Transaction costs and the sharing economy

Anders Hansen Henten and Iwona Maria Windekilde

Anders Hansen Henten is Professor, and Iwona Maria Windekilde is Associate Professor, both at the Center for Communication, Media and Information Technologies (CMI), Aalborg University, Copenhagen, Denmark.

Abstract

Purpose – *The paper aims to discuss the so-called sharing economy from a business modeling and industrial structure perspective. The illustrative cases examined are Airbnb and Uber. The research question raised is concerned with the extent to which transaction cost theory can be used to explain the changing industrial structures in the application areas that the Internet-based platforms are addressing and how other theoretical frameworks can be helpful in understanding these developments.*

Design/methodology/approach – *As the sharing economy topic is relatively new, the paper takes its point of departure in a brief overview of the different issues discussed in the academic literature and the press regarding this emerging phenomenon. The paper presents relevant theoretical approaches to analyzing business models of sharing platforms and industrial structure implications. It, thereafter, presents the cases of Airbnb and Uber to discuss the relevance of the theories put forward.*

Findings – *The paper concludes by proposing a theoretical framework for analyzing the structural implications of the sharing economy based on theories on multi-sided platforms, transaction costs and substitution and complementation.*

Research limitations/implications – *The research implications are to establish a comprehensive theory framework for analyzing the development of commercial sharing platforms.*

Originality/value – *The originality and value of the paper is related to the novelty of topic and the development of a theory framework for analyzing the business models of commercial sharing platforms. Only little has been written from an academic analytical perspective on the sharing economy, and there is a need for developing a coherent framework for analyzing these developments.*

Keywords *Business development, Transaction costs*

Paper type *Conceptual paper*

1. Introduction

During the past couple of decades, a wide variety of Internet-based platforms have sprung up – some of them extremely successful. eBay is a prominent example of one of the platforms established before the dotcom crash. Airbnb (accommodation) and Uber (transportation) are successful examples of platforms established during the past 5-10 years. Airbnb and Uber are seen as examples of the emergence of a sharing economy (Hamari *et al.*, 2013; Zervas and Byers, 2013) where people share human and physical resources. Indeed, sharing includes many different forms of activities – some of which are non-commercial and others commercial. The paper examines the commercial kinds of developments and discusses the possible foundations and implications in terms of economic reasons and industrial structures. The research question is concerned with the extent to which transaction cost theory can be used to explain the changing industrial structures in the application areas that the Internet-based platforms are addressing and how other theoretical frameworks can be helpful in understanding these developments.

The obvious explanatory framework is transaction cost theory taking its point of departure in Coase's (1973) seminal paper, as the digital platforms allow for decreasing transaction costs – in the eBay case, between sellers and buyers of all the items and services sold via

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eBay; in the Airbnb case, between those offering and those buying accommodation; and in the Uber case, between those offering and buying transportation. Without the digital platforms, the transaction costs of searching, contacting, contracting, etc. would generally be much too high for such commercial markets to develop. However, this obvious explanatory framework has only been little elaborated upon academically and analytically (Benkler, 2004). The aim of this paper is, therefore, to take a more analytical approach, using a transaction cost framework for examining prominent examples of the sharing economy. The examples examined are Airbnb and Uber.

Coase (1973) had his paper entitled "The Nature of the Firm" published, which presented the basics of the transaction cost approach, and he used it as a theoretical framework for explaining industrial structures. Basically, he used transaction costs as the explanation for the existence of firms: Were there no costs of transacting between the agents in markets, the structure of industries would be composed of individuals (or only very small companies). The explanation for larger companies to be created is the existence of transaction costs, which can be minimized by the establishment of larger entities, which is the argument in the Coase paper. The 1973 paper is, in a sense, a position paper, where Coase boldly advances transaction costs as the primary basis for industrial structures with large companies. He even discards other explanations, for instance the divisions of labor and the specialization efficiency effects. The goal was to put transaction costs on the agenda of studies of industrial structures.

In the present paper, the transaction cost approach is seen as a crucial element in explaining the development of sharing on a mass-scale. However, this approach cannot stand on its own. It does, for instance, not explain the limits of the encroachment of sharing-services on established markets (e.g. hoteling and taxi-driving). It actually does, in an inverse manner, contribute to explaining the establishment of new large companies in the Internet world. There have always been companies that live on transaction costs. Business lawyers are good examples, as their function is to see to the contracting and enforcement of business agreements. So are real estate brokers, establishing the connections between the sellers and buyers of real estate property. But the Internet has created a foundation for a large variety of new businesses that live on providing services lowering transaction costs. It may be that some of the explanatory frameworks that Coase discarded so quickly and other theoretical frameworks can offer elements of explanations for the structure of market developments.

In the paper, case analyses of the new Internet-based platform services, exemplified by Airbnb and Uber, are provided as well as an analysis of the implications for the markets they are addressing. This analysis will be used for discussing theoretical approaches that are needed to explain these developments. First, the paper examines the concept of sharing and its different forms. This is followed by a theory section, where Coase's approach to transaction costs and ideas on substitution are presented. Thereafter, an overview of the different types of Internet-based platforms is put forward, followed by case analyses of Airbnb and Uber. Before the conclusion, implications for theory and analysis are discussed.

2. Review of literature on sharing economy

2.1 Going back to collaborative consumption (1978)

The sharing economy concept is said to build on the concept of collaborative consumption (Hamari *et al.*, 2013). Actually, the concept of collaborative consumption, as it was first put forward by Felson and Spaeth (1978), had a different meaning, namely, "events in which one or more persons consume economic goods or services in the process of engaging in joint activities". The examples were "drinking beer with friends, eating meals with relatives, etc." (Felson and Spaeth, 1978).

From 1978 until 2007, there were only few publications on collaborative consumption within the context of sharing or renting goods. Belk (2007) described sharing as an alternative form of distribution to commodity exchange and gift-giving. The author pointed out that sharing can foster community, save resources and create certain synergies. His article addresses impediments to sharing as well as incentives that may encourage more sharing of both tangible and intangible goods.

In subsequent publications, Belk provides an extensive theoretical review of the concept of sharing and distinguishes "sharing in" and "sharing out" in terms of gift-giving and exchange. He suggests that "sharing in" dissolves interpersonal boundaries posed by materialism and possession attachment through expanding the aggregate extended self. However, such sharing is challenged by growing market commoditization (Belk, 2010).

Belk (2014) published a paper, "You are what you can access: Sharing and collaborative consumption online", where he pointed out that "sharing is a phenomenon as old as human kind, while collaborative consumption and the sharing economy are phenomena born of the Internet age". He concluded his paper by the modifying the former wisdom, "You are what you own", converting it to a new wisdom, "You are what you share", indicating that we just may be entering the post-ownership economy.

Furthermore, Botsman and Rogers (2010) have redefined collaborative consumption as an activity which "is enabling people to realise the enormous benefits of access to products and services over ownership, and at the same time save money, space, and time; make new friends; and become active citizens again".

2.2 Some people make allusions to transaction costs

Relatively few papers have studied transaction cost aspects of the sharing economy. Benkler (2004) in his essay "Sharing Nicely" seeks to define a particular class of physical goods as "shareable goods" that systematically have excess capacity, and to combine comparative transaction cost and motivation analysis to suggest that this excess capacity may better be harnessed through sharing relations than through secondary markets.

Benkler (2004) pointed out that the primary systematic differences between the transaction costs of markets and sharing are related to information and enforcement costs. "Markets use a combination of the price system and managerial hierarchical reporting and command flows to manage information about the universe of potential actions on resources in the world. Social frameworks use social cues that are usually less formal and less focused on crisply delineating the alternative courses of action open to participants in these frameworks". In regards to enforcement cost, he emphasized that "markets rely more heavily (though not exclusively) on formal enforcement, while social relations rely on informal enforcement mechanisms studied in the literature on social norms and reciprocity".

2.3 Discussions regarding non-profit and for-profit sharing

There is also a discussion regarding non-profit and for-profit sharing – that the new for-profit sharing encroaches on already existing non-profit sharing. This consideration corresponds to the rise of numerous for-profit and non-profit activities that are booming thanks to the rise of the sharing economy, for example Airbnb and Uber. Gorenflo (2013) talks about how money is ruining what started out as a transformative concept. In his post, he emphasizes that collaborative consumption is suffering growing pains. "As collaborative consumption goes mainstream, it risks losing the very thing that attracted people in the first place, the unique and even transformative social experiences made possible when you interact with helpful strangers". He stresses that with this potential loss goes an important part of the positive impact of non-profit sharing. Griffith (2013) has a similar point of view. She provides examples of Airbnb, which basically took the model of Couchsurfing and turned it into a for-profit enterprise, and car-sharing, which is just a more organized car-pooling. She

argues that a transaction that involves money is not actually sharing, it is renting or selling. At the same time, alternative approaches rise. Schor (2014) points out that while the for-profit companies may be "acting badly", these new technologies facilitating peer-to-peer economic activity are potentially powerful tools for building a social movement centered on genuine practices of sharing and cooperation in the production and consumption of goods and services. But achieving that potential will require democratizing the ownership and governance of the platforms. Griffith (2013) admits that without money, many sharing economy sites would not have gotten to the size they are today. "The sites required money to offer services that are effective and, as a result, their services have impacted more people than they might have otherwise. That's how, in most cases, for-profit sharing economy companies have outgrown their free counterparts" (Griffith, 2013).

2.4 Similarly, there is a discussion regarding how sharing affects users' protection but also workers' rights

New platforms such as Uber and Airbnb have drawn significant criticism from established operators and concerns from governments about fair competition, workers' rights and consumer protection. In his research, Brishen Rogers focuses on the relationship between employment regulations and liberal distributive justice and on the influence of information technology on the world of low-wage work. In his paper, "The Social Costs of Uber", Brishen (2015) pointed out that "Uber's longer-term impact on labor standards is quite unclear, however, and it may have dark implications for the future of low-wage work more generally". He assesses Uber's effects on safety, privacy, discrimination and labor standards and outlines how law makers might adapt existing laws to reach Uber and other ridesharing companies.

2.5 The sharing economy is also a result of the economic crisis, where people lose their jobs and need to find other means of income

The macro-economic factors seem to play an important role in driving the growth of the sharing economy. Many researchers point out that the new trend toward collaborative consumption started to gain momentum as a response to the global financial crisis and an attempt to fight over consumption. According to the European Economic and Social Committee (EU, 2014), a consultative body of the European Union (EU), collaborative consumption, such as car-sharing, room rental and digital communities for learning languages, represents great alternatives in times of crisis. Many believe that the sharing economy is an appealing alternative for consumers due to its economic benefits (i.e. low cost, new income opportunities), which have been considered important following the global economic crisis. It is also suggested that collaborative consumption will continue to grow even when the economy is fully recovered (Bardhi and Eckhardt, 2012; Walsh, 2011; EU, 2014).

2.6 But first and foremost, sharing has always existed, but technology provides a new platform

The Internet has made it much easier for people to connect with one another and to coordinate their activities. People use platforms to rent, sell or share things with others. It is an obvious approach and many researchers suggest the importance of digital technologies, facilitating the emergence of the sharing economy in overcoming the transaction costs, the trust and reputational barriers that once restricted sharing activities (Schor and Fitzmaurice, 2015; Stokes *et al.*, 2014; Benkler, 2004; TPRC, 2014).

3. Transaction cost theory and theory on substitution

In the present paper, theory on transaction costs is the basic explanatory framework for understanding the development of services like Airbnb and Uber. However, to understand the potentials for the costs of transaction to have an influence on the use of the new Internet-based platforms, the degrees of substitutability between traditional services and

the new services have to be discussed. Two different but interrelated frameworks will briefly be dealt with: transaction cost theory and the issue of substitution.

Transaction cost theory was first presented in a succinct manner by Coase (1973) in his paper, "The Nature of the Firm". In the basic assumptions in neo-classical economics, there is full information for all economic agents in all markets, and the only costs to be considered are the costs of production and transportation. There are no transaction costs, as all economic agents are fully informed of qualities and prices of all products and of all production and consumption possibilities.

What Coase did was to modify this assumption by including the real-world view that economic agents have only limited information, and that there are many costs associated with transacting in markets. This realistic view has a host of different implications for how markets work; however, Coase wanted to put emphasis on its implications for industrial organization. He used it for explaining why we have firms, where many people cooperate in smaller or larger entities in the production and marketing processes, and not only a vast array of individual economic agents transacting with one another. The reason he indicated was that because of the many different costs of transactions, economic agents would join up and create larger economic entities to lower transaction costs. However, he recognized that there are also costs of managing companies (internal transaction costs), but that the external transaction costs are powerful economic mechanisms that lead to the establishment of firms.

These initial ideas on transaction costs were later further developed, first and foremost, by Williamson (1979, 1981). Building partly on Simon's (1957) bounded rationality concept, Williamson developed a framework for understanding transaction costs including the concepts of bounded rationality, uncertainty, opportunism, asset specificity and transaction frequency. These are the kinds of factors that create transaction costs in the economy: The fact that there is uncertainty in markets and that all economic agents have bounded rationality and act opportunistically, and that assets to a large extent are specific and that transactions may take place more or less frequently, will create transaction costs.

Similar ideas and concepts are relevant for the discussions on substitution. In basic neo-classical economics, taking the foundational assumptions for granted, there is, in principle, full substitution between all products and services to the extent that different bundles of products and services can deliver utility to the users in ways that may satisfy the needs of users in similar manners. In reality, substitution is discussed in relation to products and services that fulfill comparable needs of users. In our examples, hotels and private accommodation both deliver accommodation services, and taxis and private transportation both deliver transportation services. The discussion is the extent to which the different services are fully substitutable. Is there full substitution between hotels and private accommodation and between taxis and private transportation?

The answer to these questions can build on, e.g., a value proposition approach and an approach that takes into account the different reasons for transaction costs and the different elements in the business processes, where there are transaction costs. In a value proposition approach, it will be discussed what the different elements in the value propositions of the different services are. A hotel stay, for instance, offers a room and bed at some known standard quality (in most cases), solitude, several rooms at the same time if being a group of people, breakfast, etc. Private accommodation via Airbnb offers a room and bed at more unknown standards, the chance of meeting new people, etc. The value propositions are to a large extent similar, but also differ at some points.

If looking at the issue from the point of view of the reasons behind transaction costs and the processes of transaction, uncertainty, bounded rationality and opportunism may play a role, as the service users will have less knowledge on the services provided because of the lower degree of standardization. The processes of searching, contacting, contracting, etc. would previously be much more difficult for private accommodation and transportation than

for hotels and taxis. However, this is exactly where the new digital platforms come in and change the basic conditions for substitution. When it becomes easy to search for the right place or the right means of transportation, to contact and to contract for getting access to the services, the degree of substitution will increase. The potential substitutability between services becomes a real possibility for substitution.

4. Internet-based platforms

With the diffusion of the World Wide Web from the mid-1990s, an interest in categorizing the different types of new Internet-based business models was initiated. One of the first most cited contributions at the time was the paper "Business models for electronic market" by Timmers (1998). Another important contribution was the Web site maintained by Rappa (2010), which included a taxonomical categorization of "Business models on the Web". This taxonomy included the following business model categories: brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription and utility.

Later, during the first years of the new millennium, came an increasing interest in ontologies of business models, i.e. the interplay between the different elements of business models including the technological, organizational, etc. aspects. One of the major contributions in this field came from information and communication technology (ICT) researchers from The Netherlands and Belgium, see, e.g., Faber *et al.* (2003), "Designing business models for mobile ICT services". Other major contributions came from Alexander Osterwalder and Yves Pigneur, with Osterwalder's doctoral thesis, "The business model ontology" (Osterwalder, 2004), as an important landmark.

The development of science in this field thus follows the traditional path from taxonomies to ontologies – and back again with more specified taxonomies on the basis of increased knowledge on the interplay between the different elements and facets of business models. The interest in the present paper is on a type of brokerage model that not only has become the object of steeply increasing research attention during the past decade (Rochet and Tirole, 2006; Gawer and Cusamano, 2002; Hagiu and Wright, 2011), but also has spread quickly in actual business developments, namely, multi-sided platforms (MSPs).

The MSP concept is an extension of the two-sided market concept (Rochet and Tirole, 2006) with more than two different kinds of customers, who are interdependent and are being served by the same platform. In a paper by Hagiu and Wright (2011), they differentiate between MSPs, re-sellers and input suppliers, where MSPs are distinguished by the direct interaction between the different customer groups. In the two cases analyzed in the present paper, Airbnb organizes the direct interaction between accommodation providers and users and Uber organizes the direct interaction between transportation providers and users. Airbnb and Uber are thus basically two-sided markets – which may be further developed into MSPs with, for instance, advertisers as a third kind of platform customers, if considered strategically desirable by the platform owners.

Airbnb and Uber are certainly not the first Internet-based platforms in the accommodation and transportation areas. Other commercial as well as non-commercial platforms have preceded them. In the accommodation and the transportation areas as well, there are many non-commercial platforms, where people can find free accommodation and transportation. These kinds of arrangements have contributed to the air of sharing, which the commercial platforms build upon. However, while the non-commercial platforms are altruistic sharing platforms, the commercial platforms are "in it for the money", both with respect to the revenue derived by the platform owners and the payments to the accommodation and transportation providers.

Other commercial platforms have also existed before the large international ones, with Airbnb and Uber as the archetypes. Renting of accommodation, especially vacation accommodation, via agencies has been taking place for a very long time. Internet has certainly provided such commercial operations with a new and much more efficient

platform but has, in many cases, basically been an extension of an existing business model. With Airbnb and Uber and other similar operations, these kinds of old-fashioned two-sided market operations have been taken to a whole new international dimension. Airbnb and Uber have vastly extended the markets for residential accommodation and transportation.

As mentioned in the introduction to the paper, businesses living on transaction costs have existed "as long as business itself". Lawyers and real estate brokers were mentioned. However, Internet with its vastly improved capabilities for communication between and among individuals and businesses establishes a basis for markets to expand and be created. Internet allows for considerable decreases of transaction costs, but just for this reason, it also in a paradoxical manner creates the basis for new businesses based on handling transaction costs.

5. The cases of Airbnb and Uber

5.1 Airbnb

Airbnb, originally called Airbed & Breakfast, is an Internet company founded in August 2008, based in San Francisco, California. The idea of renting out free space in their apartment came up in 2007. Airbnb founders, Nathan Blecharczyk, Joe Gebbia and Brian Chesky, rented out three airbeds on their living room floor and provided breakfast for their guests. On March 1, 2015, Bloomberg announced that Airbnb was raising money from investors in a financing round that would value the room-sharing service at $20 billion (Bloomberg, 2015).

Since 2008, Airbnb provides an online platform that connects hosts who have places to rent with guests seeking to rent such places. The business has grown exceptionally, and in 2015, Airbnb is representing 1,000,000 listings in 34,000 cities and 192 countries (Airbnb, 2015). Airbnb has acquired several of its competitors and has surpassed the InterContinental Hotels Group and Hilton Worldwide as the world's largest room service provider.

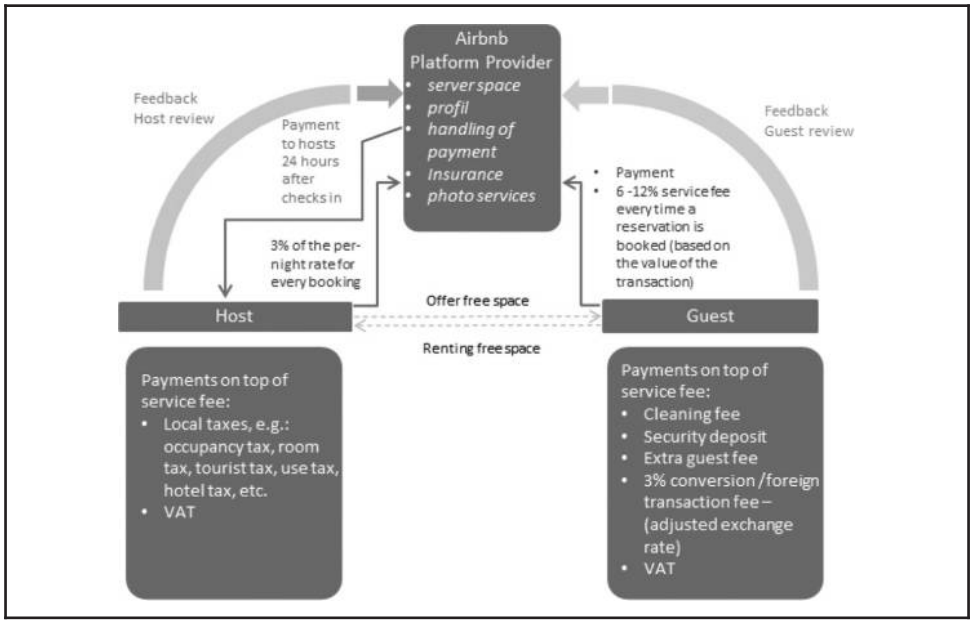
Airbnb states clearly in their "Terms of Service, Host Guarantee Terms and Conditions" that Airbnb does not own, sell, resell, furnish, provide, rent, re-rent, manage and/or control properties. Airbnb's responsibilities are limited to facilitating the availability of the site, application and services and serving as the limited payment collection agent of each host for the purpose of accepting payments from guests on behalf of the hosts. Guests pay Airbnb when they book a place and Airbnb releases the money to hosts 24 hours after the guests check in.

Airbnb charges hosts as well as guests for the use of their online platform. Both fees are calculated as a percentage of the applicable accommodation fee:

- Guests are charged a 6-12 per cent service fee on top of the reservation every time a reservation is booked (Airbnb, 2015). The exact percentage of the guest service fee depends on the reservation subtotal. It falls steadily from 12 per cent to 6 per cent when the reservation amount is increased, so that guests can save money by booking large reservations. The company claims that fees cover the cost of running the Airbnb platform.
- Hosts are charged 3 per cent of the per-night rate for every booking. This fee covers the cost of processing guest payments and is deducted from the host payout. Hosts are responsible for setting their per-night rates, cleaning fees and security deposits. Furthermore, hosts are responsible for following all laws and regulations, including paying any local taxes that apply to their accommodations (Figure 1).

The total fee may include taxes and cleaning fees. Airbnb charges VAT on its service fees for users (applicable to hosts and guests) from the European Union, Switzerland, Norway, Iceland and South Africa. In some locations, Airbnb has made agreements with

Figure 1 Airbnb platform



governments to collect and remit local taxes on behalf of hosts. Currently, Airbnb is collecting and remitting taxes in the following locations: Multnomah County and Portland, Oregon, USA; San Francisco, CA, USA; San Jose, CA, USA; Chicago, IL, USA; District of Columbia, USA; Malibu, CA USA; and Amsterdam, The Netherlands.

If the guest pays for a booking in a currency different than the one the host has chosen in the listing, the guest will be subject to varying Airbnb exchange rates which may not be identical to the real-time market rate. Furthermore, Airbnb charges 3 per cent conversion/foreign transaction fees when booking is done in foreign currency. This accounts for Airbnb holding costs and currency risks. The conversion/foreign transaction fee is separate from and in addition to the Airbnb guest service fee. The conversion fee is applied to the reservation total after guest service fees have been added (Airbnb, 2015).

Depending on the host, the actual costs can vary due to cleaning fees, extra guest charges and security deposit. Moreover, it is very difficult for guests to estimate the total costs during a searching process because of the variation in local tax levels which makes the Airbnb pricing scheme less transparent than in the hotel industry.

Despite the fact that Airbnb has its own million-dollar insurance policy, it is necessary to have a property-owner's insurance. Airbnb will cover the property and general furnishings, but only after the property's own insurance policy is exhausted (Airbnb, 2015).

Even though Airbnb has left pricing decisions in the hands of hosts, they have recently started working on a predictive pricing algorithm which will provide hosts with a recommended price for their space depending on many factors including room style, property type, number of reviews, capacity, location, seasonality, pricing of other listings, hotel and airline demand and even temperature changes at the destination. However, it still allows the host to ultimately set the final price.

Airbnb is a prominent example of a company which is part of the sharing economy. In 2014, Airbnb was named "company of the year" by *Inc. magazine*, which claimed year 2014 to be the year of the sharing economy (Fox, 2014). During the past few years, the company has grown exponentially but also has faced many problems with regulators in regards to tax requirements and unfair competition.

5.1.1 Present and future implications for the hotel industry. Few years ago, nobody expected that the Airbnb platform would threaten the traditional hotel industry. Hotels have failed to predict the growing scale of Airbnb's activities. Airbnb's platform has scaled quickly in terms of users and numbers of transactions. A strong network effect has influenced the constant growth of hosts and guests. Through its platform, Airbnb has not just created new user behaviors but has changed the supply side of the hotel industry as well.

Since 2014, big hotel chains have started realizing that the Airbnb platform is affecting their business, but it is very difficult for them to quantify the impact. Hotel News Now Report has examined how new platform businesses are impacting hotel demand, with analyses of ten largest hotel companies by room count as illustrative case studies. In Table I, Airbnb is compared to four large hotel chains.

Until recently, the luxury hotels have not considered Airbnb as a direct competitor. This has changed due to the fact that Airbnb is expanding its offers into the business and luxury travelers' segments, which are critical groups of customers to the hotel industry. In 2014, Airbnb entered the business segment, teaming up with Concur – an American travel management company – providing travel and expense management services to businesses. The agreement with Concur allows Airbnb charges to appear directly on travelers' expense forms. By 2015, Airbnb reports that just below 10 per cent of its guests are business travelers (Weed, 2015).

Even though Airbnb provides an alternative to traditional hotels, there is a new trend among small and luxury hotel owners who are joining the Airbnb platform to list their rooms alongside with booking.com, trivago and other Web sites.

5.2 Uber

Uber is a US-based online transportation network company founded in 2009. On December 4, 2014, Bloomberg announced that Uber was worth more than $40 billion (Bloomberg, 2014). Uber does not own cars and does not employ drivers. Uber claims to be a marketplace where Uber's drivers as independent agents meet Uber's customers. Uber states in "Terms and Conditions" that their services constitute a technology platform that enables users of Uber's mobile applications or Web sites to arrange and schedule transportation and/or logistics services with third-party providers of such services, including independent third-party transportation providers and third-party logistics providers under agreement with Uber or certain Uber affiliates (Uber, 2015a, 2015b).

Uber represents a platform business and provides more opportunities for growth of a sharing economy. The core value that Uber delivers is a reduction of search and transaction costs for both drivers and passengers. The Uber platform can be classified as an exchange platform due to the fact that Uber creates value primarily by enabling direct exchange between actors. The Uber platform manages a network of drivers and passengers through apps and provides real-time ridesharing options. Uber provides also various options associated with transportation or logistics, including the transportation

Table I Largest hotel companies by room count

Company	*Existing hotels*	*Existing rooms*	*Rooms in development pipeline*
IHG Intercontinental Hotels Group	4,840	710,295	193,772
Hilton Worldwide	4,278	708,268	230,000
Marriott	4,044	692,801	240,000
Wyndham Hotel Group	7,645	660,826	117,000
Airbnb		1,000,000	

Source: The 2015 Big Brands Report (2015)

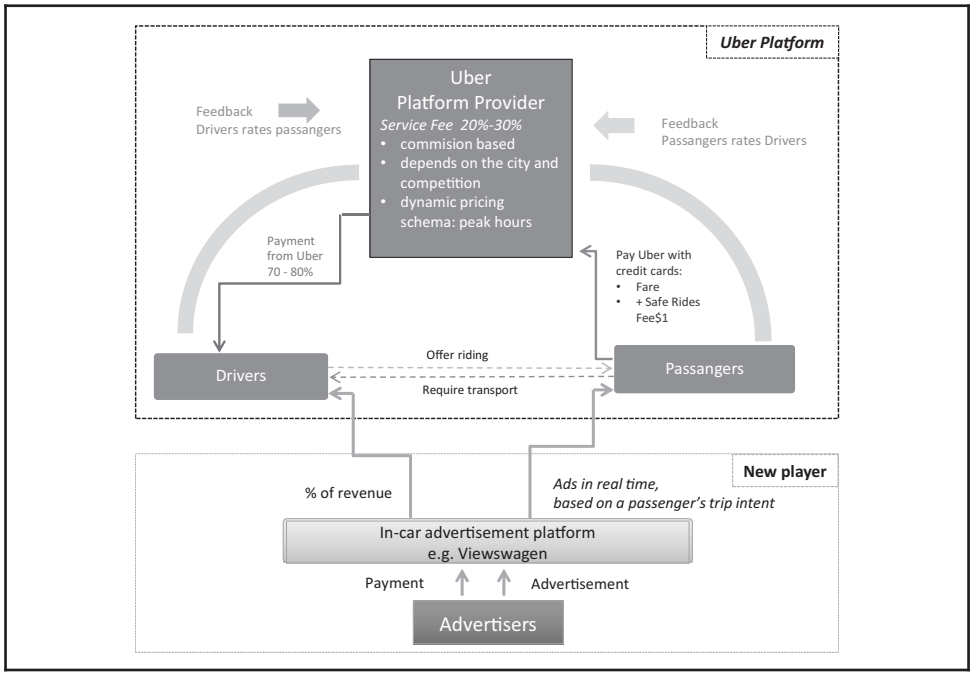
brands Uber, uberX, uberXL, UberBLACK, UberSUV and UberLUX and the logistics brands UberRUSH, UberFRESH and UberEATS.

Worldwide, the company now facilitates 1 million rides per day and is adding 50,000 new drivers per month. As of March 26, 2015, the service was available in 55 countries and more than 200 cities worldwide (Uber, 2015). Uber, in contrast to Airbnb, is setting prices for rides. Payment is done directly to Uber not to the drivers. Uber's commission-based pricing structure means that the company will take a percentage of a driver's fee every time the driver gives a ride. Uber fares include a base fee as well as rates based on time and mileage, which vary from city to city. UberX, for instance, charges $1.63 per mile and $0.30 per minute in Seattle, along with a $2.14 base fare and a $6 minimum fee. On average, 70-80 per cent of gross fares go to the independent drivers. Uber has stated that charges will be inclusive of applicable taxes where required by law. Some portion of the percentage that is retained by Uber goes to cover payment processing, payment fraud, refunds, customer service, dispute resolution, cellular handsets and local regulatory efforts (Figure 2).

In 2012, Uber introduced a dynamic pricing scheme due to the fact that there was a supply and demand imbalance during Friday and Saturday evenings. Uber offered the drivers higher prices during weekends. By offering more money to drivers, they were able to increase the road supply of drivers by 70-80 per cent in Boston.

Dynamic pricing changes are calculated algorithmically when wait-times are increasing dramatically, and "unfulfilled requests" start to rise. Prices are changed if utilization rates fall below 60 per cent or are above 80 per cent (Uber, 2013). In essence, there are two functions of the increased price model. One is to increase supply. The second function of the price increase is to temporarily intentionally reduce demand. Through these two mechanisms, the company is able to increase supply; assure reliability, which is a key tenet of the company; and maximize the number of completed rides (Gurley, 2014). Uber has informed platform users that charges applicable in certain geographical areas may increase substantially during times of high demand.

Figure 2 Uber platform



In 2014, Uber introduced a $1 Safe Rides Fee, paid for by riders. The new fee, which applies nationwide in the USA, will cover the company's costs related to "background checks, ongoing safety monitoring, education, insurance and safety features (e.g. an in-app emergency button)". This new fee is for UberX – which lets everyday drivers shuttle people around town – and not for the more expensive UberBLACK service, which uses professional chauffeurs (Soper, 2014).

On top of the Uber platform, other companies are trying to build their business model. Viewswagen has recently launched an advertising platform inside Uber and Lyft vehicles that allows drivers to show promotions on tablet screens in cars' backseats. It uses GPS to generate specific ads targeted toward passengers as they ride.

5.2.1 Present and future implications for the taxi industry. Uber, as the world's largest ride-hailing service operator, is directly affecting taxi companies' businesses. The taxi business is indeed sensitive to the fact that Uber and taxi drivers operate in the same markets subject to different rules: safety, privacy, fares, etc. Until now, taxi companies' response has been to demand more regulations for ridesharing. But taking into consideration that 70 per cent of the world's population is expected to live in urban areas by 2050 and faces congestion problem, the viewpoint has been put forward that a better alternative for taxis and customers would be deregulation for both – taxis and ridesharing (Beyer, 2015).

Salomon (2013) has pointed out that Uber can actually raise taxi drivers' income over time, not lower them, due to the possibilities to sell their services to either taxi-fleet owners or to companies like Uber. Looking from this perspective, more competition on the market means higher income for drivers.

Presently, however, the Uber platform is disrupting the status quo of the taxi industry around the world. The San Francisco Municipal Transit Agency has noticed a sharp and steady downturn in taxi use in San Francisco from 1,424 average trips per month in March 2012 to 504 in July 2014, a steep 65 per cent decline (Agency, 2014). Uber already has and will increasingly have implications on the structure of the taxi industry, on jobs and on wages.

6. Implications for theory and analysis

Belk (2014) seeks to align the concepts of sharing economy and collaborative consumption by characterizing the Felson and Spaeth definition and the definition by Botsman and Rogers (2010), which sees collaborative consumption as including "traditional sharing, bartering, lending, trading, renting, gifting and swapping", as "miss-specifications" (Belk, 2014). Belk (2014) in contrast seeks to promote a definition of collaborative consumption as "people coordinating the acquisition and distribution of a resource for a fee or other compensation".

Such a definition puts collaborative consumption on par with the commercial versions of sharing. One of the most prominent discussions on sharing and collaborative consumption is on the commercial versions and aspects (for-profit) versus the non-commercial (non-profit) versions and aspects. Criticism has been raised against the commercial versions for piggy-backing on all the non-commercial initiatives, where people share resources without charging any fees. Another line of inquiry is represented by, for instance, Rifkin (2014), who in his book on "The zero marginal cost society" among a multitude of other issues also writes about the sharing economy. The basic thought of the book is that in a growing part of the central sectors of society, there is a trend toward zero marginal costs. The clearest example is information and communication, where the marginal costs of one additional person using a piece of information or communicating are (at least close to) zero (Rifkin, 2014). Other examples that he uses are sustainable energy and even transportation, and the idea is that if the marginal costs are zero, then it will not be possible to charge for consumption and then eventually the economic foundations of capitalism will

fall apart – as is epitomized in the sub-heading of the book: "The Internet of things, the collaborative commons, and the eclipse of capitalism" (Rifkin, 2014).

In this paper, we do not venture into such a discussion but stay with the shorter-term (and maybe more realist) industrial organization implications of the sharing economy trends. These implications mainly relate to the issues of transaction costs, substitution (and complementation) and multi-sided markets. The lowering of transaction costs facilitated by Internet-based platforms allows for the exchange of goods and services between people that would not otherwise have been possible – simply because of the very high costs of searching, contacting and contracting that this would require. In a sense, new markets are created – we are dealing with market creation, as markets for private accommodation and private transportation are created. Also, new markets for intermediaries are created. The Ubers and Airbnbs are becoming gigantic business operations, where there formerly were no possibilities for such operations to be erected. At the same time, these new markets and market operators also substitute for existing business operations. As the new markets and operators do not service entirely new human needs (e.g. accommodation and transportation), there is a degree of substitution – but also complementation.

The examples of Uber and Airbnb discussed in this paper show that there can be a relatively large degree of substitution and a considerable derived competition between the old business models and the new ones. It is not likely, however, that the new business models in foreseeable time will entirely eradicate the old models (e.g. hoteling and taxi-driving). But they can do serious harm to the existing business models. And, the question raised by Rifkin (2014) is whether just a share of the market for the new operators will be able to tip the market in favor of the new operators. Ten per cent is the figure cited by Rifkin. The reason should be that the margins in some industries are low and that losing just a share of the turnover may cause the market to tip.

This, however, is a slightly strange argument, as it presupposes that the exiting industries are not able to adapt and shrink if needed. The most likely scenario is that there will be a degree of substitution, but also a degree of complementation – on the demand side as well as the supply side. On the demand side, the new operators may attract users who did not previously use the services of the existing industries. On the supply side, as is shown with respect to hoteling as well as taxi-driving, some of the existing operators may offer their services through the new platforms. Furthermore, it is not only a struggle between incumbents and newcomers. The disruption of markets also leads to incumbents entering the markets of other incumbents. Once a relatively stable division of labor is shaken up in one industry, it will have repercussions in a number of surrounding industries.

In discussions on the sharing economy, many different trends and issues are now and then blended. This applies, for instance, to mixing the sharing economy issue with the presently very popular concept of co-creation (Prahalad and Ramaswamy, 2004). Obviously, there is co-creation in the sharing of facilities. However, the focus of the co-creation issue is different from the issue of sharing. Co-creation is about the joint creation of value and also of innovation (Sundbo *et al.*, 2015) in the interaction between providers and users, while the commercial aspects of the sharing economy are basically about the creation of new markets. Also, it is about the creation of new companies providing the platforms for the exchange of goods and services – the companies living on transaction costs.

To analyze these new sharing developments, we suggest using an analytical framework comprising theories on MSPs, transaction costs and substitution and complementation. The new commercial sharing platforms are either two-sided markets or may develop into multi-sided markets. The primary function of such platforms is to deal with the transaction cost issue that has previously hindered such markets from developing to any great extent. The new markets will, to different degrees, substitute for existing providers and business models but will also enter into an interaction with existing business models in a complementary manner.

7. Conclusion

Current discussions in public media on issues relating to the sharing economy are mostly very enthusiastic about the new ways of sharing and transacting goods and services or rather critical concerning commercial sharing arrangements and businesses piggy-backing on the non-commercial activities and concerning labor conditions for those delivering the services and service quality for those receiving the services being downgraded – or rather the conditions for those working in the traditional industries being undermined by the newcomers. These are very important issues and will also, in different manners, affect the industrial developments and structures, for instance regulatory measures promoted by the taxi industry to defend the working and service conditions in traditional taxi businesses – and obviously also protect the existing markets from new entrants.

In the present paper, we focus on the implications for the industrial structures in the affected industries. The research question being asked has been concerned with the extent to which transaction cost theory can be used to explain the changing industrial structures in the application areas that the Internet-based platforms are addressing and how other theoretical frameworks can be helpful in understanding these developments.

The conclusion is that transaction cost theory is a central theoretical tool to understand the sharing economy. Internet-based platforms facilitate drastic reductions in the transaction costs between users and providers of, for instance, private accommodation and transportation. This creates whole new markets, which were previously only possible to a very limited extent. However, these new markets also substitute for existing accommodation and transportation markets. Theories regarding substitution and complementation must thus be added to transaction cost theory to analyze industrial developments. As has been shown with the Airbnb and Uber cases, there is not only substitution but also complementation.

An obvious question could be whether the new business models will entirely substitute for the old ones. The degree of substation is obviously subject to concrete analyses in the different industries, but it seems that there could be considerable possibilities for substitution based partly on lower prices of the new sharing arrangements. However, there are also limitations, which are related to the fact that there are differences in value propositions, for instance, between a hotel room and private accommodation. Limitations are also related to the regulatory measures that will be taken in relation to the new business models, but also the adaptability of the existing industries and their competitive capabilities.

An interesting side effect is that the reduction in transaction costs is facilitated by business operations that in a number of cases become extremely highly valued huge international business companies. The reduction in transaction costs, which leads to increased possibilities for smaller business operations to function, at the same time leads to the creation of large business companies thriving on transaction costs. This is, in a sense, a paradox, which also bears witness to the strength of the capitalist economy. Rifkin (2014) advances the idea that zero marginal costs will undermine the capitalist economy. However, the information and communication industries, which are core examples of the "zero marginal cost economy", have shown the great adaptability of the capitalist economy. The industries thriving on transaction costs underline this.

The platforms that facilitate the lowering of transaction costs create two-sided markets or develop into MSPs. These kinds of business models become increasingly widespread facilitated by the Internet. On the basis of the abovementioned different theoretical approaches, the present paper proposes a theoretical framework for analyzing the sharing economy based on theories on MSPs, transaction costs and substitution and complementation.

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Corresponding author

Anders Hansen Henten can be contacted at: henten@cmi.aau.dk