kozinets, 2018)? How can soft and hard incentives that are used widely in generic loyalty programs be adapted to encourage increased transactions on a platform? How effective are loyalty program-induced switching costs and incentives in driving platform loyalty (Chen *et al.*, 2018)?
Price setting	What are the benefits and costs of sharing platforms allowing providers and/or users to set prices (e.g. Uber sets prices on their platform, whereas Airbnb lets service providers decide on the pricing; Chen *et al.*, 2018)?
Regulation and society	
Low-income consumers	What economic and societal implications do sharing platforms have for low-income consumers who are likely to gain access to services at a lower price (Benoit *et al.*, 2017)?
Sustainability and labor market	What quantifiable impact have sharing platforms made on sustainability (e.g. reduced resource uses) and labor markets (e.g. stimulating employment)?
Regulation	How can regulators better facilitate the integration of sharing platforms and traditional service providers into existing regulatory systems (Cohen and Kietzmann, 2014)?
Cultural/societal differences	What cultural and societal differences play a role in the adoption, regulation and governance of sharing platforms in different countries and cultures?

Table III.

optimal configurations of convergence business models, their impact on the nature of competition, and the wider consumer, societal and economic impacts.

In addition, new technologies such as blockchains may provide opportunities for peer-to-peer transactions taking place without middlemen or mediating organizations, which could provide a disruption to existing platform and pipeline businesses alike. Thus, how platforms and pipeline businesses embrace these new technologies in the process of convergence will have significant impact on their value propositions and competitive position (Andreassen *et al.*, 2018), may offer additional avenues to achieve cost-effective service excellence (cf. Wirtz and Zeithaml, 2018) and represent exciting avenues for future research.

Consumer behavior related to sharing platforms. There are vast open areas for consumer research related to sharing platforms (see Table III) and a noticeable gap relates to branding. There is little research that provides theoretical or practical insight into how to brand platforms and their service providers (Baumeister *et al.*, 2015), and whether and how branding principles and considerations differ for the sharing economy from those of the traditional pipeline-based products (Van Alstyne *et al.*, 2016). The differences are particularly relevant, given that the role of a brand is potentially altered in the context of platform business models (Dussart, 2001).

Specifically, in pipeline businesses, brands are mostly end-user facing, promote differentiation from competition, manage customer expectations, build consumer trust in the offering, and require significant investments over long periods of time (Van Alstyne *et al.*, 2016). A key difference in the platform context is that the brand, in addition to fulfilling its customer-facing function, primarily serves as an enabler of stakeholder and ecosystem engagement. This may impact the nature and dynamics of brand creation and development and is an interesting area of future research. Relatedly, the branding of convergence business models, with its pipeline and platform components, also presents exciting avenues for future exploration.

Finally, Big Data and related analytics are expected to provide added leverage to platform business models. For example, Martin-Fuentes *et al.* (2018) used a Big Data technique called support vector machine classification to create a hotel-like grading scheme for Airbnb accommodation. They highlight how their grading system can be used to generate trust within the platform by alleviating information asymmetry and preventing opportunistic host behaviors, and by solving the problem of information overload for potential guests who may be overwhelmed by the many reviews associated with numerous heterogeneous options.

In a similar vein, Ma *et al.* (2018) suggest that a form of machine learning technique called "deep learning" can be used to understand information value of online consumer posts. For example, convolutional neural networks can detect features in texts and images to encode meaning and emotional expressions (Chevalier and Mayzlin, 2006; He *et al.*, 2016). Research is required on how these technologies can be developed to prove useful for platforms, service providers, and users alike.

In conclusion, we hope this paper helps to integrate and synthesize our understanding of peer-to-peer sharing platforms and that it will encourage further research in this fascinating and rapidly developing field.

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References

Abrate, G. and Viglia, G. (2019), "Personal or product reputation? Optimizing revenues in the sharing economy", *Journal of Travel Research*, Vol. 58 No. 1, pp. 136-148.

Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K. and Wetzels, M. (2015), "Unraveling the personalization paradox: the effect of information collection and trust-building strategies on online advertisement effectiveness", *Journal of Retailing*, Vol. 91 No. 1, pp. 34-49.

Akbar, Y.H. and Tracogna, A. (2018), "The sharing economy and the future of the hotel industry: transaction cost theory and platform economics", *International Journal of Hospitality Management*, Vol. 71, pp. 91-101.

An, C. (2018), "An assessment of the sharing economy and its policy solutions through the lens of sustainability", senior thesis, Pomona College, Claremont, CA.

Andreassen, T.W., Lervik-Olsen, L., Snyder, H., Van Riel, A.C.R., Sweeney, J.C. and Van Vaerenbergh, Y. (2018), "Business model innovation and value-creation: the triadic way", *Journal of Service Management*, Vol. 29 No. 5, pp. 883-906.

Bakos, J.Y. (1997), "Reducing buyer search costs: implications for electronic marketplaces", *Management Science*, Vol. 43 No. 12, pp. 1676-1692.

Bardhi, F. and Eckhardt, G. (2012), "Access-based consumption: the case of car sharing", *Journal of Consumer Research*, Vol. 39 No. 4, pp. 881-898.

Baumeister, C., Scherer, A. and Wangenheim, F. (2015), "Branding access offers: the importance of product brands, ownership status, and spillover effects to parent brands", *Journal of the Academy of Marketing Science*, Vol. 43 No. 5, pp. 574-588.

Belk, R.W. (2013), "Extended self in a digital world", *Journal of Consumer Research*, Vol. 40 No. 3, pp. 477-500.

Benoit, S., Baker, T.L., Bolton, R.N., Gruber, T. and Kandampully, J. (2017), "A triadic framework for collaborative consumption (CC): motives, activities and resources & capabilities of actors", *Journal of Business Research*, Vol. 79, pp. 219-227.

Boros, L., Dudás, G., Kovalcsik, T., Papp, S. and Vida, G. (2018), "Airbnb in Budapest: analysing spatial patterns and room rates of hotels and peer-to-peer accommodations", *GeoJournal of Tourism and Geosites*, Vol. 21 No. 1, pp. 26-38.

Caldieraro, F., Zhang, J.Z., Cunha, M. Jr and Shulman, J.D. (2018), "Strategic information transmission in peer-to-peer lending markets", *Journal of Marketing*, Vol. 82 No. 2, pp. 42-63.

Chen, J., Zhang, C. and Xu, Y. (2009), "The role of mutual trust in building members' loyalty to a C2C platform provider", *International Journal of Electronic Commerce*, Vol. 14 No. 1, pp. 147-171.

Chen, Y.J., Dai, T., Korpeoglu, C.G., Korpeoglu, E., Sahin, O., Tang, C.S. and Xiao, S. (2018), "Innovative online platforms: research opportunities", working paper, Johns Hopkins Carey Business School, Baltimore, MD, January 12.

Chesbrough, H. (2012), "Open innovation: where we've been and where we're going", *Research-Technology Management*, Vol. 55 No. 4, pp. 20-27.

Chevalier, J.A. and Mayzlin, D. (2006), "The effect of word of mouth on sales: online book reviews", *Journal of Marketing Research*, Vol. 43 No. 3, pp. 345-354.

Cohen, B. and Kietzmann, J. (2014), "Ride on! Mobility business models for the sharing economy", *Organization & Environment*, Vol. 27 No. 3, pp. 279-296.

Cusumano, M.A. (2015), "How traditional firms must compete in the sharing economy", *Communications of the ACM*, Vol. 58 No. 1, pp. 32-34.

Dellarocas, C. (2000), "The design of reliable trust management systems for electronic trade communities", working paper, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, MA.

Dellarocas, C. and Wood, C.A. (2008), "The sound of silence in online feedback: estimating trading risks in the presence of reporting bias", *Management Science*, Vol. 54 No. 3, pp. 460-476.

Dolnicar, S. (2018), "Unique features of peer-to-peer accommodation networks", in Dolnicar, S. (Ed.), *Peer-to-Peer Accommodation Networks: Pushing the Boundaries*, Goodfellow Publishers, Oxford, pp. 1-14.

Duch-Brown, N. (2017), "The competitive landscape of online platforms", working paper, European Commission Joint Research Centre, Seville, July 1.

Dussart, C. (2001), "Transformative power of e-business over consumer brands", *European Management Journal*, Vol. 19 No. 6, pp. 629-637.

Eckhardt, G. and Bardhi, A. (2015), "The sharing economy isn't about sharing at all", *Harvard Business Review*, Vol. 93 No. 4, pp. 881-989.

Ert, E., Fleischer, A. and Magen, N. (2016), "Trust and reputation in the sharing economy: the role of personal photos in Airbnb", *Tourism Management*, Vol. 55, pp. 62-73.

Etzioni, A. (2017), "Cyber trust", *Journal of Business Ethics*, Vol. 122 No. 1, pp. 1-13.

Evans, D.S. and Schmalensee, R. (2010), "Failure to launch: critical mass in platform businesses", *Review of Network Economics*, Vol. 9 No. 4, pp. 1-26.

Evans, D.S. and Schmalensee, R. (2016), *The Matchmakers: The new Economics of Multisided Platforms*, Harvard Business Review Press, Boston, MA.

Font Vivanco, D., Kemp, R. and van der Voet, E. (2015), "The relativity of eco-innovation: environmental rebound effects from past transport innovations in Europe", *Journal of Cleaner Production*, Vol. 101, pp. 71-85.

Fradkin, A., Grewal, E. and Holtz, D. (2018), "The determinants of online review informativeness: evidence from field experiments on Airbnb", working paper, Boston University Questrom School of Business, Boston, MA, June.

Frenken, K. and Schor, J. (2017), "Putting the sharing economy into perspective", *Environmental Innovations and Societal Transitions*, Vol. 23, pp. 3-10.

Gawer, A. and Cusumano, M.A. (2014), "Industry platforms and ecosystem innovation", *Journal of Product Innovation Management*, Vol. 31 No. 3, pp. 417-433.

Guttentag, D., Smith, S., Potwarka, L. and Havitz, M. (2018), "Why tourists choose Airbnb: a motivation-based segmentation study", *Journal of Travel Research*, Vol. 57 No. 3, pp. 342-359.

Gyódi, K. (2017), "Airbnb and the hotel industry in Warsaw: an example of the sharing economy?", *Central European Economic Journal*, Vol. 49 No. 2, pp. 23-34.

Hagiu, A. (2018), "The best way for Netflix to keep growing", *Harvard Business Review*, available at: https://hbr.org/2018/08/the-best-way-for-netflix-to-keep-growing (accessed October 14, 2018).

Hagiu, A. and Rothman, S. (2016), "Network effects aren't enough", *Harvard Business Review*, Vol. 94 No. 4, pp. 64-71.

Hagiu, A. and Wright, J. (2015), "Multi-sided platforms", *International Journal of Industrial Organization*, Vol. 43, pp. 162-174.

Hall, J.V. and Krueger, A.B. (2018), "An analysis of the labor market for Uber's driver-partners in the United States", *ILR Review*, Vol. 71 No. 3, pp. 705-732.

Hall, J.V., Kendrick, C. and Nosko, C. (2015), "The effects of Uber's surge pricing: a case study", available at: http://economicsforlife.ca/wp-content/uploads/2015/10/effects_of_ubers_surge_pricing.pdf (accessed October 14, 2018).

Hall, S. and Pennington, J. (2016), "How much is the sharing economy worth to GDP?", World Economic Forum, available at: www.weforum.org/agenda/2016/10/what-s-the-sharing-economy-doing-to-gdp-numbers/ (accessed September 1, 2018).

Hamari, J., Sjöklint, M. and Ukkonen, A. (2016), "The sharing economy: why people participate in collaborative consumption", *Journal of the Association for Information Science and Technology*, Vol. 67 No. 9, pp. 2047-2059.

Hartl, B., Hofmann, E. and Kirchler, E. (2016), "Do we need rules for 'what's mine is yours'? Governance in collaborative consumption communities", *Journal of Business Research*, Vol. 69 No. 8, pp. 2756-2763.

Hassan, M. and Tovey, M. (2012), *The Reputation Society: How Online Opinions are Reshaping the Offline World*, MIT Press, Cambridge, MA.

Hazée, S., Delcourt, C. and Van Vaerenbergh, Y. (2017), "Burdens of access: understanding customer barriers and barrier-attenuating practices in access-based services", *Journal of Service Research*, Vol. 20 No. 4, pp. 441-456.

He, K., Zhang, X., Ren, S. and Sun, J. (2016), "Deep residual learning for image recognition", available at: https://arxiv.org/pdf/1512.03385.pdf (accessed October 14, 2018).

Hellwig, K., Belk, R. and Morhart, F. (2015), "Shared moments of sociality: embedded sharing within peer-to-peer hospitality platforms", in Diehl, K. and Yoon, C. (Eds), *Advances in Consumer Research*, Vol. 43, Association for Consumer Research, Duluth, MN, pp. 186-190.

Johnson, A.G. and Neuhofer, B. (2017), "Airbnb – an exploration of value co-creation experiences in Jamaica", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2361-2376.

Johnson, N. (2017), "Platform vs. linear: business models 101", Applico, available at: www.applicoinc.com/blog/platform-vs-linear-business-models-101/ (accessed September 25, 2018).

Johnson, N. (2018), "What are network effects?", Applico, available at: www.applicoinc.com/blog/network-effects (accessed September 25, 2018).

Karlsson, L. and Dolnicar, S. (2016), "Someone's been sleeping in my bed", *Annals of Tourism Research*, Vol. 58, pp. 159-162.

Kuksow, D. and Villas-Boas, J.M. (2010), "When more alternatives lead to less choice", *Marketing Science*, Vol. 29 No. 3, pp. 507-524.

Kumar, V., Lahiria, A. and Dogana, O.B. (2018), "A strategic framework for a profitable business model in the sharing economy", *Industrial Marketing Management*, Vol. 69, February, pp. 147-160.

Lalicic, L. and Weismayer, C. (2017), "The role of authenticity in Airbnb experiences", in Schegg, R. and Stangl, B. (Eds), *Information and Communication Technologies in Tourism 2017*, Springer, New York, NY, pp. 781-794.

Lamberton, C. and Rose, R.L. (2012), "When is ours better than mine? A framework for understanding and altering participation in commercial sharing systems", *Journal of Marketing*, Vol. 76 No. 4, pp. 109-125.

Lee, S. and Kim, D.Y. (2018), "Brand personality of Airbnb: application of user involvement and gender differences", *Journal of Travel & Tourism Marketing*, Vol. 35 No. 1, pp. 32-45.

Li, J. and Netessine, S. (2018), "Market thickness and matching (in)efficiency: evidence from a quasi-experiment", working paper, Ross School of Business, University of Michigan, Ann Arbor, MI, September 27.

Liang, S., Schuckert, M. and Law, R. (2017), "Multilevel analysis of the relationship between type of travel, online ratings, and management response: empirical evidence from international upscale hotels", *Journal of Travel & Tourism Marketing*, Vol. 34 No. 2, pp. 239-256.

Liang, S., Schuckert, M., Law, R. and Chen, C.C. (2017), "Be a 'superhost': the importance of badge systems for peer-to-peer rental accommodations", *Tourism Management*, Vol. 60, pp. 454-465.

Liu, S.Q. and Mattila, A.S. (2017), "Airbnb: online targeted advertising, sense of power, and consumer decisions", *International Journal of Hospitality Management*, Vol. 60, pp. 33-41.

Lwin, M.O., Wirtz, J. and Stanaland, A.J.S. (2016), "The privacy dyad: antecedents of promotion- and prevention-focused online privacy behaviors and the mediating role of trust and privacy concern", *Internet Research*, Vol. 26 No. 4, pp. 919-941.

Ma, Y., Xiang, Z., Du, Q. and Fan, W. (2018), "Effects of user-provided photos on hotel review helpfulness: an analytical approach with deep leaning", *International Journal of Hospitality Management*, Vol. 71, pp. 120-131.

Mao, Z. and Lyu, J. (2017), "Why travelers use Airbnb again? An integrative approach to understanding travelers' repurchase intention", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2464-2482.

Martin-Fuentes, E., Fernandez, C., Mateu, C. and Marine-Roig, E. (2018), "Modelling a grading scheme for peer-to-peer accommodation: stars for Airbnb", *International Journal of Hospitality Management*, Vol. 69, pp. 75-83.

Masum, H. and Zhang, Y.C. (2004), "Manifesto for the reputation society", *First Monday*, available at: https://journals.uic.edu/ojs/index.php/fm/article/view/1158/1078 (accessed February 23, 2019).

Min, S., So, K.K.F. and Jeong, M. (2018), "Consumer adoption of the Uber mobile application: insights from diffusion of innovation theory and technology acceptance model", *Journal of Travel & Tourism Marketing*, available at: https://doi.org/10.1080/10548408.2018.1507866 (accessed February 23, 2019).

Moazed, A. (2017), "Platform types: explained and defined", Applico, available at: www.applicoinc.com/blog/what-makes-uber-different-from-android-how-to-make-sense-of-platform-businesses/ (accessed September 25, 2018).

Mody, M. and Hanks, L. (2019), "Consumption authenticity in the accommodations industry: the keys to brand love and brand loyalty for hotels and Airbnb", *Journal of Travel Research*, available at: https://doi.org/10.1177/0047287519826233 (accessed February 23, 2019).

Mody, M.A., Suess, C. and Lehto, X. (2017), "The accommodation experiencescape: a comparative assessment of hotels and Airbnb", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2377-2404.

Muzellec, L., Ronteau, S. and Lambkin, M. (2015), "Two-sided internet platforms: a business model lifecycle perspective", *Industrial Marketing Management*, Vol. 45 No. 1, pp. 139-150.

Ndubisi, N.O., Ehret, M. and Wirtz, J. (2016), "Relational governance mechanisms and uncertainties in nonownership services", *Psychology & Marketing*, Vol. 33 No. 4, pp. 250-266.

Nielsen, C. and Lund, M. (2015), "A brief history of the business model concept", working paper, Aalborg University, Aalborg, March 19.

Parker, G.G., Van Alstyne, M.W. and Choudary, S.P. (2016), *Platform Revolution: How Networked Markets are Transforming the Economy and How to Make Them Work for You*, WW Norton & Company, New York, NY.

Pera, R., Viglia, G., Grazzini, L. and Dalli, D. (2019), "When empathy prevents negative reviewing behavior", *Annals of Tourism Research*, Vol. 75, pp. 265-278.

Perren, R. and Kozinets, R.V. (2018), "Lateral exchange markets: how social platforms operate in a networked economy", *Journal of Marketing*, Vol. 82 No. 1, pp. 20-36.

Piscicelli, L., Ludden, G.D. and Cooper, T. (2018), "What makes a sustainable business model successful? An empirical comparison of two peer-to-peer goods-sharing platforms", *Journal of Cleaner Production*, Vol. 172, pp. 4580-4591.

Poon, K.Y. and Huang, W.J. (2017), "Past experience, traveler personality and tripographics on intention to use Airbnb", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2425-2443.

Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, Simon and Schuster, New York, NY.

Priporas, C.V., Stylos, N., Rahimi, R. and Vedanthachari, L.N. (2017), "Unraveling the diverse nature of service quality in a sharing economy: a social exchange theory perspective of Airbnb accommodation", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2279-2301.

Prothero, A., Dobscha, S., Freund, J., Kilbourne, W.E., Luchs, M.G., Ozanne, L.K. and Thøgersen, J. (2011), "Sustainable consumption: opportunities for consumer research and public policy", *Journal of Public Policy & Marketing*, Vol. 30 No. 1, pp. 31-38.

Rauch, D. and Schleicher, D. (2015), "Like Uber, but for local government policy: the future of local regulation of the shared economy", *Ohio State Law Journal*, Vol. 76 No. 4, pp. 901-963.

Razli, I., Jamal, S. and Zahari, M.S. (2017), "Perceived value in peer-to-peer (P2P) accommodation: a case of Airbnb", *Journal of Tourism, Hospitality & Culinary Arts*, Vol. 9 No. 2, pp. 213-224.

Richard, B. and Cleveland, S. (2016), "The future of hotel chains: branded marketplaces driven by the sharing economy", *Journal of Vacation Marketing*, Vol. 22 No. 3, pp. 1-10.

Sacks, D. (2011), "The sharing economy", Fast Company, available at: www.fastcompany.com/1747551/sharing-economy (accessed October 10, 2018).

Schaefers, T., Lawson, S.J. and Kukar-Kinney, M. (2016), "How the burdens of ownership promote consumer usage of access-based services", *Marketing Letters*, Vol. 27 No. 3, pp. 569-577.

So, K.K.F., Oh, H. and Min, S. (2018), "Motivations and constraints of Airbnb consumers: findings from a mixed-methods approach", *Tourism Management*, Vol. 67, pp. 224-236.

Studach, M. (2017), "Niido, the first Airbnb-powered residential building, is making waves near Miami", Business of Home, available at: https://businessofhome.com/articles/meet-niido-the-first-airbnb-powered-residential-building-making-waves-near-miami (accessed October 10, 2018).

Tadelis, S. (2016), "Reputation and feedback systems in online platform markets", *Annual Review of Economics*, Vol. 8 No. 1, pp. 321-340.

Teubner, T., Hawlitschek, F. and Dann, D. (2017), "Price determinants on Airbnb: how reputation pays off in the sharing economy", *Journal of Self-Governance and Management Economics*, Vol. 5 No. 4, pp. 53-80.

Ting, D. (2018), "Airbnb is quietly borrowing ideas from the hotel industry to build up its inventory", Skift, available at: https://skift.com/2018/08/03/airbnb-is-quietly-borrowing-ideas-from-the-hotel-industry-to-build-up-its-inventory/ (accessed October 10, 2018).

Tiwana, A. (2013), *Platform Ecosystems: Aligning Architecture, Governance, and Strategy*, Morgan Kaufmann, Waltham, MA.

Tsiotsou, R.H. and Wirtz, J. (2015), "The three-stage model of service consumption", in Bryson, J. Jr and Daniels, P.W. (Eds), *Handbook of Service Business: Management, Marketing, Innovation and Internationalisation*, Edward Elgar Publishing, Cheltenham, pp. 105-128.

Tussyadiah, I.P. and Pesonen, J. (2016), "Impacts of peer-to-peer accommodation use on travel patterns", *Journal of Travel Research*, Vol. 55 No. 8, pp. 1022-1040.

Tussyadiah, I.P. and Pesonen, J. (2018), "Drivers and barriers of peer-to-peer accommodation stay – an exploratory study with American and Finnish travelers", *Current Issues in Tourism*, Vol. 21 No. 6, pp. 703-720.

Upbin, B. (2010), "How Airbnb hacked the reach-around problem", *Forbes*, December 7, available at: www.forbes.com/sites/bruceupbin/2010/12/07/how-airbnb-hacked-the-reach-around-problem/#680faf61337b (accessed December 14, 2018).

Van Alstyne, M. and Parker, G. (2017), "Platform business: from resources to relationships", *GfK Marketing Intelligence Review*, Vol. 9 No. 1, pp. 24-29.

Van Alstyne, M.W., Parker, G.G. and Choudary, S.P. (2016), "Pipelines, platforms, and the new rules of strategy", *Harvard Business Review*, Vol. 94 No. 4, pp. 54-62.

Wallenstein, J. and Shelat, U. (2017), "Hopping abroad the sharing economy", Boston Consulting Group, available at: www.bcg.com/en-us/publications/2017/strategy-accelerating-growth-consumer-products-hopping-aboard-sharing-economy.aspx (accessed December 14, 2018).

Wirtz, J. and Ehret, M. (2019), "Asset-based strategies for capturing value in the service economy", in Maglio, P.P., Kieliszewski, C.A., Spohrer, J.C., Lyons, K., Patricio, L. and Sawatani, Y. (Eds), *Handbook of Service Science*, Vol. II, Springer, New York, NY, pp. 785-810.

Wirtz, J. and Lovelock, C. (2016), *Services Marketing: People, Technology, Strategy*, World Scientific, Singapore.

Wirtz, J. and Lwin, M.O. (2009), "Regulatory focus theory, trust and privacy concern", *Journal of Service Research*, Vol. 12 No. 2, pp. 190-207.

Wirtz, J. and Zeithaml, V. (2018), "Cost-effective service excellence", *Journal of the Academy of Marketing Science*, Vol. 46 No. 1, pp. 59-80.

Wirtz, J., den Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., Van De Klundert, J., Canli, Z.G. and Kandampully, J. (2013), "Managing brands and customer engagement in online brand communities", *Journal of Service Management*, Vol. 24 No. 3, pp. 223-244.

Wirtz, J., Patterson, P., Kunz, W., Gruber, T., Lu, V.N., Paluch, S. and Martins, A. (2018), "Brave new world: service robots in the frontline", *Journal of Service Management*, Vol. 29 No. 5, pp. 907-931.

Wittkowski, K., Moeller, S. and Wirtz, J. (2013), "Firms' intentions to use nonownership services", *Journal of Service Research*, Vol. 16 No. 2, pp. 171-185.

Yang, S. and Ahn, S. (2016), "Impact of motivation in the sharing economy and perceived security in attitude and loyalty toward Airbnb", *Advanced Science and Technology Letters*, Vol. 129, pp. 180-184.

Yang, S., Song, Y., Chen, S. and Xia, X. (2017), "Why are customers loyal in sharing-economy services? A relational benefits perspective", *Journal of Services Marketing*, Vol. 31 No. 1, pp. 48-62.

Zervas, G., Proserpio, D. and Byers, J.W. (2017), "The rise of the sharing economy: estimating the impact of Airbnb on the hotel industry", *Journal of Marketing Research*, Vol. 54 No. 5, pp. 687-705.

Zhang, Z., Liang, S., Li, H. and Zhang, Z. (2019), "Booking now or later: do online peer reviews matter?", *International Journal of Hospitality Management*, Vol. 77, pp. 147-158.

Zhu, F. and Furr, N. (2016), "Products to platforms: making the leap", *Harvard Business Review*, Vol. 94 No. 4, pp. 72-78.

Zhu, G., So, K.K.F. and Hudson, S. (2017), "Inside the sharing economy: understanding consumer motivations behind the adoption of mobile applications", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 9, pp. 2218-2239.

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