

Dr Piotr C. Sosnowski  
University of Lodz  
ORCID: 0000-0002-3573-6718  
e-mail: piotr.sosnowski@uni.lodz.pl

# Access-based distribution — practical application of sharing economy in supply chain management

*Dystrybucja oparta na dostępie — praktyczne zastosowanie gospodarki współdzielenia w zarządzaniu łańcuchem dostaw*

## Abstract

The aim of this article is to determine the role of access-based distribution in sharing economy in the context of supply chain management. The research method used in this paper is the review of the existing literature. The reviewed literature is related to the areas of access-based distribution, sharing economy and supply chain management. The main concept introduced in this paper is access-based distribution. The results concern the interplay between access-based distribution and sharing economy in the context of supply chain management. The main research limitation is the relatively scarce literature on the topic of access-based distribution in the context of supply chain management. The main research implication is to provide the basis for further research related to such concepts as sharing economy, closed-loop supply chains and smart product-service systems. The originality of this study lies in the lack of comprehensive elaborations on the topic of access-based distribution in the context of supply chain management.

## Keywords:

access-based distribution, circular economy, collaborative economy, sharing economy, product-service systems

## Streszczenie

Celem artykułu jest określenie roli dystrybucji opartej na dostępie w gospodarce współdzielenia w kontekście zarządzania łańcuchem dostaw. Metodą badawczą zastosowaną w niniejszym opracowaniu jest przegląd istniejącej literatury. Analizowana literatura dotyczy obszarów: dystrybucji opartej na dostępie, gospodarki współdzielenia oraz zarządzania łańcuchem dostaw. Główną koncepcją wprowadzoną w niniejszym opracowaniu jest dystrybucja oparta na dostępie (*access-based distribution*). Wyniki badania dotyczą wzajemnego oddziaływania pomiędzy dystrybucją opartą na dostępie a gospodarką współdzielenia w kontekście zarządzania łańcuchem dostaw. Głównym ograniczeniem badawczym jest skąpa literatura na temat dystrybucji opartej na dostępie w kontekście zarządzania łańcuchem dostaw. Główną implikacją badawczą jest stworzenie podstaw do dalszych badań związanych z takimi koncepcjami jak gospodarka współdzielenia, łańcuchy dostaw obiegu zamkniętego oraz inteligentne systemy produktowo-usługowe (*smart product-service systems*). Oryginalność artykułu wynika z braku kompleksowych opracowań na temat dystrybucji opartej na dostępie w kontekście zarządzania łańcuchem dostaw.

## Słowa kluczowe:

dystrybucja oparta na dostępie, gospodarka cyrkularna, gospodarka współdziałania, gospodarka współdzielenia, systemy produktowo-usługowe

JEL: D30

## Introduction

Globalisation and digitalisation have changed the global economy. Cooperation between

companies from countries all over the world has resulted in the building of global supply chains. Furthermore, digitalisation has facilitated worldwide communication that has enabled an

exchange of market information on a global scale and in real-time for the first time in history. It has resulted in creating new ways of building supply chains that use such concepts as sharing economy. The way to introduce sharing economy in supply chain management is access-based distribution.

The aim of this article is to determine the role of access-based distribution in sharing economy in the context of supply chain management. The adopted research approach is the consideration of access-based distribution as a business solution in the supply chain management area, taking into account the premises of sharing economy.

Sharing economy focuses on reducing the use of resources through sharing resources without the change of ownership. Sharing resources without the change of ownership includes the following activities, as described by A. Felländer et al. (2015): "renting, bartering, loaning, gifting and swapping of assets that are typically underutilised, either because they are lying unused or because they have not yet been monetised". Hence, sharing economy is related to managing the flow of material goods and their use. In spite of that, there are no comprehensive studies related with the practical application of access-based distribution in sharing economy.

## The concept of sharing economy

The concept of sharing economy can be defined as an "accessibility based business model for peer-to-peer markets" (European Commission, 2013). In this case, sharing economy focuses on facilitating access for consumers to consumer-owned property, skills or competencies. It should be noted that this definition limits sharing economy to the consumer-to-consumer (peer-to-peer or P2P) market. However, the parties providing such assets might be either businesses or consumers. It is significant, since "selling the use, not the product" is the idea present both on B2C and B2B markets (Matzler et al., 2015).

Sharing economy relies on facilitating access to the goods or services, rather than ownership (Eckhardt et al., 2019; Frenken & Schor, 2017; Martin, 2016; Pietrewicz & Sobiecki, 2016). Hence, it concerns not only material goods, but also services, information, knowledge, competencies and time. Examples of sharing economy practices include: cohousing, tool lending, coworking and collaborative consumption (Kassan & Janelle, 2012). What all these examples have in common is

facilitating access to resources (material goods, money, time) by their owners to non-owners either for-profit or non-profit.

Sharing economy is also called "access economy", "platform economy", "gig economy", "economy of access", "access-based consumption", "collaborative consumption" and "collaborative economy" (Bontoux et al., 2016; Denning, 2014; Echikson, 2020; Heinrichs, 2013; Richardson, 2015; Al Salman & Claassen, 2018). Some scholars associate sharing economy with non-market-mediated access, where sharing is identified as giving for free (Eckhardt & Bardhi, 2016). It should be noted that it is not always true, since sharing economy also includes such activities as renting or leasing. Other scholars (Altrock & Suh, 2017) differentiate sharing economy and access economy by the character of the transaction: if it is an economic driven exchange, it is an access economy, if it is a cost-free sharing, it is sharing economy. Due to the supply chain management approach, this article is focused on market-mediated access, taking into account both free and paid solutions. In summary, sharing economy is described either as a model or a system. It is aimed at reducing negative environmental impacts. Other concepts of this kind include, among others, circular economy.

Since the aim of this paper is related to supply chain management, which is not limited to peer-to-peer markets, the following definition is proposed: sharing economy is an accessibility-based business model enabling the exchange of goods and services between individuals and organisations to increase the use of under-utilised resources.

One of the main drivers for implementing the concept of sharing economy in practice is the possibility of obtaining economic benefits. As indicated by M. J. Pouri (2021) it results from either free or idle capacity of durable goods (e.g. free seats in a car) or from the abundance of consumable goods (e.g. to avoid generating waste), time (it cannot be stored), information (e.g. software) and competences (both information and competences might lose their value over time). Another driver of implementing sharing economy in business practice is the relatively lower transaction cost due to the digitalisation and use of online platforms (Felländer et al. 2015; Munoz & Cohen, 2017). Its enablers are the possibility of creating an online platform that is focused on a specific type of sharing, lending, renting (European Commission, 2013; Puschmann & Alt, 2016; Zhu et al., 2017) and the availability of assets that are underused (Felländer et al., 2015; Munoz & Cohen, 2017) or even unnecessary (swapping) (Daunoriene et al., 2015).

## Supply chain management and access-based distribution

According to A. J. van Weele (2014), supply chain management is "the management of all activities, information, knowledge and financial resources associated with the flow and transformation of goods and services up from the raw materials suppliers, component suppliers and other suppliers in such a way that the expectations of the end-users of the company are met or surpassed". The main goal of supply chain management is to meet demand most efficiently and cost-effectively (Ocicka, 2017). One of the key areas of the supply chain (along with supply and production) is distribution. Distribution is a supply chain area that aims at providing material goods and services to end-users (Witkowski, 2010).

However, there is a lack of comprehensive studies on distribution in sharing economy from the supply chain management point of view. W. Eckhardt and F. Bardhi describe access-based distribution practices as a way to provide access-based consumption (or non-ownership consumption). They define it as "transactions that do not lead to a transfer of ownership but provide temporary access to consumption resources" (Eckhardt & Bardhi, 2016). It should be taken into account that access-based distribution includes also warehouse sharing (accessing the storage space), transportation space (Reitmaier et al., 2017) and some internet streaming services, e.g. access-based distribution of music (Günther, 2016). The important role of the relationship between supply chain management and sharing economy was also identified by O. C. Ferrell et al. (2017).

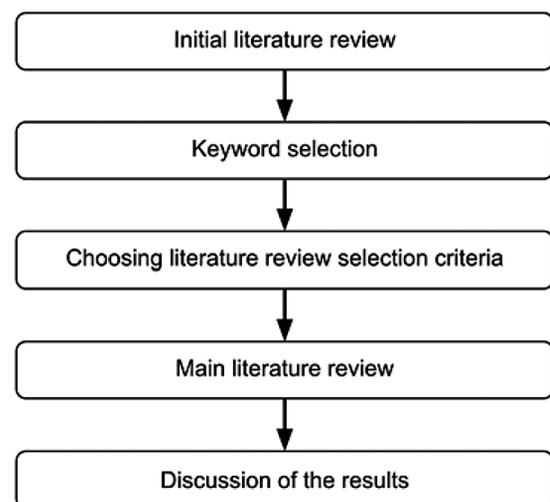
Access-based distribution is closely related to the concept of access economy. Access economy, also called "access-based economy" (Jaremen et al., 2019), is related to facilitating access to underutilised assets, both for-profit and non-profit. The main activities of access economy are renting, lending or sharing private property, skills and resources (Eckhardt & Bardhi, 2016). It is often identified with sharing economy. Hence, access-based distribution can be defined as a distribution that does not lead to a transfer of ownership but to provide access to material and non-material consumption resources, e.g., by renting, leasing and lending. Therefore, it might be either a form of a for-profit sharing economy (for enterprises) or a form of non-profit sharing economy (for non-profit organisations).

### Research methodology

The study consisted of several stages. The first stage was the initial literature review. It aimed to

determine the current state of literature related to areas of sharing economy and access-based distribution in the context of supply chain management. The second stage was the choice of literature selection criteria, including the keywords for the main literature review. In the third stage, the main literature review was conducted. In the fourth, the results were discussed. In the final stage, the conclusion and research implications were presented. The visualisation of the research methodology is presented in Figure 1.

Figure 1  
Research methodology



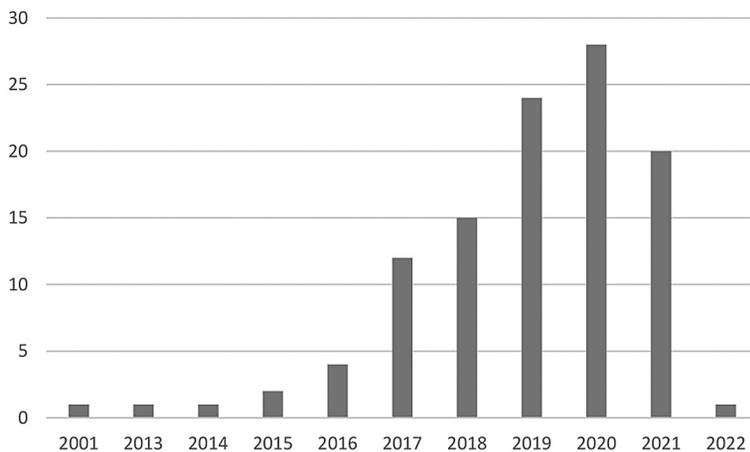
Source: own elaboration.

The results of the initial literature review are presented in the earlier chapters of this paper. To conduct the main literature review, SCOPUS was chosen as a research database. Based on the results of the initial literature review, the literature selection criteria were chosen:

1. Title, abstract or keywords contains at least one phrase from both following groups:
  - a) sharing economy, access economy, access-based economy, community-based economy, platform economy, gig economy, collaborative economy, collaborative consumption, access-based consumption,
  - b) distribution, supply chain.
2. The subject area is business, management and accounting.
3. Document types taken into account are articles, reviews, books, book chapters and conference papers. Editorials and letters are excluded from consideration.

Figure 2

Number of publications found per year



Source: own elaboration.

4. Only sources in the final publication stage are considered. Articles in the press are excluded.
5. The publication is directly related to the area of distribution in sharing economy.

The query returned 111 sources. There was no limit to the date of publication. However, there is only one source found older than 2013. All found publications were in English. The literature review was conducted in November 2021. The chart describing the number of found publications per year is presented in Figure 2.

It can be observed, that the number of publications related to the area of access-based distribution is increasing steadily. It may indicate the growing importance of these topics for modern researchers. Not every source regarding distribution in sharing economy in the supply chain management context is related to access-based distribution. E.g. Q. Wei et al. (2019) focused on a shared distribution system based on revenue-sharing and cooperative investment contracts instead of access-based distribution.

Table 1

Examples of access-based distribution

| Sectors                                   | Products/services              | Sources  |
|---|--------------------------------|--|
| Apparel                                   | Clothing libraries             | Al-Yafei et al., 2021; Zamani et al., 2017                                 |
| Automotive                                | Carsharing                     | Al-Yafei et al., 2021; Ampudia-Renuncio et al., 2020; Liang et al., 2021   |
|   | Ridesharing                    | Corona-Trevino, 2017; Ferrell et al., 2017                                 |
| Electric personal transportation vehicles | Mobility-as-a-service          | Nikitas et al., 2017   |
| Housing                                   | Lodging                        | Ferreira et al., 2020; Lagonigro et al., 2020; Lee & Cho, 2021; Mach, 2020 |
|   | Long-term accommodation rental |  |
| IT equipment                              | Product-service systems        | McIntyre & Ortiz, 2015   |
|   | Device-as-a-service            |  |
| Logistics                                 | Transportation sharing         | Islam et al., 2020; Reitmaier et al., 2017                                 |
|   | Warehouse sharing              |  |
| Manufacturing                             | Production capacity sharing    | Zhao et al., 2019  |
| Parking                                   | Parking space renting          | Ferrell et al., 2017   |
| Sport equipment                           | Bike-sharing                   | Al-Yafei et al., 2021; Ma et al., 2018                                     |

Source: own elaboration.

## Findings and discussion

Possibilities related to sharing information and knowledge in the supply chain have been discussed since the internet became a common form of communication (Basu, 2001). However, these possibilities do not have to be related to providing access to material goods or services.

Providing access to material goods without change of ownership, in which the use of a product, rather than the product itself is sold, is described as product-service systems. They include not only collaborative consumption based on access but also maintenance, take-back and recycling (Szekely & Strebel, 2013). According to this, access-based distribution should include not only product-service systems but also distribution and redistribution markets. These markets should enable end owners to distribute and redistribute material goods among users. The examples of access-based distribution are presented in Table 1.

It should be noted that some of the examples listed above function mainly on B2B market (product-service systems, device-as-a-service, transportation sharing, warehouse sharing and production capacity sharing). Hence, in the context of supply chain management, access-based distribution can be present in several links of a supply chain.

### Practical application of access-based distribution

The practical application of access-based distribution is based on the assumption that users are interested in accessing the goods, not ownership (Cheng, 2016). It implies the second assumption that end owners (corporate or individual) are interested in providing access to the goods. This kind of consumption is also called collaborative consumption (Barnes & Mattsson, 2016). It should be noted that collaborative consumption does not exclude access-based distribution on B2B or B2C markets, since company-owned resources can also be used collaboratively (Ertz et al., 2016). D. de Lange and D. Valliere (2020) refer to this kind of collaborative consumption as "for-profit collaboration".

Y. Li et al. (2020) identified two sharing economy business modes. In the first, access to material goods is facilitated by the customer, who is an end owner. In the second, access to material goods is facilitated by the retailer using the sharing platform. It is visualised in Figure 3.

Taking into account the supply chain management context, the end-owner takes the role of provider that provides access to the material goods to the client, the obtainer. They collaborate in order to source and trade this access (Ertz et al., 2016). Furthermore, the provider does not necessarily have to be the owner of the accessed goods. It can operate as an intermediary between the producer and end owner. However, this kind of cooperation can be applied both in ownership-based distribution and in access-based distribution. In both cases there is sharing involved: access to the finished product is facilitated without change of ownership. However, only the B2C sharing mode involves access-based distribution. It should be noted that providing access to the finished product instead of selling its ownership by a distribution company might be facilitated by the manufacturer, e.g., due to the contractual clauses or aftersales services. It is significant for manufacturers and distribution companies, since the sharing economy business mode (or lack of it) could affect their cost-effectiveness (Tian & Jiang, 2018). Hence, the role of the manufacturer as a facilitator of access-based distribution might be crucial for the functioning of this kind of distribution.

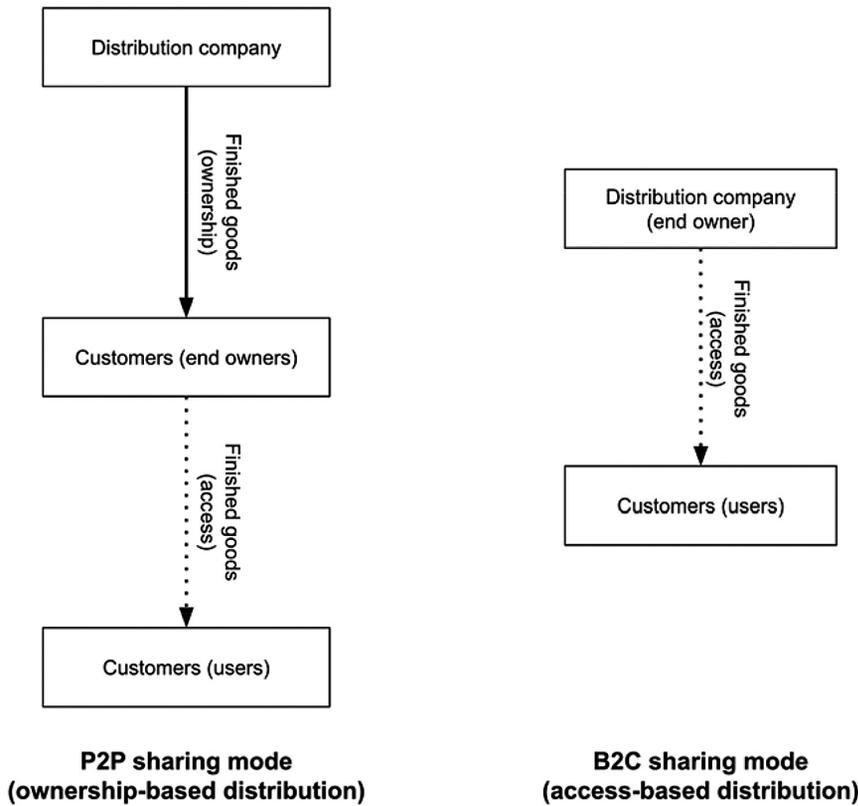
It should be noted that not every kind of practical application of sharing economy is related to the access-based distribution as defined earlier in this paper. E.g. O. C. Ferrell et al. (2017) include food delivery and at-home physician visits as examples of the practical application of sharing economy. However, these are rather related to servitisation than facilitating access to material goods.

### Relationships between access-based distribution, sharing economy and servitisation

Servitisation focuses on service-oriented thinking, aiming at replacing the exchange of value with an exchange of use (Nudurupati et al., 2016). However, there is no reason to limit servitisation to access-based distribution, because not every service has to be directly related to using material goods. Although access-based distribution might be treated as one of the types of servitisation. On the other hand, not every activity related to sharing economy (e.g., swapping) is related to services. It is visualised in Figure 4.

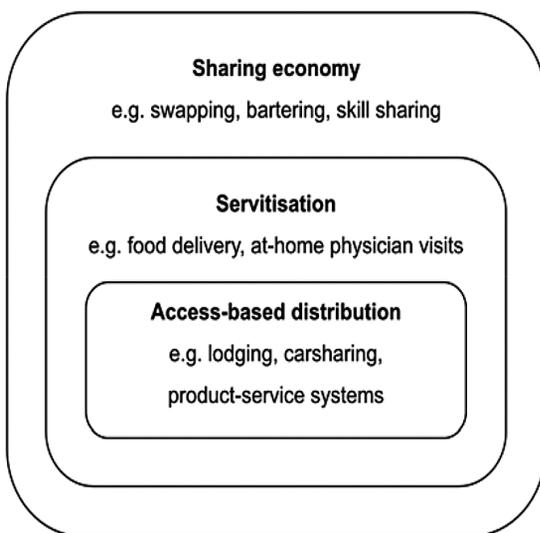
The relationships proposed are debatable. For example, is carsharing involving a private car a form of access-based distribution? Since access-based distribution in this paper is considered in

Figure 3  
Sharing economy business modes



Source: own elaboration based on Li et al., 2020, p. 4.

Figure 4  
Relationships between access-based distribution, sharing economy and servitisation



Source: own elaboration based on Eckhardt & Bardhi, 2016; Nudurupati et al., 2016.

the context of supply chain management, and servitisation involves services, the answer should be "no".

On the other hand, carsharing involves facilitating access to the material goods (a car) without change of ownership. Hence, the key factor on deciding whether the activity related to sharing economy is also related to access-based distribution or not is business context. As can be seen in Figure 3, P2P sharing is not an activity related to access-based distribution.

There are several factors significant for introducing access-based distribution for a specific product. M. Ampudia-Renuncio et al. (2020) identified the key role of web-based platforms in supply-demand matchmaking. T. A. Weber (2020) described after-market control and the durability of a product as key factors to introducing a shareable product to a market. It is significant to the focal topic because these factors can affect supply chain management.

## Conclusion and recommendations for future research

To summarise, the following conclusions were formulated.

Firstly, sharing economy does not have to facilitate any kind of access-based distribution to material goods. There should be a distinction between two kinds of the practical application of sharing economy: access-based distribution, related to facilitating access to material goods without change of ownership (e.g. car sharing), and servitisation, related to facilitating access to services instead of material goods (e.g. food delivery, at-home physician visits).

The business models that might be suitable for access-based distribution are product-service systems (including smart product-service systems). Their role in access-based distribution might also be related to building closed-loop supply chains (Szekely & Strebel, 2013).

Furthermore, access-based distribution can be present in both B2B and B2C markets. Hence, in the context of supply chain management, it is applicable in both upper and lower streams of

a supply chain. The role of access-based distribution in sharing economy in the context of supply chain management can be described as follows: it is limited to distribution companies and their clients. There is no indication of involvement of producers or their suppliers to activities related with facilitating access-based distribution. In case of smart product-service systems, it might depend on the technical features of product, that support accessibility. However, it is not determined at the moment.

The first recommendation for future research is to determine the role of smart product-service systems in facilitating not only access-based distribution but also closed-loop supply chains and sharing economy in general.

The second recommendation is to determine the relationship between access-based distribution, servitisation and sharing economy. It might be significant both in the business and legal context (if any legal regulations related to access-based distribution are to be introduced).

Furthermore, the significance of the interplay between sharing economy and closed-loop supply chains also constitutes a direction for future research.

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**Dr Piotr C. Sosnowski**

Doctor of Management and Quality Sciences. Assistant Professor at the Department of Logistics, Faculty of Management, University of Lodz. His current research interests include closed loop supply chains, green supplier evaluation and green purchasing. Author of scientific publications on supply chain management, purchasing management, building relationships with suppliers and environmental management in the supply chain.

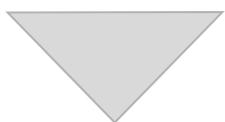
**Dr Piotr C. Sosnowski**

Doktor nauk o zarządzaniu i jakości. Adiunkt przy Katedrze Logistyki na Wydziale Zarządzania Uniwersytetu Łódzkiego. W pracy naukowej obecnie zajmuje się: łańcuchami dostaw obiegu zamkniętego, ewaluacją środowiskową dostawców oraz koncepcją Green Purchasing. Autor publikacji naukowych z zakresu zarządzania łańcuchem dostaw, zarządzania zakupami, budowania relacji z dostawcami oraz zarządzania środowiskowego w łańcuchu dostaw.

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