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Conceptualizing the Sharing Economy through Presenting a Comprehensive Framework

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Abstract: In recent years, through the advances in technology and highlighting the sustainability concepts in different aspects of human lives, the sharing economy has become an interesting topic for researchers, and also, many businesses claim to be active in this environment. However, a comprehensive definition, which is generally accepted, does not yet exist in the literature. In this paper, through a systematic literature review, analysis, and coding, a comprehensive definition, and also, an inclusive framework is presented for the sharing economy. This can help scientists and businesses to clarify which companies or parts of their activities fall into the SE category, and which do not. Such clarification in a small scale is done for five companies at the end of the paper.

Keywords: sharing economy (SE); sustainability; idle capacity; collaborative consumption; under-utilized assets; online platform; access versus ownership

1. Introduction

Sharing economy (SE) as a conceptual term has been in the media for a number of years [1,2]. Many factors, such as the growth of internet applications and smartphones, globalization and urbanization, the global economic crisis, shifts in the general attitudes, and higher attention towards sustainability in consumption, have led to the advent of the sharing economy in recent years [3–6]. This term has been of frequent use among several practitioners, for instance, in the well-intentioned speech of Joe Gebbia from Airbnb, the Car2Go slogan "proud to share" [7], or some companies, like Uber or Deliveroo, trying to link their names with this trend because of people's positive attitude towards it.

The idea of sharing things and using them together is not new, but is a phenomenon as old as mankind. However, the extent to which physical goods could be shared was quite limited in the past, both for the difficulty of matching supply and demand, and for the lack of trust between lender and loaner. In recent years, the rise of digitalization has come to cover these gaps. Nowadays, a growing number of companies rely on the intensive use of digital platforms, which allows an easy match of demand and supply, and building the required trust among users. Even materialistic consumers, more prone to owning things, are attracted by the sharing economy [8,9] and projections show that the key sharing sectors including car-sharing, online staffing, music/video streaming, finance, and accommodation, have the potential to increase global revenues from roughly $15 billion today to around $335 billion by 2025 [10,11]. Such exponential growth calls for the importance of the subject both in theory and practice.

The basis for these sharing activities is the service-oriented economy or product–service systems (PSS), also known as servitization or the functional economy [12]. This business strategy recognizes the value of utilization while the consumers pay for using product's functions, and not for its ownership [13,14]. Heinrichs (2013) refers to Botsman and Rogers (2011), and puts PSS among the

three features of SE [15,16]. Servitization is considered an enabler for the SE business models [17] but it is also strongly linked with the circular economy paradigm [18–20]. This approach proposes a closed-loop vision of the material flows, instead of the linear "manufacture–use–dispose" view prevailing nowadays. Closing the loop through recycling or energy recovery is just a partial solution oriented to patching up the dominant model of the linear economy. In fact, the shortest loops, such as reuse, repair, or remanufacturing, are preferred over recycling, energy recovery, or landfilling [21]. However, products will only be reusable, repairable, or remanufacturable if they are designed with this purpose, seeking for an extended product lifetime instead of for built-in obsolescence. This design for extended product lifetime is already being observed in manufacturers that market product–service systems, instead of products, a number of whom offer (or claim to offer) an SE business model. Not only the SE business models could support the transition towards the circular economy by promoting the extended products' lifetime, but also, they maximize utilization by occupying the idle capacity [22,23]. The environmental benefits of sharing have been analyzed by a number of researchers, including [16,24–26].

Despite the popularity of the SE both as a research field for scholars and the high growth rate of companies claiming to be a part of SE all around the world during the past few years [27], no generally accepted definition yet exists for this term [4,23,28,29]. Schor (2014) point out the problem of self-definition by the sharing economy innovators, and the press due to a lack of an agreed-upon definition, which results in the inclusion of a company in the sharing economy based on some definitions, and the exclusion of the same company based on some others [30]. Of course, Daunoriene et al. (2015) and Allen and Berg (2014) believe that these definitions are not in contrast by their nature, but evolutionary [26,31], since "the definition of the concept is taking shape with the level of inclusivity and variety in scope" [26] (p. 837).

Apart from the variations in the specifications and characteristics of the sharing economy identified in different research, a big ambiguity exists regarding the nature of the sharing economy. Surprisingly, the sharing economy is introduced by a variety of natures, such as online/digital platforms [4,32–37], activities, platforms, and resources [38], forms of exchange [39], an economic model [40–47], an economy/economic system [48,49], a socioeconomic model/system [50–52] a sociotechnical system [53], a socioeconomic ecosystem [54–56], an ecosystem [57,58], companies or businesses [59–61], a type of business model [62], various economic activities [27,29,63–68], a market [69], a web of markets [70], a phenomenon [71–76], economic-technological phenomenon [23], Value [77], practice [78], and even a variety of bottom-up initiatives, public–private–people partnerships, business start-ups, and local government schemes [79].

The growing interest in the SE topic makes the number of researchers joining the field increase daily, but without a clear definition and framework for what it is and what it is not, the scientific discourse remains blurred. Therefore, this paper aims at clarifying what SE is and how it is defined. To do so, a systematic literature review has been conducted, gathering 67 definitions from among 193 papers by means of it. The main features characterizing SE in these definitions have been identified, their frequency has been calculated by using coding method, and then, a comprehensive definition of the SE followed by a framework is provided. This framework is then used for testing a group of famous companies to clarify which ones belong to the SE, and which ones do not.

The rest of the paper is organized as follows. The next section deals with the theoretical frame of the SE, highlighting the factors that define it. Section 3 presents the methodology used, while Section 4 presents the results obtained, which includes a comprehensive definition and framework for the SE (Section 4.2.5 introduces sustainability as one of the seven building blocks of the sharing economy definition framework). In Section 5, the proposed framework is used for evaluating 5 famous companies assuming to be a part of the SE to check if they really belong to the group of SE companies or not, and finally, in the last section, conclusions, limitations, and avenues for further research are gathered.

2. Theoretical Framework

The term sharing economy was first added to the Oxford Dictionary in 2015 [80]. Likewise, the scientific literature dealing with the concept is relatively new [4]. Among the related available literature, researchers have focused on different aspects of the SE using a variety of names for it. Among the names used for the SE, the following can be cited (i) peer-to-peer economy [81], (ii) collaborative economy [45,82,83], (iii) collaborative production and collaborative consumption [31,52,66,82], (iv) access economy, access-based consumption [5,31,84], (v) grassroots economy, commons-based peer production and the mesh [31,85], (vi) product–service system [11] and (vii) on-demand economy, gig economy, platform economy [86,87]. Nevertheless, the term sharing economy is the most widely used in the literature [6], and not all the other names used can correctly reflect the whole phenomenon that takes place in the SE.

Despite the popularity of SE as a research field and the high growth rate of SE companies [27], Kosintceva (2016) claims that only 77 reviewed articles with the term sharing economy in their titles were available in the academic research databases by February 2016 [51], and Daunoriene et al. (2015) state that not a large number of definitions are provided for the SE in the literature [26]. Besides, as mentioned in the introduction section, no generally accepted definition yet exists for this term [4,23,28,29], and the available definitions are mostly different and ambiguous, which is attributed to the lack of research on the SE [51].

Although sharing is as old as mankind, something makes the SE new: stranger sharing [30,88], i.e., sharing things with strangers, unlike the previous behavior to share things with family, friends or other people we know. However, there are currently different interpretations for the word *sharing* that lead this term to be ambiguous. According to the research conducted by Frenken and Schor (2017), one interpretation excludes the exchanges in which a financial benefit goes to at least one of the parties, from sharing activities [88]. Based on this interpretation, the peer-to-peer asset rental practices cannot be considered as a part of the SE, and only gift-giving or similar activities are included in it. Another interpretation only considers the access to an asset, regardless of the financial benefit provided for each of the parties. Considering such an interpretation, both peer-to-peer asset rental practices and gift-giving can be included in the SE. According to such different interpretations, many of the companies, such as Airbnb or WeWork, which are considered as SE companies by a vast group of people, are not considered so by another group. Belk (2014) considers the terms true-sharing and pseudo-sharing for such cases, and believes that in true-sharing, no revenue should be considered, and in the event that a monetary exchange is being done, that is not true-sharing anymore, but pseudo-sharing [89].

Regarding the theoretical framework that sustains the concept of SE and the factors that enable it, four core pillars for the SE are introduced by PricewaterhouseCoopers LLP. (2015), namely (i) digital platforms that connect spare capacity and demand, (ii) transactions that offer access over ownership, (iii) more collaborative and trust-based forms of consumption, and (iv) branded experiences that drive emotional connection [10]. On the other hand, Muñoz and Cohen (2017) identify seven distinct dimensions of SE models which are platforms for collaboration, under-utilized resources, peer-to-peer interactions, collaborative governance, mission driven, alternative funding, and technology reliance [50]. Schor (2014) assumes four wide categories for SE activities, consisting of the recirculation of goods, increased utilization of durable assets, exchange of services and sharing of productive assets [30]. As can be seen, there is also an open debate on how the sharing economy can be conceptualized.

As abovementioned, different definitions and frameworks have been proposed for the SE, which shows the variety in the interpretations regarding what the SE is and what it can and cannot do [90]. Therefore, although Schor (2014) believes that "coming up with a solid definition of the SE that reflects common usage is nearly impossible" [30] (p. 2) and Acquier et al. (2017) believes that the SE needs an organizing framework rather than a new definition [91], both a comprehensive definition and framework for the SE are needed [92]. Hence, in this research, the authors try to remove this ambiguity

from the definition of this term and provide both a definition and a framework in a comprehensive and clear way. The research questions addressed are how can the SE be defined? And what is the theoretical framework behind the SE?

In order to answer the research questions, a systematic literature review is conducted, and the available SE definitions are reviewed and analyzed. Through codifying the various features of SE in the definitions, the frequency of the features is identified, and then, the theoretical reasoning behind them is discussed and used for presenting a comprehensive definition and framework for the SE, as presented in the next section.

3. Methodology

Defining the SE and setting a framework for it such that it can evolve is theory building. One of the best approaches for theory building is conducting a state of the art review or a systematic literature review [20,93–95]. Therefore, in this paper, written definitions from various scientific publications are gathered and analyzed to gain a good understanding of the SE concept for providing a definition and framework for it.

To address this, three main stages are considered, which are as follows.

3.1. Stage 1

A literature review was conducted using the papers, scientific reports, theses and dissertations, and also, specific websites found through searching relevant keywords. Before starting the search, a list of related keywords, such as peer-to-peer economy, collaborative economy, collaborative consumption, product–service system, on-demand economy, gig economy, mesh, access-based consumption, access economy, digital economy, platform economy, and the like, were prepared, and the most related ones were selected for the search. The final keywords considered were sharing economy, collaborative economy, and peer-to-peer economy, and a comprehensive search was conducted in Web of Science, Scopus, and Google scholar from before 2013 to 2018 by the date 22 November 2017 for these keywords. The papers obtained were refined through the systematic review method, which is illustrated in Figure 1.

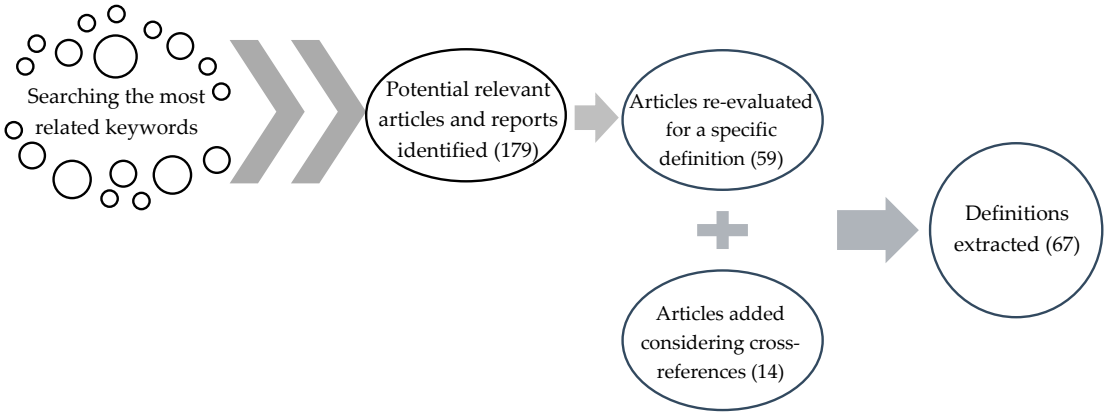


Figure 1. Systematic review process for sharing economy (SE) definitions.

The initial search for the sharing economy and its definition in the web, resulted in 179 papers, reports, and theses. In a simple filtering, papers focusing on the application aspects and neglecting the presentation of a specific definition for SE were segregated, and 59 papers containing new definitions or highlighting a specific definition remained. Reviewing the references of this selection, 14 other references, containing websites, papers, scientific reports, and theses or dissertations were added to the collection, and the total number reached 73, from which 67 definitions for the SE were extracted.

As Roover (2016) states, researchers follow different strategies regarding writing a paper about the SE [54]. The first group mention a specific definition at the beginning of the article, which they will

consider in the whole paper. The second group assume that the reader knows what the SE is, and therefore, provide no specific definition. And the third group gives some examples of the phenomenon and the active SE companies without defining it. In this paper, the explanations provided by the second and third groups are not considered, while the definitions provided by the first group are analyzed for describing the SE. Most of the papers of this group proposed a new definition. However, there are also cases that specify a definition from another researcher to be followed in the whole text (e.g., [54]).

It is worth mentioning that due to ambiguities in the SE concept, many of the papers of the first group mentioned above either contain explanations rather than a compact definition regarding the SE or they contain a small definition followed by complementary notes. To capture all the relevant information, we also considered the neighboring texts of the definitions, or the entire papers.

3.2. Stage 2

In the second stage, the main features characterizing SE in the definitions gathered in stage 1 were identified and listed. Then, considering the specification of the features in the 67 definitions available, a manual coding in Excel was done for the definitions, and the existence of a feature was given a weight in each of the definitions. This coding was checked twice by two different researchers to make sure all the features had been considered and given a weight. Summing up the weights showed the frequency of each feature in the total 67 definitions considered, which helped us in providing a comprehensive definition, as well as designing a framework for the SE. The steps taken in this stage are illustrated in Figure 2.

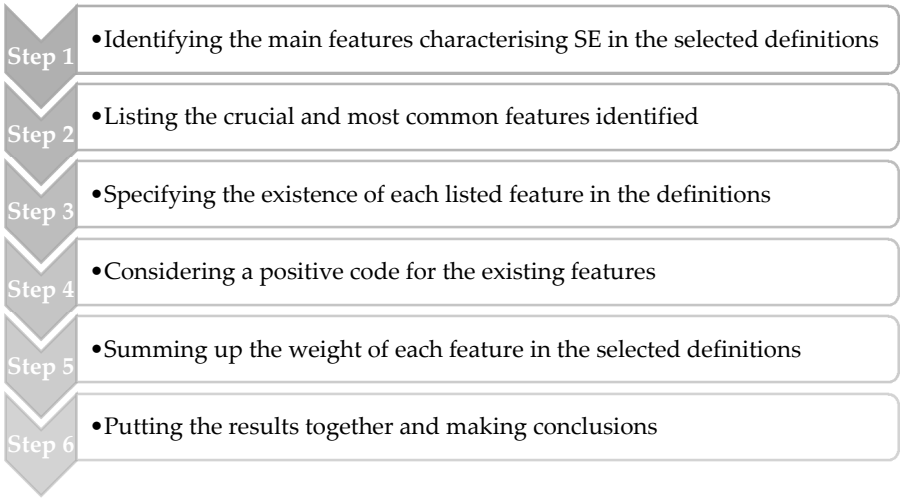


Figure 2. Steps of the coding procedure and extracting a comprehensive definition.

3.3. Stage 3

Gathering the results from stage 2 and analyzing them, a comprehensive definition of SE was provided that helped in recognizing which companies have the principles of the SE at the core of their business model. This allowed for presenting a framework to visualize how SE concepts are included into business modelling. With it, we intended to shed light on the scope and boundaries of the SE, illustrating the difference between SE business models and companies acting as capitalist platforms.

Subsequently, the presented definition and framework were tested with a case study research methodology. We believe case study is an appropriate methodology, since it is considered a robust research strategy when there is a need for a comprehensive and deep investigation [96], as it is the case with under-researched or emerging topics, such as SE. This methodology is typical for conducting research in social sciences [97] and provides the opportunity for understanding the behavioral conditions from the viewpoint of the companies under research. Therefore, this method enables us to

closely examine the data gathered from the considered cases in a specific context [96]. Among the three categories of case study research, namely exploratory, descriptive, and explanatory [97], the descriptive case study fits the approach we considered in this research, as we tried to describe the phenomenon taking place in the activities of the selected companies.

In the case studies, five renowned companies that are usually considered as SE were tested to check if they really comply with the features that define the SE. The first case study refers to Airbnb, which is at the forefront of accommodation services with a peer-to-peer perspective around the world, and is, therefore, considered to be one of the pioneers in SE activities [98]. This company has been analyzed as a SE company in various scientific research studies [3,32,99–104]. The other case studies refer to four companies belonging to the same sector, namely the field of transportation, including Car2go, Uber, BlablaCar, and Lyft. Both Uber and Lyft are listed among the first six car-sharing services, and are introduced as two of the key players in the SE environment [98]. The slogan "proud to share" used by Car2go [7] suggests that rental-per-minute services under a free-floating scheme are also presented by companies as an act of sharing between consumers. Moreover, some scientific researches have also considered this company under the label of SE [3,105]. Finally, BlablaCar is considered as another case study due to the nature of its main activities and its concentration on the ridesharing and therefore, sharing of transportation costs between the passengers [106], rather than car-sharing.

The rise of urban population highlights the importance of new strategies for mobility. In this vein, new business models in the mobility sector call for understanding how well they are aligned with the SE concepts. Therefore, beside the world-famous Airbnb in the accommodation field, the mentioned companies in the transportation sector have been chosen as the case studies in this paper.

4. Results and Discussion

The results obtained in this research are discussed in the following 3 subsections concentrating on sample overview, main features discussion, and the newly proposed SE definition and framework, respectively.

4.1. Sample Overview

Figure 3 illustrates the publication year for the 179 extracted papers in our research, and therefore, the exponential growth of the publications regarding SE can be clearly seen in this figure. Besides, the number of papers, which have provided a definition or specified a definition from another resource to be used in their papers, are also shown on the bars with a lighter color and their respective numbers.

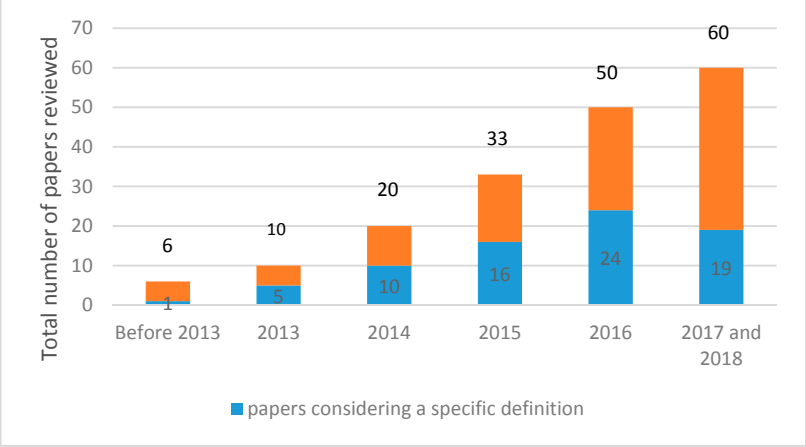


Figure 3. Focusing on SE and its definition over time.

The growing number of papers presenting a definition for the SE by 2016 shows the increasing interest of scholars and the need of the scientific world for clarification regarding the borders of the SE.

4.2. Core Principles of the Sharing Economy

The 67 definitions obtained through stage 1 of the procedure have been analyzed to identify their main features considered by the researchers. By analyzing the definitions, 11 main features characterizing SE were extracted as are stated in Figure 4. These features were given weights in the definition to follow coding procedure (stage 2 of the methodology), and were then used for providing a comprehensive definition and an inclusive framework for the SE.

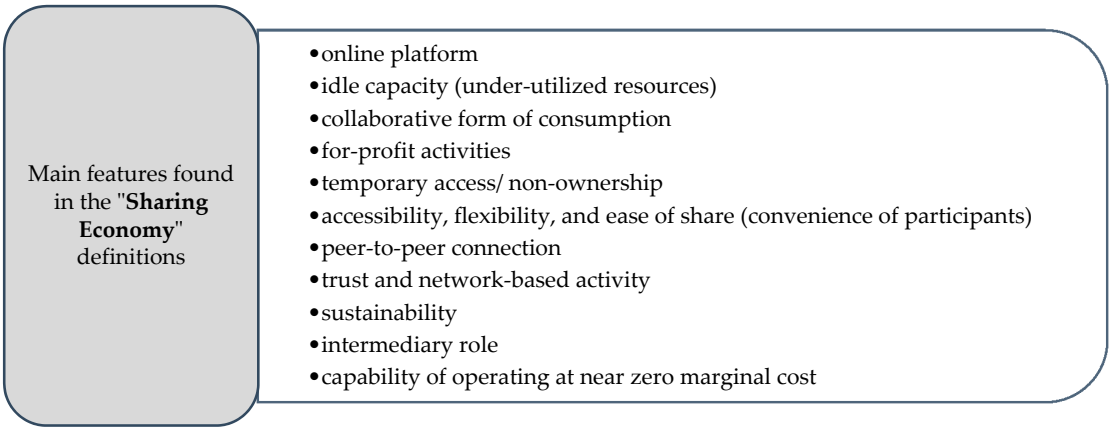


Figure 4. Main features characterizing SE extracted from the definitions.

Not all these features appear in one particular definition, but the collection made of all of these features clarifies different aspects of the SE. It has not escaped our notice that common elements and features in different definitions may be expressed with different terms. Therefore, a common term is considered for such features in this classification. In addition, among the definitions analyzed in this research, definitions provided by Owyang (2013), Mun (2013), Stokes et al. (2014), The European Commission and Hult and Bradley (2017) use the term collaborative economy rather than SE [45,66,76,82,107], i.e., they consider both terms as synonyms. The abovementioned features characterizing SE are described in detail in the following. In order to clarify the similarities and differences between features that seem to be very near, these features are put into groups.

4.2.1. Online Platforms, the Intermediary Role and Convenience of Participants

The most frequent term in the SE definitions is "*online platforms*" containing websites and mobile applications (apps). This feature has been stated in 44 out of 67 definitions studied in this paper, and therefore, about 65.7% of the definitions have highlighted it. Through online platforms, the SE can create a network for the supply and demand side, and connect the providers and customers to each other. Even so, Cockayne (2016) expresses SE as "a term that describes digital platforms that connect consumers to a service or commodity through the use of a mobile application or website" [108] (p. 73), and Laurell and Sandström (2017) recognize the SE as being ICT-enabled platforms, which are used for exchanges [35]. Monte (2015) states that these platforms are secure and transparent for the transactions regarding assets [52]. In this way, online platforms can be considered as the main infrastructure of the SE [4,70]. Also, Welsum (2016) introduces the technology platform and apps as the cause of the primary innovation that takes place in the SE business model [109]. Advances in technology and the growing rate of its application have resulted in SE becoming active in physical assets sharing, rather than only digital ones [110]. Richter et al. (2017) put their emphasis on the internet and Web 2.0 as the enabler and facilitator of the SE, through which sharing under-utilized assets takes place, systematically [41].

Dervojeda et al. (2013), Grybaitė and Stankevičienė (2016) and Muñoz and Cohen (2017) highlight the intermediary role of the SE in the exchange between service providers and users [33,50,61], and also,

Beck (2017) states that the digital intermediation in the SE, which is conducted through online platforms, makes the peer-to-peer transactions for the under-utilized assets viable [86]. Finck and Ranchordás (2016) consider the role of professional intermediary for the digital platforms, since it connects the supply and demand side and facilitates payment transactions [111]; but this is not always the case. Many companies who provide such online platforms to provide goods or services to the customers are, themselves, the owner of the resources. In such situations, the digital platform is a means for facilitating the introduction of the product or service to the customers and selling or renting it. However, in the standpoint presented by Rauch and Schleicher (2016), the relationships in the SE are not necessarily between two parties other than the provider of the platform, as the asset or service provider may be the company providing the online platform itself [112]. Nevertheless, we believe that if the company owns the resources and uses them only for moneymaking through temporary access of other entities, and uses the online platform to present the resources to the customers, it does not have an intermediary role, and therefore, is not considered as a part of the SE. However, if the company provides a platform to connect providers whose part of the resources being used have become idle to the customers in need of them, it is then playing the intermediary role, and is included in the SE.

In fact, these platforms facilitate peer-to-peer transactions [59] and accelerate the coordination of supply and demand side, and make most kinds of collaborative consumptions (e.g., sharing, renting, bartering, . . .) easier in the SE [113]. That is why Rudy (2016) calls the SE companies "digital matching firms" [59]. These companies can provide access to various assets in a broad geographical area, which was not otherwise possible. Therefore, offering an asset by the supply side and requesting the asset by the demand side takes place much more conveniently compared with the traditional markets, due to the utilization of technology in the SE system. Kathan et al. (2016) believe that SE systems heavily depend on new technologies and owe their accessibility, flexibility and convenience of sharing to them [75].

The intermediary role in the SE is noticed by nine definitions, which constitute approximately 13.4% of the sample studied. Moreover, the convenience of participants, which can be considered as a result of the application of online platforms in the SE, appears in 29.9% of the definitions in the sample that include 20 definitions.

4.2.2. Temporary Access, Collaborative Form of Consumption, and Idle Capacity

In the SE systems, the available resources and the need of customers are balanced [26], and providers and consumers collaboratively consume the resources which are under-utilized [23]. As Investopedia (2017) simply explains, the sharing economy model is usually used in cases where a specific asset is expensive, and it is not always fully employed [47]. Therefore, the tangible or intangible resources, which are not or not fully utilized, are offered to other people who need them for temporary utilization, and the owner receives an economic benefit in return. In almost all papers, giving a temporary access to under-utilized or unused assets by other consumers has been implicitly or explicitly mentioned among the SE characteristics. Miller (2016) and Demary (2015) highlight the sharing as the critical aspect of the phenomenon [43,65]. Demary (2015) specifies that sharing can either take place between consumers only, or involve suppliers [65]. Biswas et al. (2015), Matofska (2016), and Roover (2016) agree on the SE being a socioeconomic ecosystem in which human and physical resources are shared, and consider four broad categories for its activities, including recirculation of goods, increased utilization of durable assets, exchange of services, and sharing of productive assets [54–56]. In fact, no transfer of ownership happens in this system, but a share of an asset provides the ground for collaboratively consuming it. Through collaborating the consumption of the resources by different consumers, material goods or less tangible assets are redistributed and efficiently used, and this can release society from hyperconsumption, and leads to environmental benefits [15,16,40]. Of course, sometimes the assets being offered to be collaboratively used in SE systems are very unique [69], and the permission for temporary access to them by other people can give an opportunity to more people to use that resource. However, it is emphasized that the ownership is not transferred in

such platforms, and therefore, no good is bought or sold, but collaboratively used, and then returned to the owner. Depending on the nature of tangible or intangible asset, SE contains many types of compensation including renting, swapping, bartering, and other similar activities. Mair and Reischauer (2017) even consider trading, gift-giving, and payment as other various forms of compensation in the SE [70]. Nevertheless, when explaining the SE, Rahim et al. (2017) point out "digital platforms and applications (apps) that enable people or businesses to share, sell, or rent property, resources, time, or skills" [29] (p. 3). Sharing and renting are also stated in many other definitions; however, selling should not be considered in such systems, because the transfer of ownership does not happen in the SE, and a temporary access to the assets is provided for the consumers. In fact, most of the researchers (e.g., [62,88,114,115]) emphasize temporary access over ownership in the SE.

In sum, among the 67 definitions analyzed, 32, 41, and 42 definitions have touched upon the features temporary access/non-ownership, collaborative form of consumption and idle capacity, respectively. The respective corresponding percentages in the whole sample for these features are 47.8%, 61.2%, and 62.7%.

4.2.3. For-Profit Activities

As the analysis of the definitions and explanations provided in different research studies show, three different ideas exist regarding the financial outcomes for the suppliers in the SE. Many researchers agree that SE practices takes place for profit-gaining purposes by the people who share a resource (e.g., [10,27,32,60,69,71,73,109]), and negate the idea that gift-giving practices or charities should be included in such an environment. Armstrong and Park (2017) believe that in the SE, people coordinate "the acquisition and distribution of a resource for a fee or other compensation via digital platforms, which may include trading, bartering, or swapping activities where giving and receiving may include non-monetary exchange on websites or apps" [116] (p. 2). Grybaitė and Stankevičienė (2016) and Kennedy (2016) insist that helping others or charity is not a correct meaning for sharing [33,53]. The second large group agree with both profit-based and non-profit-based activities (e.g., [39,46,72,74,117,118]) and finally, a very small group insist on non-profit activities and gift-giving practices to be considered in the SE [119]. However, due to the mechanism of the SE and its economic nature, in this paper, we mostly agree with the first group of researchers, emphasizing that the economic benefit should not always be a monetary amount, but could be another tangible or intangible asset.

In the analyzed sample, 46.2% of the definitions have shown for-profit activities taking place in the SE, which indicates 31 definitions and only one definition [119] insist on only non-profit activities to be included in the SE. Among all the definitions in the sample, 16 definitions (or 23.9 of the definitions) accept both for-profit and non-profit activities to be included in the SE.

4.2.4. Peer-to-Peer-Connection

Cho et al. (2017) point out that through creating a link between peer-providers and peer-consumers, SE platforms give people the opportunity to consume under-utilized resources collaboratively [23]. Borcuch (2016) highlights the peer-to-peer economic activities through online platforms in the SE [63] and Wosskow (2014) and Curtis (2014) include peer-to-peer marketplaces and time banks under this term [34,36]. Biswas et al. (2015), Matofska (2016), and Roover (2016) believe that both the companies who provide a platform for peer-to-peer connection of providers and consumers, and the companies who own goods or provide services and give their temporary access to consumers, are considered as sharing businesses [54–56]. Grybaitė and Stankevičienė (2016) also consider both individuals and businesses as potential members of the SE [33]. Codagnone et al. (2016) and Michelini et al. (2018) also consider Peer-to-Peer (P2P), Peer-to-Business (P2B), Business-to-Peer (B2P), Business-to-Business (B2B), and government-to-government (G2G) as various forms of interaction that take place in this economic environment [4,37].

Many researchers, such as Kumar et al. (2018) and Owyang (2013) believe that both individuals and companies can be placed at supply and demand side [27,45]. We believe that this becomes

true when the company which is positioned at the supply side of the transaction is an institutional consumer who wants to monetize the idle capacity of its resources, and usually is not the owner of the platform; because, if the supplier and the provider of the platform are the same, the company is usually using the resources only for presenting to other consumers, and is not consuming the resources itself. This reflects a PSS, and therefore, the consumer-to-consumer relationship in the system and the intermediary role of the platform provider will be under question, and it fails to be an SE anymore, as sharing has become the occupation of this company, due to its creating extra capacity.

Peer-to-peer-based activity appears in 53.7% of the definitions in the sample, which consists of 36 definitions.

4.2.5. Sustainability

Sustainability is noticed in about 22.4% of the definitions that are studied in this research, which constitute 15 definitions out of the 67 definitions analyzed. From the year 2013 to 2017, at least one definition touching upon sustainability was available for each year in our sample, indicating that sustainability has been an important concept during all these years.

Besides the few papers that consider sustainability elements in their definition of the SE (such as [67]), some papers take account of the three fundamental sustainability dimensions, and specifically concentrate on economic, environmental, and social aspects of the SE when analyzing SE activities (e.g., [16,24,25]). Building "a potential new pathway to sustainability" is what Heinrichs (2013) expects from the SE [14]. The footprint of sustainability can be followed in the SE by considering more efficient utilization of the resources, creating social capital, reducing economic activities, lowering environmental pollutions and empowering ordinary people [51,120]. Liu and Yang (2018) believe that developing SE is a way towards the adoption of sustainable lifestyles [58].

Stanković et al. (2016) believe in equal levels of importance for economic, financial, ecological, and social values in the sharing economy for value sharing and creation [121]. The aim of SE from the standpoint of Muñoz and Cohen (2017) is "to increase efficiency and optimization of under-utilized resources in society" [50] (p. 1). Rifkin (2014) gives more weight to social capital in comparison with market capital in the SE, and believes that social trust is more important than other market forces in this environment [122]. In addition, Roh (2016) notices more efficiency and access, which is enabled in such systems [123]. Nadler (2014) believes that the benefits of on-demand access leads to the maximization of assets usage and improving the convenience of participants [60]. Quoting from the European Commission, Brighenti (2016) highlights the more efficient use of the resources in the SE, which results in higher productivity and sustainability [107]. Productivity is also highlighted by Wallsten (2015) [73], and implicitly specified by Bond (2015) [44], while more efficient exploitation of physical assets is considered by Welsum (2016) [109]. Goudin (2016) and Murillo et al. (2017) share the opinion that in the SE, using online platforms "reduce[s] the scale for viable hiring transactions or viable participation in consumer hiring markets", and hence, the extent of under-utilization of assets decrease [124,125]. In addition, Stephany (2015) states that making the underutilized assets accessible to others leads to a reduction in the need for owning those assets by the community [77].

Many scholars who have analyzed the SE from the environmental point of view, believe that this phenomenon can have positive effects, due to many reasons, such as an increase in the duration of using resource-consuming products [22], and using the idle capacity [23]. Firnkorn and Müller (2011) considered the case of Car2go in Germany, and concluded its positive effect regarding CO_2 emission and land consumption [126]. Besides, Schor and Fitzmaurice (2015) believe that if the SE grows significantly in the next decade, it has the potential to increase sustainability and reduce environmental negative effects in some key areas [74]. This is while a few other scholars claim that this is not always the case, and a paradoxical potential exists in this regard [40], called the *sustainability paradox* or the *paradox of sustainable development*, which refers to the increase in consumption due to societal and economic factors, while there is an environmental need for reducing the consumption [127]. However, Verboven and Vanherck (2016) define this paradox as "the contradiction between the obvious positive

effects of a sustainable business model and the often less visible or ignored negative externalities, including the rebound-effect, both on behavioral as on systemic level, associated with the transition from the old to the novel model" [127] (p. 2). They also define rebound effect as "an unintended side-effect that occurs when efficiency is improved, leading to a price decline and an increase in purchasing power [which in turn] results in a higher resource use or consumption" [127] (p. 3). Some scholars believe that in terms of SE, a rebound effect happens when the price of the product or service goes down as a result of sharing, and therefore, there is a rise in use or consumption of products and services [22,128]. In fact, although it is expected that the changes in consumption patterns in the SE [129] lead to less demand for production, what happens in reality can be very different, showing more demand, which leads to more negative environmental impacts. Therefore, the SE does not necessarily result in lower consumption, and there is no proof for the claim of minimization of consumption in such models [127].

Although most attention is paid to the environmental impacts when analyzing SE activities from the sustainability standpoint, the social dimension should not be neglected. However, very few studies have considered the social impacts of the SE activities. Zwickl et al. (2016) look into work-sharing from the sustainability standpoint and conclude that little empirical evidence exists for negative impacts of employment in any work-sharing reform [130]. Gavrieli et al. (2014) argue that the behavioral change resulting from SE can lead towards building a sustainable urban lifestyle [131], while Verboven and Vanherck (2016) state that SE models can harm the right of the workers as some SE models "replace existing stable jobs by unstable, poorly paid and sometimes even exploitive or illegal work relations" [127] (p. 8). Many other aspects of the social dimension of sustainability can also be studied and analyzed considering SE, such as new technology applications and new relationships created through the online platforms. Therefore, whether the SE is pushing societies towards sustainability improvements, or is pulling them away, requires the close attention of scholars if it is to be clarified.

4.2.6. Trust and Network-Based Activity

One of the aspects pinpointed in some of the definitions is the community-based activities taking place in the SE, which some researchers like Hamari et al. (2015), Kennedy (2016), Rahim et al. (2017), and Hult and Bradley (2017) have specified in their definitions [29,53,64,82]. Hamari et al. (2015) define SE as "the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services" [64] (p. 2), and Hult and Bradley (2017) highlight "horizontal networks and participation of a community", which depend on trust created between the community members [82] (p. 599).

In fact, peer-to-peer-based activities should not be considered as equal to network-based activities. What it is mostly meant by peer-to-peer-based activities is that the activities take place between two persons or institutions (people or businesses). However, network-based activities have a much broader and deeper meaning, and not all peer-to-peer activities are necessarily network-based. Network-based activities contain more relationships among the entities, other than the sharing activity itself. These can include sharing information regarding a specific supplier or the quality of an asset, helping others make a better choice among their available asset choices, giving guidelines to others, and many more similar activities. The review and rating systems in the SE platform, which provide the opportunity to rank the quality of various elements in the system—such as the service or asset provider, the customer, and the asset—work based on the network opinion, and the steps towards building trust among the members. When trust is built, a horizontal network is shaped, connecting suppliers (sharers) and demanders (users) for future transactions. In this regard, the definition provided by Rudy (2016) highlights the importance of rating systems, as he defines the SE as "companies that use Internet and smartphone-enabled apps to match service providers with consumers, help ensure trust and quality assurance via peer-rating services, and rely on flexible service providers who, when necessary, use their own assets" [59].

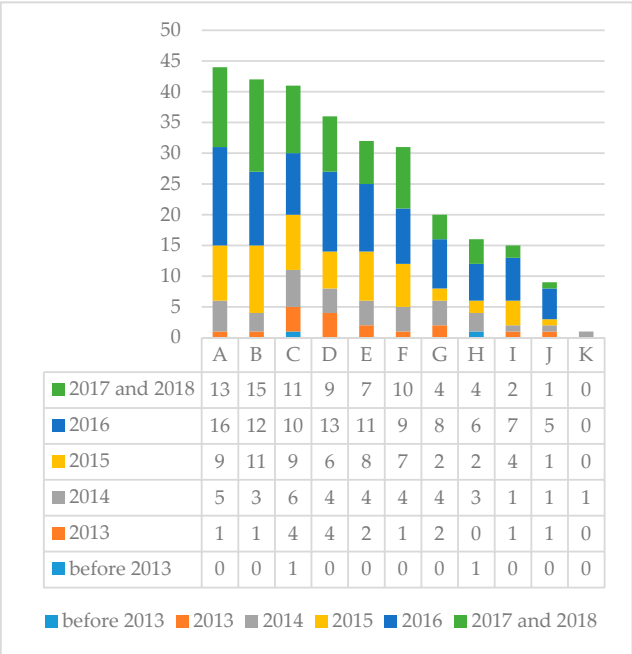
In order for a business to be conducted by a supplier (sharer) and a demander (user), they should trust each other [51]. In fact, the transactions in the SE depend more on the social trust than any other market force. Paundra et al. (2017) believe that communication, coordination, and trust building among people, which has been created via the application of technology, have made SE activities expand [42]. In the ECORL, Economy Co-responsibility Learning (2016), it is stated that, due to rather informal economic activities in the SE and the absence of effective regulation in it, trust is an essential input for the system [68].

Approximately 23.9% of the definitions analyzed in this research—equivalently 16 definitions out of 67—have noticed trust and network-based activities in the SE.

4.2.7. Capability of Operating at Near-Zero Marginal Cost

Allen and Berg (2014) believe that the lack of information (or knowledge) causes many of the resource losses we face and increases our transaction costs [31]. In larger economies that contain more potentially beneficial options for trade, it is logical that more monetary and time cost is required for making the lowest price choice among all the options. In reality, due to the limitations, most of the time, we cannot find the best choice in terms of low price, as we cannot screen and access all the options [31]. What the SE platforms have presented to society is the ease of access to various choices, with no need to make any payment to go and personally find them. This has resulted in a lower cost for the activities taking place in the SE. Rifkin (2014) recognized the internet as the enabler of the SE, and believes that SE can operate at near-zero marginal cost [49]. The definition he provided is the only definition in our sample that has noticed the capability of the operation of SE firms at near-zero marginal cost.

The number of definitions in different years, which contain each of the features, is shown in Figure 5. In fact, the trend of concentration of the SE definitions on the different features specified can be observed in this figure. As some of the papers or reports use a specific definition provided by another researcher, which reflects their own point of view, the repetition of definitions is also considered in this figure to capture the trend.



	A	B	C	D	E	F	G	H	I	J	K
2017 and 2018	13	15	11	9	7	10	4	4	2	1	0
2016	16	12	10	13	11	9	8	6	7	5	0
2015	9	11	9	6	8	7	2	2	4	1	0
2014	5	3	6	4	4	4	4	3	1	1	1
2013	1	1	4	4	2	1	2	0	1	1	0
before 2013	0	0	1	0	0	0	0	1	0	0	0

(A)	online platforms
(B)	idle capacity
(C)	collaborative form of consumption
(D)	peer-to-peer connection
(E)	temporary access/ non-ownership
(F)	for-profit activity
(G)	convenience of participants
(H)	trust and network-based activity
(I)	sustainability
(J)	intermediary role
(K)	can operate at near zero marginal cost

Figure 5. The frequency of each feature appearance in the sample SE definitions by year.

Although features such as idle capacity, collaborative form of consumption, temporary access and intermediary role are considered as important specifications of the sharing economy, they vary in terms

of the frequency of being used by the researchers in defining SE during the time period considered. This may be due to the fact that each of the researchers has concentrated on specific aspects of the SE, depending on their philosophical view, the economic rationale, and the purpose [68].

4.3. The Proposed Definition and Framework

Analyzing the viewpoint regarding the SE and its vital and important features can help us provide a comprehensive definition and an inclusive framework for this concept. Based on the analysis conducted in this research, although (i) using online platforms, (ii) temporary access without transferring ownership, (iii) more collaborative form of consumption, and (iv) using idle capacity are very near to each other, they can be considered as standalone features. These features are so crucial in the SE that they can be considered as its elements. Moreover, the role of SE as an intermediary is noticed in some papers (e.g., [33,50,61]) and it seems that this is a vital role for the SE and should be considered in its main definition. The lower price provided by SE activities and social aspects of the SE, such as trust, are other elements which have been neglected in many of the papers.

Taking all the discussed information into account, and the challenge for both definition and framework of the SE, we suggest considering the SE as an economic system in which various companies provide platforms to facilitate the sharing activities, and define the SE as:

An economic system, whose intermediary companies utilize online platforms to facilitate and lower the cost of the for-profit transactions of giving temporary access—without the transfer of ownership—to idle resources of consumers in the peer-to-peer networks that it has created, because of the trust built among its members, who may be individuals or businesses.

In this definition, the SE has been considered as an economic system in which an online platform connects the supply and demand sides, both of which are consumers; i.e., individuals or businesses that own a resource and use it, and let others use its idle capacity. Therefore, companies like Car2go that own some cars, which are only provided for being used by other people, but not the company itself, are not considered as a part of the SE. However, if a company owns a resource, uses it, and then shares its idle capacity with other companies or people, it is considered as an SE company. Moreover, taking into account the economic nature of the SE, we believe that the for-profit activities mentioned in the definition do not always indicate monetary transactions, but sometimes the exchange of other tangible or intangible assets.

In this research, we focus on the processes taking place in the SE and, considering the definition provided, present the framework for the SE as illustrated in Figure 6.

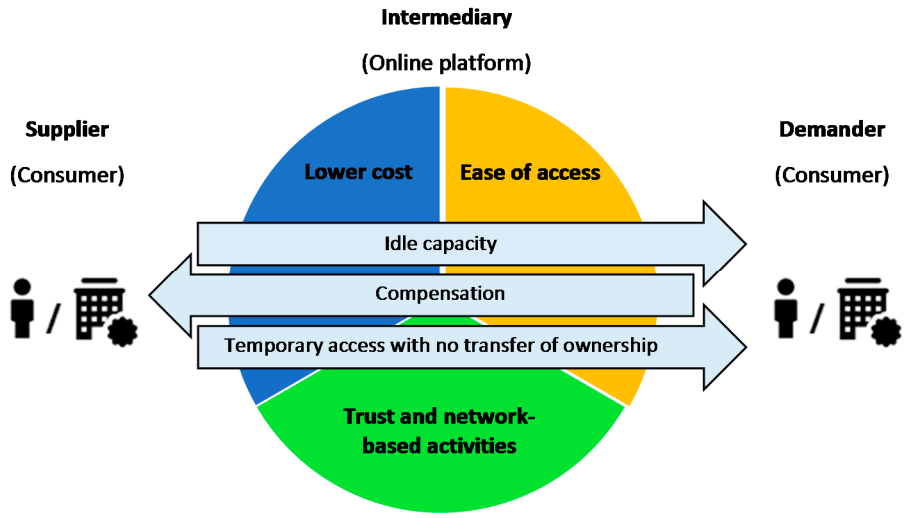


Figure 6. The proposed framework for SE.

5. Applying the SE Framework for a Sample of Companies

Frenken and Schor (2017) believe that due to the positive symbolic value that sharing has, companies like to be put under the heading of SE [88]. However, considering the definition and framework provided in this paper, not all companies owning an online platform connecting supply and demand sides can be considered as SE companies. That is to say, companies arising from the on-demand or gig economies should be left out. In this section, five very well-known companies including Airbnb, Car2Go, Uber, BlablaCar, and Lyft, that are usually considered under the label of SE, are selected and analyzed to check if they fall into the group of SE companies or not. The analysis is conducted at the business model level, and therefore, a company can be rated as belonging to the SE under an operation mode, and may be rated differently under another.

5.1. Airbnb

Airbnb is one of the most reputed companies in the SE, and has been analyzed in many scientific studies from different points of view [99–104]. This company was originally founded in the United States, but its activity has expanded to 191 countries [100]. The revenue, operating income, and net income for Airbnb, in 2017, has been estimated as $2.6 billion, $450 million, and $93 million, respectively [132].

Airbnb platform provides a network that connects people who want to share their extra space with the travelers who are looking for a cheap or different place to stay in, compared with hotels [133]. In theory, home owners can monetize their idle accommodation capacity through giving a temporary access to travelers from all around the world, and the travelers can find their desired places easily through the online platform and mobile app with a price lower than hotels. However, in practice, some companies and private investors have started the business of renting their accommodations—instead of sharing their idle capacity—under the Airbnb brand. These economic agents drain the offer of existing privately rented apartments, turning them into tourist apartments. The criticism that city gentrification has aroused is linked to these types of operations, due to the inflation caused on long-term rental apartments, associated with their scarcity.

For instance, the available long-term rental offers in the city of Madrid have decreased 38% between 2014 and 2018 [134]. Data provided by Inside Airbnb, an independent, non-commercial site that gathers public information about the apartments listed in Airbnb worldwide, shows for the city of Madrid that only 13% of the apartments offered belong to the idle capacity of independent owners. All the rest of the apartments and rooms offered belong to professional renters, including 32% offered by companies that had 6 or more apartments offered on the Airbnb website [134]. These data encourage the increase of professional renters using the Airbnb website as a digital platform.

Hence, according to the framework provided, when Airbnb is used as originally designed (an individual renting an apartment or room willing to take advantage of its idle capacity) it can be labeled as a company operating in the SE. Contrarily, when professional renters, and investors operate through the Airbnb platform, the concept of idle capacity use is lost, and therefore, cannot be included in the SE.

5.2. Car2Go

Car2Go is an initiative of the German car manufacturer Daimler AG, which, in the models of collaborative mobility, has seen an opportunity instead of a threat. The company facilitates urban transport by establishing a network of cars (electric for selected cities) available per minute for any registered user [7], whose number reached nearly 3 million in 2017 [135]. It follows a free-floating model, in which cars can be picked up in the street.

It is claimed that the company belongs to the SE, and it uses the "proud to share" slogan in its website [7]. The most collaborative points of Car2go are due to access at any time, the freedom to collect and deposit the vehicle anywhere (within the established limits), and to rent by the minute,

which increases the freedom of the service and facilitates the service to be shared among a greater number of users.

However, the Car2go business model possesses some less typical features of the SE, such as not taking advantage of existing idle resources and trying to give them greater use, but rather, acquiring a relatively large number of new vehicles in order to distribute them and provide the service. In addition, while the set of users shares the vehicles with total freedom, there is no contact between them, so no sense of community is generated.

That is to say, in spite of using an online platform that provides easy access of the consumer to resources, in the supply side of this system there is a company whose occupation is lending cars per minute through the intensive use of IT. Therefore, it does not satisfy the requirements of the SE framework. Contrarily, we can consider Car2go as a PSS, since it has servicizing activities. It is presenting the function and services of its resources to its customers in exchange for a profit.

5.3. Uber

Uber is a Californian company with several years of operation and a successful business model in more than 630 cities spread around the globe, which could earn a revenue of $7.5 billion in 2017 [136]. In its original form, Uber provides a platform and creates a network of riders and drivers through which riders can request a ride or a shared ride. Four groups of services are provided by Uber [137]:

1. Economy, including UberX (private rides for 1–4 passengers), Uber XL (private rides for 1–6 passengers) and UberSELECT (luxary rides for 1–4 passengers).
2. Premium, including UberBLACK (High-end black car rides by professional drivers for 1–4 passengers), UberSUV (High-end black car rides by professional drivers for 1–7 passengers), and UberLUX (Luxary car rides by professional drivers for 1–4 passengers).
3. Accessibility, including rides accessible for wheelchairs.
4. Carpool, including UberPOOL for shared rides.

Under the Uber Economy format, the model is well known all over the world, very disruptive and market liberalizing by enabling anyone to put their own vehicle (and their driving skills) at the service of those who need it and pay for it. This service has been questioned by national authorities in many countries, usually after opposition from the more traditional parts of the transportation sector. Besides, in the model called Uber Premium, which is implemented in several European cities, the company becomes an exchange platform in which private professional licensed drivers offer their services to the clients. Such consideration in this model is to adapt to the rigid legislation. In the model called Accessibility, the company provides the ground for people using wheelchairs and the drivers owning suitable cars for the transportation of such people to connect for transportation. All the three models of Uber Economy, Premium, and Accessibility mainly reflect PSS, and therefore, none of them can be considered as SE activities.

Another format called UberPOOL is also available, which allows shared journeys. In this case, the platform plans an optimal route to pick up nearby users with similar destinations [137]. Then, ride and costs are shared, and for this reason, the collaborative model seems quite clear. In contrast with the three previously mentioned models, this model can be labeled as an SE type activity.

5.4. BlablaCar

BlaBlaCar is a widespread ridesharing platform between users (P2P), in which the drivers who are going to make a journey specify the route, the time and place of departure, the number of places available, and the price of the trip, among others. Users willing to share the ride may request a seat in the vehicle or contact the driver to specify more details of the trip.

The price that the occupants pay for the trip has the objective of sharing the expenses of the trip (gasoline and tolls, mainly), and not to obtain an economic gain for the driver. Therefore, the use of

idle capacity is inherent to the business model. However, the company itself enjoys the commissions received from each booking [138].

The most valuable asset of BlaBlaCar is, like that of all similar platforms, trust among users. For this reason, the company wants to act as a social network where user profiles include a photo and other personal details. In addition, after each trip, the driver and occupants score the rest of the participants in the trip.

For the abovementioned reasons, BlablaCar can also be included within the SE definition.

5.5. Lyft

Lyft is a transportation network company in the United States, which operates in over 300 cities. Its revenue, in 2016, has been announced to be $700 million [139]. Although this company has been very famous as an SE company [140–142], it has been introduced as an on-demand transportation company, too [139].

Lyft provides an online platform for connecting the passengers and drivers together, via which people have different options for the type of ride and also can benefit from online tracking of the arrival on the map. Moreover, both passengers and drivers can rank each other after a trip, through the app. Some other attractive features of such a system for the drivers is that they can benefit from commercial auto liability insurance and additional coverage at no cost, they are not treated as cab drivers, and they are allowed to earn tips from passengers [143].

Besides the ordinary on-demand services that match the passengers with the nearby drivers online, four other types of rides are also provided by the Lyft app, including Lyft Line, Lyft Plus, Lyft Premier, and Lyft Lux. Lyft Line is a ridesharing service that matches passengers with other riders of the same direction, which can lower the transportation cost of the passengers by 60%. This type of activity in Lyft is considered to be a part of SE. This is while Lyft Plus matches passengers with six-seater cars, and costs a bit more than ordinary Lyft rides and Lyft Line. Besides, Lyft Premier matches passengers with a more Premium four-seater car, and Lyft Lux matches passengers with luxury cars. In addition to all these, people can use self-driving cars provided by Lyft and its partners for their transportation purposes, which is not a part of the SE, either [143].

Mapping the main activities taking place in the companies analyzed in this section, to the framework suggested, gives us the information summarized in Table 1. For the supply side and demand side, it is important that both of them be a consumer, so that the supplier can present the idle capacity and the demander temporarily accesses it. The platform should also hold its intermediary role, which is supported by trust of the users, the ease of accessibility it creates, and the community-based rating and review systems that help it to keep the quality of its services and the trust of users.

Table 1. Summary of the analysis of selected companies.

Company	Activity	Note	Supply Side		Platform	Demand Side		SE Company
			Consumer/Idle Capacity	Profit Gaining	Intermediary Role	Consumer	Temporary Access	
Airbnb	Providing idle capacity of a landlord's accommodation to a traveler	If the landlord is sharing its idle capacity	*	*	*	*	*	Yes
		If the landlord is sharing its extra accommodation bought for moneymaking	-	*	*	*	*	No
Car2go	Renting cars to passengers	The company is the owner of the cars and has bought them not for its own usage, but for moneymaking	-	*	-	*	*	No
Uber	Uber Economy; Uber Premium and Uber Accessibility	The transportations are of on-demand nature and PSS type	-	*	*	*	*	No
	UberPool	Ridesharing happens	*	*	*	*	*	Yes
BlablaCar	Main activity	Ridesharing happens	*	*	*	*	*	Yes
Lyft	Lyft ordinary services; Lyft Plus; Lyft Premier; Lyft Lux	The transportations are of on-demand nature and PSS type	-	*	*	*	*	No
	Lyft Line	Ridesharing happens	*	*	*	*	*	Yes

Note: The * sign shows that the factor exists in the activities.

6. Conclusions, Implications, Limitations, and Avenues for Further Research

The sharing economy has become a buzz word in the past few years. It is extensively becoming a topic of scientific research, and is also used by many companies. Both researchers' interest and the rise of companies that claim to be operating in this domain contribute to the importance of this phenomenon. In spite of its importance, a definition in which researchers agree upon, as well as the determination of the factors that define the borders of this phenomenon, are still lacking. Therefore, it is still unclear which companies can be put under the tent of the sharing economy. This ambiguity has important implications that need to be addressed in diverse areas, such as policymaking, and represents not only a big opportunity, but also a big threat for the companies competing in the sharing economy arena.

The present paper has tried to clarify how SE can be defined, and which framework it follows. This was done through a systematic literature review that gathered the state of the art of SE definition. In particular, 67 definitions of the SE were extracted from the scientific sources, which allowed the identification of 11 main features that define the concept. Among these features, digital or online platforms are considered to be the main infrastructure for such change [4,70], being the most important feature found in this research. Putting all the information and analysis together, a comprehensive definition and a framework has been presented for the SE. This definition and framework paves the way for the academic world to have a common understanding of the SE, and clarifies the borders of the concept. This would prevent doubts about which companies to include in the SE, and which ones to exclude. Therefore, deeper studies on various aspects of the SE would be possible, and hence, many developments are expected in theoretical and experimental topics in this field. Besides, when companies included in SE are segregated from other companies, policy confusions regarding the rules and regulations that apply for a company would be prevented. In this regard, and for the sake of obtaining smart and proportionate regulations, SE companies could learn from other industries, such as telecommunication and energy producers, and how it helps policymakers to identify the areas for regulatory interventions.

Clarifying the borders of sharing economy activities can also help recognize the effects of such activities on the sustainability of the societies. Such developments can be useful for companies and practitioners in SE and regular economic systems, especially when conducting the strategic planning for the firms and deciding on the different elements of the business models. Public institutions may even be affected by the clarification of the SE and the activities taking place in such an environment, and then decide to make changes in their strategies and regulations.

However, this study is not without limitations. Among them, problems raised due to the variations in the name assigned to this phenomenon or process can be addressed. As stated in Section 2, the SE has been called by many other names, and this caused many problems in finding relevant papers, in which a definition is provided. If a much deeper search were to be conducted, there is a probability that a few other definitions would be added to the collection of definitions in this paper. The framework and definition we proposed has been tested with five well-known companies that claim to be part of the SE, or are usually labeled as SE companies. The test could be extended to many other companies from a variety of sectors and geographic locations.

Finally, the following avenues for further research have been identified. First, what are the factors that companies working in the SE domain should bear in mind to be successful? Or alternatively, how does business model innovation interact with the SE? That is to say, which are the factors of the business model that should be adapted in order to be effective in the SE? And then, what are the borders and limitations for the SE activities to follow sustainability and prevent the sustainability paradox? Such questions can initiate vast topics to be studied by future researchers to make more clarifications on the SE and its impact on the whole of society, and help companies and practitioners to make more effective decisions in order for their companies to be more successful.

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and R.C.-G. contributed considerably by guiding the project, sharing ideas, contribution in text development and editing and adding value to the total structure of the paper and framework that was proposed.

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