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A state-of-the-art review of the sharing economy: Scientometric mapping of the scholarship

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A state-of-the-art review of the sharing economy: Scientometric mapping of the scholarship

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Highlights:

- Scientometric review provides a systems view of the sharing economy (SE) research
- Four clusters of research on the sharing economy are identified
- The SE research is mainly focused on examining freelance work and its implications
- The SE phenomenon is a complex construct encompassing inter-related concepts
- Implications and guidance for future research on the SE are presented

Abstract

Using a dataset of 2,229 scholarly outputs from the Web of Science on the sharing economy (SE), our scientometric review provides a taxonomy of the current research on the SE in terms of their contributions, theories, and methods utilized in existing studies. The review also highlights a typology of the inter-related concepts of the SE. We demonstrate four clusters of existing research: freelance work and its implications, transportation and solutions for the sustainable development of the SE, user experience and collaborative consumption, and the SE in the context of hospitality and tourism. We suggest future research directions in terms of the need to investigate the SE implications on a wider set of stakeholders including businesses and governments, to examine the SE value creation in terms of business models and entrepreneurship, to investigate the SE in other industries and sectors, and to conduct large-scale empirical studies in this research domain.

Keywords: *sharing economy; collaborative consumption; gig economy; platforms; bibliometrics; systematic review*

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1. Introduction

The sharing economy (SE) phenomenon has increasingly attracted attention in scholarly literature in recent years. We broadly define the SE as commercial and non-commercial sharing of goods and services that is coordinated via online platforms without the transfer of ownership (Acquier et al., 2017; Belk, 2014; Curtis & Lehner, 2019; Hamari et al., 2016; Ma et al., 2019; Ranjbari et al., 2018; Schlagwein et al., 2019). Based on the data from the Web of Science (WoS) database (with the search terms being outlined in the methodology section), the amount of published academic literature on the SE has more than doubled from 2015 to 2017, with the rate of growth continuing in 2019 and 2020.

Existing literature on the SE has highlighted how this new economy creates business opportunities (Murillo et al., 2017; Van Welsum, 2016), facilitates higher utilization of goods stemming from more frequent use of otherwise idle capacity (Gerwe & Silva, 2020; Jiang & Tian, 2018; Kumar et al., 2018), generates collaboration in communities (Bouncken & Reuschl, 2018; Frenken & Schor, 2017; Miller, 2016), and is more environmentally sustainable (Böcker & Meelen, 2017; Geissinger et al., 2019; Michelini et al., 2018). Scholars have highlighted that the SE is about 'consumers granting each other temporary access to under-utilized physical assets ('idle capacity'), possibly for money' (Frenken & Schor, 2017, pp. 4–5). This is also noted in several other studies on the SE (Ranjbari et al., 2018; Schlagwein et al., 2019). Acquier et al. (2017) further demonstrated that the SE comprises of three 'organizing cores' – the access economy (an economy that enables people to access the products/services they need without necessarily 'owning' them), the platform economy (an economy where economic transactions are facilitated by Information Communication Technology platforms), and the community-based economy (an economy whereby non-contractual and often non-monetized interactions occur with the primary purpose to contribute to the collective outcome). Despite these and other important studies, there remain several gaps.

First, the SE phenomenon is still fuzzy, with a variety of terms that are loosely lumped under the umbrella term of the 'sharing economy'. Indeed, the term 'sharing economy' is used interchangeably with collaborative economy, collaborative consumption, gig economy, and platform economy (see for example Ahsan, 2020; Ertz & Leblanc-Proulx, 2018; Murillo et al., 2017; Netter et al., 2019; Sutherland & Jarrahi, 2018). Given the varied conceptual understanding of the SE, it becomes increasingly pertinent to have an overarching view of the SE literature to not only highlight the main areas of existing research on the SE but also delineate the various concepts that comprise the SE phenomenon.

Second, there are varied theoretical perspectives and frameworks from the different disciplines researching this phenomenon. In marketing, for instance, researchers have studied the impact of the new SE business models on established industries (Kumar et al., 2018; Zervas et al., 2017). In the management field, there are studies examining new working arrangements (e.g., Bouncken & Reuschl, 2018; Burtch et al., 2018; Wood et al., 2019) as well as ethics and sustainability in the SE research (see, for example, a review of how SE supports the

development of sustainable societies – Ryu et al., 2019). In the tourism and hospitality areas, research on the SE is increasingly abundant, but with an over-emphasis on the accommodation (Cheng, 2016; Prayag & Ozanne, 2018; Zervas et al., 2017) and the ride-sharing sectors (Benoit et al., 2017; Standing et al., 2019; Zhang & Mi, 2018). Research examining the SE phenomenon has also been conducted in different disciplines such as information systems (e.g., Sutherland & Jarrahi, 2018) as well as governance and law (e.g., Hong & Lee, 2018; Miller, 2016; Yaraghi & Ravi, 2017).

Given the gaps in the existing literature on the SE, we conduct a scientometric review of large volumes of the SE literature. Our study expands recent findings on the differences among the SE concepts, through reviewing a dataset of 2,229 scholarly outputs. Our scientometric review highlights 1) a taxonomy of the current SE research, by way of identifying clusters of existing interdisciplinary research on the SE, outlining the main contributions of studies within each cluster, the theories used, and the primary methods utilized in each cluster, and 2) a typology of the inter-related concepts of the SE in existing studies to provide the delineation of the SE concepts. Given that few studies have been conducted to comprehensively review existing literature on the SE, our study also offers identification of future research directions stemming from the most comprehensive analysis of the literature on the SE to date.

In essence, our objectives for this study are twofold. First, we aim to identify the gaps in the SE literature through conducting a comprehensive state-of-the-art scientometric review, by way of exploring and mapping the data that is available on the entire academic literature of the SE. Given that existing studies on the SE are not constrained within specific fields of studies (Hu & Zhang, 2017; Korom, 2019; Rafols et al., 2012), it is important that a review on this topic is comprehensive in order to have an integrated and holistic systems perspective of the entire scholarship. The systems view of the entire scholarship is needed for scholars to identify how the various disciplines in this field of study are structured and related to each other. Through this extensive review of existing studies, we seek to identify the different research directions of the SE in extant studies and propose a delineation of the SE concepts.

Our second objective is to review an extensively large number of scholarly articles by way of content analysis, to provide a systematic review of the research themes in the existing literature. This is then mapped into a taxonomy of the literature that is divided into clusters of research (Klarin, 2020; Randhawa et al., 2016). Through these analyses, we offer a summary of the key contributions, theories, and methods to then suggest possible future research directions.

In the following sections, we first explain the methodology behind this scientometric review. Second, we identify previous review studies that have been published on the SE phenomenon to highlight the need for a scientometric review. We then provide the taxonomy of the scholarship and the delineation of the SE concepts as findings of the paper. We further highlight the typology and the empirical studies of the SE scholarship. Finally, we provide the implications of our study and suggestions for future research directions on this pertinent area of research.

2. Scientometric review methodology

More recently, advancements in technology brought forth algorithm-based scientometric mapping that allows a holistic visualization of a particular research domain (Petticrew & Roberts, 2006; Tranfield et al., 2003). The rationale for utilizing scientometric mapping reviews is four-fold. First, a scientometric review utilizes objective, consistent, transparent, and reproducible results for the audience (van Eck & Waltman, 2014). Compared to the traditional reviews that are prone to type II bias of subjective presentation and interpretation of data, this method relies on complex algorithms that allow for an unbiased outlook of the research topic. Second, a scientometric review enables the search of all the academic publications of the topic, facilitating a more comprehensive understanding of the chosen research domain. The use of the entire scholarship literature thus allows the bridging of crucial gaps between disparate disciplinary boundaries (Hu & Zhang, 2017; Rafols et al., 2012). Third, a scientometric review, with its visual representations, not only enables the identification of the existing research domains but also the trends of the scholarship domains over time. Finally, this method allows scholars to objectively analyze how scholarship can be organized systematically, and to also provide a content analysis of the topic including, for example, the provision of top impact and top trending themes as well as publications.

To fulfill the objectives of this study, we systematically searched and organized the literature by utilizing the VOSviewer clustering software to identify high-similarity terms and their 'positions' on the map. The software enables clustering through assigning nodes in a network based on the relationships between the terms, with publications that are assigned to the same clusters being likely to have a common theme (Korom, 2019; van Eck & Waltman, 2010, 2014). Through conducting a scientometric review, we can systematize existing research studies into several inter-related clusters. This algorithmic clustering essentially allows the delineation of the SE concepts and the analysis of all published research on the SE, in one visual map (Fellnhofer, 2019; Nazarov & Klarin, 2020).

The scientometric review that we adopt in this study is a mixed-methods review that includes a *mapping review* which categorizes the current literature, and a *state-of-the-art review* (Grant & Booth, 2009). *Mapping reviews* are valuable in offering the contextualization of systematic reviews and the identification of gaps in the scholarship corpus. The maps demonstrate the total 'population' of the studies and their interconnections, and thus offer a holistic understanding of the existing research domains. *State-of-the-art reviews* address the current state of the literature; these reviews are particularly valuable to identify potentially under-researched areas. In sum, a scientometric review allows unprecedented-in-scope investigations of the available literature through the provision of more reliable and robust results of a particular research area.

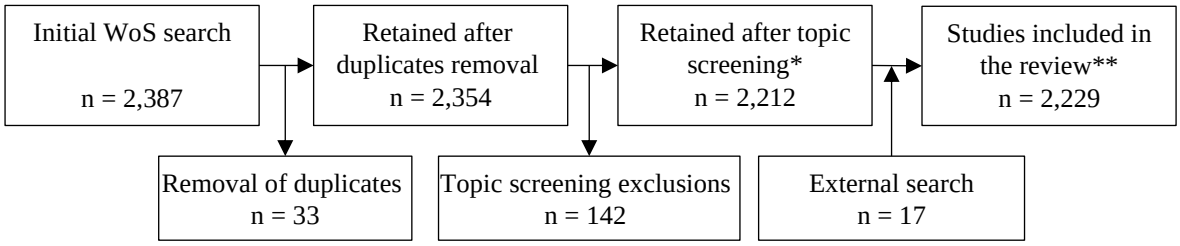
Tranfield et al. (2003) proposed three stages of conducting a thorough, transparent, and reliable systematic review, and these are: 1) planning and outlining a review protocol, 2) execution of the protocol, and 3) reporting. In the planning stage, we outlined the protocol for the selection, search strategies, methods of the review, and accompanying data and information. In this stage, we also had to decide on the selection of the database, and have chosen to use the entire WoS as it is considered one of the largest scientific knowledge

databases (Crossan & Apaydin, 2010; Podsakoff et al., 2008). The WoS also has major overlaps with Scopus, suggesting that the results will have marginal divergences between the two, particularly as we are comparing large volumes of publications (Vieira & Gomes, 2009). The dates of the document search were set from 2008 to 15 January 2020.

In the execution of the protocol stage, we followed the procedures set out in the planning stage by identifying 1) the search terms, 2) the selection of studies, and 3) the extracting, mapping and synthesizing data. First, we used the various terms outlined in many academic papers when considering the terms under the umbrella of the SE. Using these guides and using Boolean search of WoS, the search terms were set as: "*sharing economy" or "gig economy" or "peer to peer economy" or "peer-to-peer economy" or "peer economy" or "peer2peer economy" or "peer 2 peer economy" or "peer-2-peer economy" or "p2p economy" or "crowd economy" or "collaborative economy" or "collaborative consumption" or "access economy" or "on-demand economy" or "mesh economy" or "uberisation" or "uberization" or "platform economy"*. The search returned 2,387 documents that contain any of these terms within the titles and abstracts of the original works, all of which were selected.

In the second phase of the execution stage, i.e. the selection of studies, we read through all the 2,387 article titles, abstracts, and keywords to ensure they were relevant. After a process of exclusions and inclusions as detailed in Figure 1, our data is based on 2,229 publications (including editorials, letters, books, book chapters, proceedings). We utilized the search of all publication types as a large-sample thematic study of the entire scholarship (Justeson & Katz, 1995; van Eck & Waltman, 2014).

Figure 1. Results of the search and study selection criteria



*Despite mentioning the SE, some publications are not in any way related to examining the SE.

**Additional publications are included in the review as some were not picked up in the initial WoS search due to various reasons, including journals not listed in the WoS.

In the third phase of the execution stage, the mapping and state-of-the-art reviews were done using an innovative science mapping software, VOSviewer, which utilizes citation content analysis that demonstrates relationships between scientometric indicators (including authors, organizations, and terms) in a visual map (Rafols et al., 2012). The VOSviewer software identifies (1) the most frequently used concepts within the topic fields (titles, abstracts, and keywords), and (2) the relationships between these concepts. Thus, this approach systematically reveals the key concepts within the SE paradigm by using a number of noun phrases (or terms) from the topic fields (titles, abstracts, and keywords) and how they are linked with each other based on the frequency and occurrence of words within the contexts. In the

process of generating the maps, we utilized the default settings of the software, which generally represents a best practice in a scientometric mapping (Lee et al., 2014; van Eck & Waltman, 2010).

Scientometric mapping ensures the robustness of the cluster analysis in three ways. First, the VOSviewer algorithms present a visual representation of the map by default (Korom, 2019; Waltman et al., 2010) – the map indicates the dynamics of the field through the identification of terms used in existing studies. Second, the algorithm arranges the terms based on citation counts (highlighting the top article citation impact terms) as well as the top trending terms within clusters. In this way, we can have an overview of the most popular terms and themes that have been used in existing SE studies. Third, the algorithm categorizes terms that are strongly associated with each other to be placed in the same cluster. We are then able to examine the different clusters, each comprising of studies that use closely connected terms. From this, we can critically analyze the convergence and divergence of studies within the SE literature.

3. Existing literature reviews of the SE

Given the interdisciplinarity of the topic, we endeavored to collect major review studies from across the different disciplines to provide an integrated and holistic picture of the current pattern of research in the field. Table 1 highlights the existing review studies on the SE which are mainly published in the management, sustainability, tourism and marketing, and information systems literatures. After checking the gathered dataset of previous review studies, we did not include studies that might contain discussions on the SE but are primarily reviewing different topics. For example, Fritze et al. (2018) discussed the servitization within the SE context but it is not a review of the SE literature in general, and therefore is excluded from Table 1.

Table 1. SE review studies

Review	Type	Key topics	Discipline	Methodology remarks
Andreassen et al. (2018)	Traditional narrative	T-model value creation	Business and management	No methodology. The difference between SE and T-models is unclear.
Bouncken and Reuschl (2018)	Traditional narrative	Coworking-spaces	Business and management	No detailed methodology, builds a conceptual model of coworking spaces.
Calo and Rosenblat (2017)	Traditional narrative	Regulation in consumer law	Law	No detailed methodology, highlights the need for consumer protection regulation.
Cheng (2016)	State-of-the-art, mapping	SE and its implications	Tourism and hospitality	Only 66 studies, limited search criteria and databases.
Cheng and Edwards (2019)	Mapping, structural	SE in tourism and hospitality	Tourism and hospitality	Limited search criteria and only 18 journal articles.
Curtis and Lehner (2019)	Scoping review	Defining SE for sustainability	Sustainability	Limited studies and search criteria.
Ertz and Leblanc-Proulx (2018)	State-of-the-art, mapping	Sustainability and SE	Sustainability	Unclear link between methods and study context. Limited search criteria.
Hatzopoulos and Roma (2017)	Traditional narrative	Regulating the gig economy	Law	No detailed methodology, highlights the need for a new special labor regulation.
Hawlitschek et al. (2018)	Manual systematic	SE-based trust and blockchain	Information science	Dual systematic review into trust and blockchain in the context of the SE.
Lamberton (2015)	Traditional narrative	Collaborative consumption	Business and management	No methodology provided, limited search criteria, based on 193 results up to 2014.
Plewnia and Guenthe (2018)	Traditional narrative	Typology of SE activities	Business and management	43 papers, limited search criteria, no detailed methodology provided.
Prayag and Ozanne (2018)	Manual systematic	Peer-to-peer accommodation	Tourism and hospitality	Peer-to-peer accommodation sharing from 2010-16, only identified 71 studies.
Ranjbari et al. (2018)	Manual systematic	Definition of the SE	Business and management	67 papers, limited search criteria, methodology is brief.
Ryu, Basu, and Saito (2019)	Manual systematic	Sustainability side of the SE	Sustainability	Contributions and future research directions are not clear.
Schlagwein et al. (2019)	Manual systematic	Definition of the SE	Information science	No detailed methodology, develops a definition of the SE based.
Si et al. (2019)	State-of-the-art, mapping	Bike sharing	Sustainable transportation	A thorough state-of-the-art of bike sharing.
Spreitzer, Cameron, and Garrett (2017)	Traditional narrative	Alternate work arrangements	Business and management	No detailed methodology, potentially biased and utilized 10 journal sources.
Standing, Standing, and Biermann (2019)	Traditional narrative	The SE impact on transport	Transportation research	No methodology provided, transport governance-oriented.
Stewart and Stanford (2017)	Traditional narrative	Regulating the gig economy	Law	No detailed methodology, highlights the need for a new special labor regulation.
Sutherland and Jarrahi (2018)	Manual systematic	Technological basis of the SE	Information science	435 publications, limited search criteria. No specific methodology steps provided.
ter Huurne et al. (2017)	Manual systematic	Trust in the SE	Consumer behavior	Limited search criteria and only 45 studies screened.
Todolí-Signes (2017)	Traditional narrative	Regulating the gig economy	Law	No detailed methodology, highlights the need for a new special labor regulation.

While the reviews represented in Table 1 provide valuable insights into the SE literature, there are several limitations to the existing review studies. First, a large part of the reviews tends to be narrative with limited information on the scientific methodology (e.g., Lamberton, 2015; Spreitzer et al., 2017; Standing et al., 2019). As an example, Andreassen et al. (2018) provided an insightful analysis of how value is created in the SE business model but have not provided a methodology for the literature review. Many studies indeed suffer from the lack of rigorous methodological approach which limits the contributions in the field.

Another drawback is the fact that these reviews are generally constrained within a specific discipline, e.g., tourism or information sciences. For example, several studies explored the SE in the tourism and hospitality sectors (Cheng, 2016; Cheng & Edwards, 2019; Prayag & Ozanne, 2018). Some reviews are narrow in their scope of investigation, for example some studies only specifically examine trust in the context of the SE (Hawlitschek et al., 2018; ter Huurne et al., 2017). Si et al.'s (2019) outlook on bike sharing from 2010 to 2018 as a specific context of the SE, and Prayag and Ozanne's (2018) review of the peer-to-peer (p2p) accommodation sharing research from 2010 to 2016, also provided the readers with an understanding of the SE but only within specific contexts, i.e., the bike sharing and the p2p accommodation sharing respectively. This also applies to the law review studies where the main discussion is mainly around the discourse of regulatory bases of a particular topic, in this case mostly about employment regulations of the gig economy sector (Hatzopoulos & Roma, 2017; Stewart & Stanford, 2017; Todolí-Signes, 2017).

Third, existing review studies were often conducted using limited search criteria, which subsequently limit the number of results incorporated in the studies. For example, Cheng and Edwards (2019, p. 38) simply searched for “sharing economy” and “collaborative economy”, while Sutherland and Jarrahi (2018) used “collaborative consumption” and “sharing economy” as their search terms. Consequently, the number of articles they generated is limited to publications that have only used those terms. Furthermore, some studies that are noted as ‘systematic reviews’ do not strictly follow the conventions of the systematic review in social science (for the requirements of systematic reviews in social science, see Grant & Booth, 2009; Petticrew & Roberts, 2006; Schlosser, Wendt, & Sigafoos, 2007; Tranfield, Denyer, & Smart, 2003), limiting the depth and breadth of our understanding of the SE.

Finally, given that there have not been any studies that have looked at the SE phenomenon at the systems level, existing review studies on the SE phenomenon are not integrated enough to provide a holistic perspective of the SE. Cheng’s (2016) study, for instance, provided a cross-discipline review of articles based on only 66 studies from 2010 to 2015 but this period is considered as the nascent stage of research into the SE. In addition, the search criteria utilized as part of the review were not extensive enough to generate a deeper understanding of the SE phenomenon – the terms that were used were “‘sharing economy’, ‘collaborative economy/consumption’ and some typical platforms of the SE, such as ‘AirBnB’ through EBSCOHost, Science Direct, and Google Scholar” (Cheng, 2016, p. 61).

As such, while existing review studies have increased our understanding in terms of providing various definitions (e.g., Curtis & Lehner, 2019; Schlagwein et al., 2019), user perceptions of the SE (e.g., Geissinger et al., 2020), a framework of the SE (Ranjbari et al.,

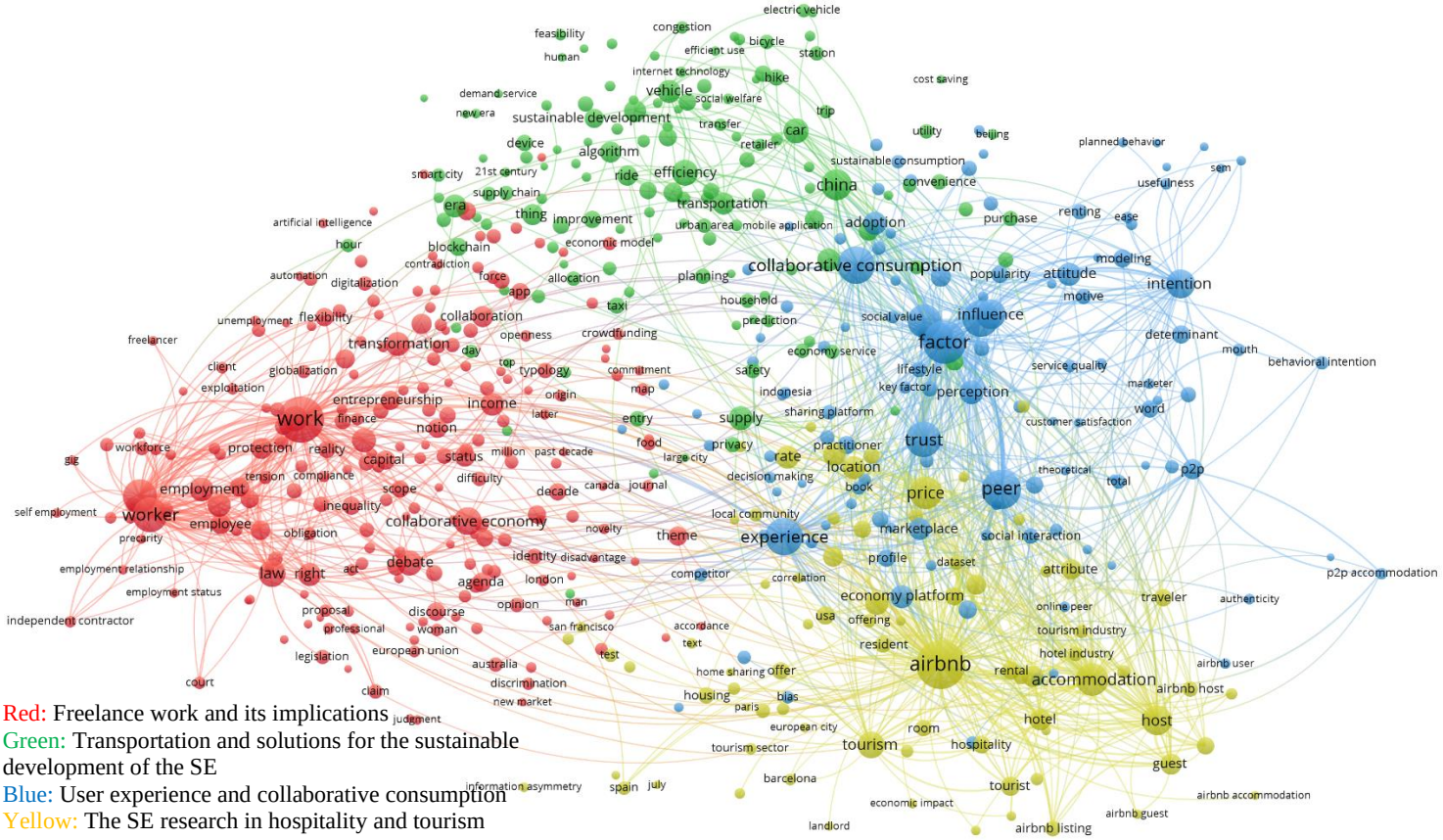
2018), and overviews of research on specific areas within the SE (e.g., Cheng, 2016; Plewnia & Guenther, 2018), they are still relatively limited in terms of the breadth (e.g., Sutherland & Jarrahi, 2018) and the lack of clarity in the methodology used (e.g., Lamberton, 2015). Geissinger et al. (2020), in their analysis of user-generated social media content, highlight that even though existing studies have used the 'sharing economy' term as an umbrella term encompassing the different economies, the findings of the study indicate that the sharing-, access-, platform-, and community-based economies appear as independent economies, with limited overlaps between them. There is therefore a need to conduct a scientometric review to analyze the current research of the SE by way of identifying clusters of existing research on the SE, and to uncover the convergence/divergence in the field in order to provide future research directions.

4. The taxonomy of the SE scholarship

The scientometric review identified four clusters of existing literature on the SE, coded as red, green, blue, and yellow clusters. The red cluster is associated with *freelance work and its implications;* the green cluster depicts *transportation and solutions* related to the SE; the blue cluster is associated with *user experience and collaborative consumption;* and the yellow cluster is related to *the SE research in hospitality and tourism.* To provide a thorough investigation of these main clusters, each cluster is then analyzed according to the themes that are presented within the cluster. It is to be noted that the clusters contain two or more sub-clusters that are related to each other as the automatic algorithmic function of the VOSviewer combines sub-clusters that share common terms. For example, the term 'big data' appears in the second cluster which is related to both the SE transport research and the SE solutions research. The more terms that are shared between the sub-clusters/themes, the more likely the sub-clusters will end up in one cluster. This is not to say that 'big data' is not present in other clusters, it simply indicates that 'big data' is more likely to be found in publications related to the green cluster.

The results of the thematic analysis are represented visually in Figure 2. In the map, the frequency of occurrences is represented by the size of the noun phrase, i.e. the larger circles represent a higher number of occurrences of the term.

Figure 2. The scientometric mapping of the SE scholarship



Red: Freelance work and its implications
Green: Transportation and solutions for the sustainable development of the SE
Blue: User experience and collaborative consumption
Yellow: The SE research in hospitality and tourism

In addition to providing a visual representation of the SE scholarship as shown in Figure 2, we also provide Table 2 which demonstrates the key themes in the four clusters. For each cluster, we provided: 1) the top article citation impact terms (i.e., the themes that are prevalent in the documents that receive the highest citation counts), 2) the top trending terms (i.e., the themes that appear in the articles with the most recent publication date), and 3) the indicative disciplinary fields.

Table 2. Key themes in the four clusters

	Top article citation impact terms[a]	Top trending terms[b]	Indicative fields
Red – Freelance work and its implications	Gig; gig work; neoliberalism; Canada; decade; critique; map; latter; absence; short term; autonomy; agenda; policymaker; flexibility; scope; exploitation; novelty; controversy; local government; independent contractor; capitalism; discrimination; tension; entrepreneurship; intersection; struggle; political economy; Australia; economic activity; debate; inequality; argument; London; taxi driver; worker; TaskRabbit	Gig work; precarity; Uber driver; labor market; academia; Sweden; Russia; woman; automation; digitalization; gig worker; occupation; United Kingdom; court; digital transformation; platform capitalism; synergy; interpretation; compliance; gig economy; circular economy; contract; short term; artificial intelligence; client; obligation	Economics; Politics; Law; Industrial relations; Management
Green – Transportation and solutions for the sustainable development of the SE	Cost saving; public transit; social welfare; reuse; bike sharing; monitoring; environmental impact; hour; pricing; retailer; supply; trip; big data; efficient use; environmental benefit; environmental sustainability; future development; demand service; sustainable business model; experiment; loss; value proposition; new generation; incumbent; transport; waste; manufacturer; congestion; business model innovation; device; route	Art; Beijing; station; prediction; bike; guidance; hour; bike sharing; ride hailing; supply chain; accuracy; large scale; blockchain; new generation; big data; negative externality; usage; retailer; route; planning; rapid development; Didi; manufacturer; Didi Chuxing; monitoring; e commerce; new service; congestion; privacy; large city; improvement; reduction; China; transport; bicycle; energy	Sustainability and environmental sciences; Transport; Computer science; Planning; Management
Blue – User experience and collaborative consumption	Enjoyment; p2p accommodation; authenticity; Airbnb user; social exchange theory; trustworthiness; online peer; seller; accommodation service; p2p; economy platform; peer; social influence; subjective norm; possession; reputation; buyer; materialism; service quality; decision making; motive; attitude; online; desire; motivation; renting; planned behavior; trust; reputation system; description; value co creation; social interaction; customer satisfaction; behavioral intention; determinant; economic value	Subjective norm; behavioral intention; customer satisfaction; p2p accommodation; usefulness; positive influence; consumer behavior; loyalty; intention; economy platform; economy context; feeling; accommodation service; fashion; service quality; influence; consumers intention; enjoyment; modeling; young person; India; adoption; gender; customer; social exchange theory; social influence; willingness; competitive advantage	Marketing; Computer science; Behavioral science; Management
Yellow – The SE research in hospitality and tourism	Airbnb accommodation; economic impact; amenity; Airbnb guest; attribute; Paris; hotel; hotel industry; stay; landlord; information asymmetry; Airbnb listing; European city; traveler; visitor; hospitality industry; online review; guest; host; revenue; hospitality; listing; accommodation; San Francisco; Airbnb; neighborhood; tourism; location; likelihood; disruptive innovation; comment; tourism industry; destination; rental; offer; tourist; USA; Barcelona; Airbnb host; rating	Paris; Airbnb platform; comment; information asymmetry; online review; Airbnb accommodation; Airbnb host; listing; unit; segment; Airbnb guest; home sharing; New York city; amenity; current state; Airbnb listing; short term rental; economic impact; facility; increase; text; host; room; quantity; guest; proliferation; attribute; destination; hotel; resident; hotel industry; European city; location; rating; offering; externality	Hospitality; Tourism; Marketing

[a] Top impact terms are the terms that appear in the highest average normalized citation articles, arranged in descending order.

[b] Top trending terms are the terms that appear in the most recent articles, arranged in descending order from the most recent publication date.

4.1. Red cluster – Freelance work and its implications

The red cluster, the largest cluster (as indicated by the number of terms within), depicts research into freelance work in the SE, and the implications of the freelance work. This cluster is characterized by several research themes that include: (i) the impact of the new economic systems on the labor force; (ii) the entrepreneurship opportunities available through the use of technologies; (iii) the employment regulation and governance of the SE; and (iv) the new business models of the digital economy.

One of the prominent themes within this cluster is the impact of the new economic system on the labor force. Indeed, the impact of the SE participation from the perspectives of the workers has gained scholarly attention in recent years with the proponents of the SE attempting to justify and normalize flexible and precarious work through an association between capitalist exchange and altruistic social values (Cockayne, 2016; Martin, 2016; Wood et al., 2019; Zwick, 2018).

The second theme within this cluster engages in understanding the impact of digital technologies and the digital economy, on entrepreneurship. Existing studies that are within this theme suggest that there are positive outcomes for the unemployed and underemployed as they can now be 'casually employed' (Burtch et al., 2018). In addition, it has also been suggested that the SE builds individual efficacy, trust and community among users (Bouncken & Reuschl, 2018), and has a positive impact on the innovation and sustainability of entrepreneurship (Richter et al., 2017).

The third stream within this cluster is related to the disruptions of the SE in the economy, which remain largely unregulated. Some attempts were made to examine the implications of the SE and the need to address the legal voids to better govern the SE (Hong & Lee, 2018; Miller, 2016; Stewart & Stanford, 2017).

Finally, several conceptual papers in this cluster have discussed the implications of the creative destruction of the traditional business models and the adoption of new co-ownership economies based on the premises of technological communication developments (Acquier et al., 2017; Belk, 2014). For example, Frenken (2017) outlines the future of the SE in terms of a market-led future in platforms, a government-led future that moves labor to capital, and a citizen-led future that embraces cooperatively-owned platforms. These three platforms are largely dependent on sharing or collaboration, and they are different from the traditional models in terms of the distribution of economic gains and political power as well as the environmental impacts.

The unique proposition of this cluster is in the fundamental analysis of the SE phenomenon, particularly in what it entails and its impacts on society and to the workers. The fields of research in this cluster include law, politics, industrial relations, and management. Terms including *(systematic) literature review*, *critique*, *paper analysis*, and *reflection* are reflected in this cluster, demonstrating a heavy reliance on secondary data content analysis of studies found within this cluster. Other themes within the cluster include methodology-related themes such as *participant observation* and *qualitative analysis*, indicating that works within this cluster are also predominantly based on qualitative exploratory studies.

The contributions of the cluster tend to be tied to exploratory research, reflected in terms that include *future research direction(s), definition, typology, legislation, new model, new concept, regulation,* and others, particularly those focusing on the regulations of the gig economy sector. This cluster essentially investigates the freelance work in the SE, with less focus on quantitative research studies but primarily on the employment regulation and institutionalization of the SE. Many studies within this cluster also propose the development of the institutions to accommodate changes brought forth by the SE phenomenon. These topics are discussed through the use of the transaction cost theory and the theoretical concepts of justice, value, social and open innovation, as well as platform capitalism. The most common methodological approaches are literature reviews, conceptual papers, reflection and critique pieces. The themes of the gig, on-demand and platform economies seem to be intertwined in this cluster through the discussion of the gig economy employment, entrepreneurship, the business models, and the regulation. The research disciplines studying the themes in this cluster include management, economics, law and industrial relations, as well as politics (Table 2).

4.2. Green cluster – Transportation and solutions for the sustainable development of the SE

The green cluster depicts three broad themes within the SE literature: (i) the SE in the transportation sector, (ii) the environmental concerns and the sustainability issues in relation to the SE, (iii) and the discussions of information technology solutions that enable sustainable growth and development of the sharing platforms and collaborative consumption.

The first theme within this cluster is related to the SE developments in the transportation sector covering various topics ranging from concerns about the well-being of workers in platforms like Uber and Deliveroo (Fleming, 2017; Rosenblat & Stark, 2016), to transport efficiency (Kong et al., 2018), to general implications of the SE on the transportation sector (Buldeo Rai et al., 2017; Standing et al., 2019). Young and Farber (2019), for example, demonstrate that ride-hailing options like Uber and Lyft are unlikely to impact the use of other travel modes even though they impact the traditional taxi segment, and provide a sustainable business model in the long run. A scientometric review of the literature on bike sharing demonstrates that research on this topic has moved from the basic safety and benefits of the phenomena to more complex external impacts, system optimization, design and integration with public transit and the sustainability of the business model (Si et al., 2019).

Another sub-theme of this cluster examines the impact of the SE on environmental sustainability. Several studies suggest that users are increasingly concerned with ecological sustainability, and they are more likely to be supportive of collaborative consumption (Böcker & Meelen, 2017; Ertz & Leblanc-Proulx, 2018; Michelini et al., 2018). For example, Geissinger et al. (2019) demonstrate that new and 'smaller' platforms are more likely to present themselves as sustainable in comparison to the dominating platforms such as Airbnb and Uber. Zhang and Mi (2018) further highlight the environmental impact of the SE, noting that in 2016, bike sharing in Shanghai saved 8,358 tonnes of gasoline while eliminating 25,240 tonnes of carbon dioxide and 64 tonnes of nitrogen oxide emissions. The number of articles focusing on this aspect clearly highlights the focus of studies on environmental concerns and issues.

The final theme of the cluster is related to the information technology solutions to promote the sustainable growth of this economy. Several extant studies attempt to offer predictions, frameworks, and algorithmic models based on the premises of collaborative consumption to create solutions through the SE platforms (Lombardi & Schwabe, 2017; Masoud & Jayakrishnan, 2017; Niu et al., 2018). For example, Kong et al. (2018) highlighted the most effective routes for shared subway and shuttle buses to increase public transportation efficiency. Lombardi and Schwabe (2017) also demonstrated that the sharing economy-based energy storage system model may increase the profitability of operating a battery storage system as compared to the single-use model. Various themes within this cluster therefore illustrate the increasing depth and richness of research in the transportation and solutions areas.

This cluster has a number of methods depicted in various studies including the use of *simulation, prediction, feasibility,* and *algorithm* analyses. These methods help provide solutions for *logistics, travel, urban planning,* and *environmental sustainability*. Studies within this cluster also consider the economic theories of *demand and supply*, not only from the business perspective but also the public spending on infrastructure including *urban planning, transportation, roads, energy, the environment,* and others. Other theoretical perspectives adopted in this cluster are concerned with *supply chain* management and *logistics* in general. *Social welfare* is also commonly depicted in studies within this cluster, highlighting the need for solutions for the sustainable development of the SE.

The contributions of the green cluster relate to the solutions for planning, logistics, and sustainable development. The theoretical perspectives in the majority of studies in this cluster are from the fields of microeconomics, social welfare, and supply chain management. The methods utilized in studies within this cluster include simulations using algorithms, feasibility studies, and paper content analyses. In essence, this stream discusses the implications of the SE on transport, sustainable development, and the technological advancements that create effective solutions (Table 2). The research disciplines in this cluster include sustainability and environmental science, logistics, IS solutions, planning, and management.

4.3. Blue cluster – User experience and collaborative consumption

The blue cluster relates to the collaborative consumption and the experiences of the users of the SE platforms. Existing studies within this cluster are predominantly focused on exploring the motivations associated with participation in the SE (Benoit et al., 2017; Hamari et al., 2016). Some other studies have also indicated the social and hedonic motivations for participating in the SE, for example Truffer's (2003) study is focused on the environmental sustainability motivations for participating in this new economy. Studies within the blue cluster also tend to investigate the motivations and concerns of consumers using online platforms (Guttentag et al., 2018; Tussyadiah, 2016).

Studies within the blue cluster, in general, highlight user experiences in the SE, be it the motivations, preferences, intentions, and the behavior of consumers. For example, Tussyadiah and Pesonen (2016) demonstrate how meaningful social interactions with locals and unique experiences in authentic settings induce people to travel more often, stay longer, and participate in more activities within the SE. Others focus on the attributes of the

facility/platform that engage users (Belarmino et al., 2019). There have also been studies investigating concerns such as trust, efficacy, system use, and cost associated with the SE (Moehlmann, 2015; Tussyadiah & Pesonen, 2018). An example is the study done by Mauri et al. (2018) highlighting personal reputation and experience as being critical in the SE. Several other studies further investigate factors that influence the perceptions of users of these platforms and the consequent reputation of the service providers (Abrate & Viglia, 2019; Cheng & Jin, 2019; Ert et al., 2016; Liang et al., 2017). Abrate and Viglia (2019) demonstrate that reputation is the key factor behind the choice of a product, where personal branding and trust are of utmost importance in peer-to-peer platforms. The SE is also increasingly known as a reputation-based economy where businesses and individuals are dependent on reviews and experience (Ert et al., 2016; Etzioni, 2019; Mauri et al., 2018; Moehlmann, 2015).

Quantitative studies in this cluster appear to be more prevalent in comparison to those in the red cluster, with terms including *regression analysis, survey data, structural equation modeling (SEM), online survey, questionnaire, hypothesis,* and *survey* frequently highlighted. This is due to the nature of research in this cluster that includes marketing, behavioral science, and management investigating user experiences of the SE as a whole. Many of the behavior-related terms are found in this cluster with studies citing prominent theoretical constructs and theories including *planned behavior* and *customer behavior*, to guide our understanding of the behavior of consumers/users in the SE. Social interaction theories are also present in this cluster with terms including *social exchange theory* and *social capital* highlighted in several studies in this cluster.

In this cluster, many existing studies offer valuable practitioner-oriented implications, and they highlight aspects of competitive advantage discussions and behavioral customer analysis within the SE. Studies within this cluster predominantly utilize the theories of planned behavior, social capital, value co-creation, and social exchange theories. Most of the methods incorporated in studies within this cluster include the use of regressions, surveys, structural equation modeling, in-depth interviews, and further qualitative/quantitative methods to measure individuals' behavior or derive conceptual models of the SE. This cluster offers a different perspective of the SE adoption through examining the perceptions of the users and consumers, and in this way the consumption patterns are more defined through the concepts of collaborative consumption as well as peer, reputation, and trust economies. This cluster falls under the marketing, behavioral science, computer science, and management research fields.

4.4. Yellow cluster – The SE research in hospitality and tourism

The majority of existing studies on the topic of the SE are focused on examining shared accommodation, with the likes of Airbnb, Couchsurfing, and other accommodation booking websites that have transformed the hospitality and tourism industry. Thus, unsurprisingly, a significant part of research on the SE falls within the domains of hospitality and tourism management, which is illustrated in the yellow cluster. Apart from the hospitality and tourism research, there is no other service or industry that is being researched as extensively within the yellow cluster.

A number of studies highlight the negative impact of Airbnb on the traditional hotel industry (Guttentag & Smith, 2017; Oskam & Boswijk, 2016; Zervas et al., 2017). For example, Zervas et al.'s (2017) study highlights that Airbnb's operations in Austin, Texas, reduce hotel revenues by about 8-10%, essentially affecting the lower-priced hotels in the area. Other studies also demonstrate that the SE platforms can effectively co-exist with the traditional models of hotel accommodation (Gutiérrez et al., 2017; Wachsmuth & Weisler, 2018). For instance, Heo et al. (2019) demonstrate that in Paris, hotels and Airbnb customers are not similar in terms of their profiles and as such, their product offerings are complementary to each other. Another research theme within this cluster pertains to the perspectives of suppliers within the SE, in terms of their investment opportunities, business performance, and the implications of the SE for the wider society. For instance, a study into the touristic areas of Portugal demonstrates that the Airbnb platform is an example of a buy-to-let investment scheme that displaces residents with tourists, leading to various implications that favor investors while creating insecurity and displacement concerns for residents (Cocola-Gant & Gago, 2019).

Issues of online reviews/comments also fall within the boundaries of this cluster with the majority of the literature focusing on the positive aspect of the SE platforms (Bulchand-Gidumal & Melián-González, 2019; Cheng & Jin, 2019; Liang et al., 2017). For example, Zervas et al. (2015) note that more properties receive higher ratings on Airbnb in comparison to reviews on TripAdvisor. Bridges and Vásquez (2018), in a study of 400 English-language reviews in four cities, demonstrate that interestingly, less-than-positive experiences are often communicated using more nuanced, subtle cues to ensure an overall positive review of the SE product and service offerings. Finally, the mapping reveals that other studies within the yellow cluster investigate factors that influence the pricing of the property, including the host attributes, photos of owners and the properties, amenities, and even the location (Ert et al., 2016; Gibbs et al., 2018; Wang & Nicolau, 2017). All these themes examine shared accommodation and they fall within research in hospitality and tourism, as depicted in our mapping review.

The methods utilized in the majority of studies in this cluster are mainly qualitative, highlighted by terms such as *qualitative approach* and *content/literature/website/online review/comment(s)*. Quantitative research studies are rare in this cluster as evident from the limited quantitative methodologies depicted in this cluster. Since this cluster depicts the context of hospitality and tourism, the theoretical lenses are rooted in *tourism* and *hospitality planning* and *decision-making theories* to estimate and evaluate consumers' assessments. Existing studies within this cluster also highlight the *information asymmetry* that is inevitably present in the business services-related sharing economy.

The cluster offers specific contributions to hospitality and tourism research (Table 2) in terms of the customer, demographic, and reputation analyses. These contributions are resolved through the use of tourism and hospitality planning-, decision-making-, and information asymmetry theoretical stances. The studies in this cluster utilize content/literature reviews, website analyses, and online comments/reviews analyses, predominantly utilizing secondary data or other qualitative research techniques. The key focus of this cluster is its

emphasis on the reputation, on-demand, and access economies, with studies primarily focusing on Airbnb and accommodation platforms.

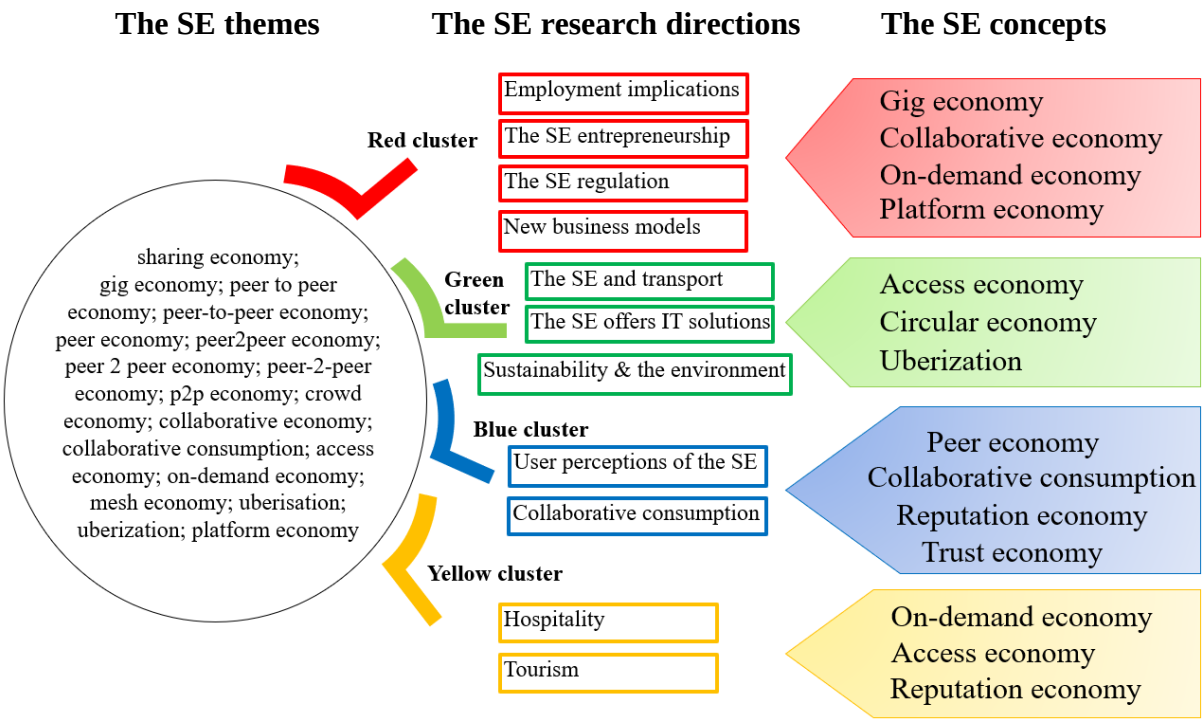
4.5. The delineation of the SE concepts

We propose a typology that provides clarity to the various concepts commonly considered as (or part of) the SE phenomenon. Using scientometric analysis, in Table 3 we selected highly cited studies and the different definitions for each of the depicted SE concepts. Through our proposed typology of the SE concepts, we highlight how these different concepts are mapped to each of the four clusters (Figure 3). For example, the *gig economy* concept falls under the red cluster, as the majority of the publications citing this particular concept tend to fall into the red cluster. However, this is not to say that the *gig economy* concept is exclusive to the red cluster, instead this is a representation of research identifying that the *gig economy* concept is often related to the *freelance work and its implications* cluster. The proposed typology helps to guide scholars to carefully define the SE with considerations of relevant SE concepts within specific clusters.

Table 3. Illustrations of the SE concepts

SE concept	Definition
Sharing economy	"… consumers granting each other temporary access to under-utilized physical assets ('idle capacity'), possibly for money." (Frenken and Schor, 2017, pp. 4-5)
Collaborative consumption	"… is people coordinating the acquisition and distribution of a resource for a fee or other compensation." (Belk, 2014, p. 1597)
Gig economy	"… functions as a marketplace for the mediation of both physical as well as digital services and tasks. For digital tasks, the entire activity is carried out online from initial instruction through to completion and evaluation; physical tasks are managed and mediated digitally (often via an app) but carried out offline (e.g. transportation, DIY) … there are several defining features, which are appropriate for common analysis… the platform; the labour pool; the employment contract; algorithmic control; and digital trust." (Howcroft and Bergvall-Kåreborn, 2019, p. 23)
Crowd economy	"It is a synergy of elements like, networked crowds, a democratic mind set, self-awareness, exponential problems that need collective action and technological advances that morph the crowd economy into a more purpose-driven and valuable ecosystem… a dynamic ecosystem of productive people who participate through a platform with a purpose to achieve mutually beneficial goals." (Nekaj, 2017, p. 2)
Platform economy	"It is any type of digital platform that uses the internet to connect dispersed networks of individuals to facilitate digital interactions between people. Within the platform economy there is a triangular relationship between three parties (1) the platform (2) the worker and (3) the customer. It is the job of the platform to connect people with demand (the customer) to people that provide supply (the worker)." (Zysman and Kenney, 2018, p. 2)
Access economy	"… provides temporary access to consumption resources for a fee or for free without a transfer of ownership." (Eckhardt and Bardhi, 2016, p. 210)

Figure 3. Typology of the SE concepts and cluster allocation



4.6. Empirical studies on the SE

To further examine the nature of the SE research, we identified the extent of empirical efforts in this growing scholarship, to help us gain a more in-depth understanding of the scholarly work in this field. Considering the nascent nature of the SE scholarship, it is not surprising that the majority of studies in the SE are conceptual (Breidbach & Brodie, 2017; Frenken & Schor, 2017; Sutherland & Jarrahi, 2018). Even though it is difficult to measure exactly the percentage of conceptual papers against empirical publications due to the sheer volume of 2,229 publications that we have gathered, we utilized text-mining techniques to identify all the empirical study-related terms within the entire scholarship on the SE (see Table 4). We utilized Creswell's (1998, 2009) extensive work on qualitative methodology research and UCLA's Institute for Digital Research & Education (2019) for quantitative methods to identify the variety of data collection methods and analyses (qualitative and quantitative methods) of existing empirical studies on the SE.

Table 4. Empirical studies on the SE based on the total of 2,229 publications

Qualitative methods	**538 (24%)**	**Quantitative methods**	**315 (14%)**	**Data collection methods**	**719**
Case stud*	295	Structur* equation	73	Survey*	225
Grounded	56	Regression	66	Interview*	181
Mapping	54	Simulation	48	Experiment*	116
Content analysis	40	Correlation	25	Questionnaire*	68
Ethnograph*	36	Factor analysis	10	Observation*	58
Comparative analysis	27	Cluster analysis	9	Simulation*	48
Qualitative analysis	12	Descriptive statistic*	5	Statistic* analysis	12
Qualitative method*	11	Discriminant analysis	4	Focus group	6
Phenomenolog*	5	Binomial model	4	Secondary data	5
Historical research	1	ANOVA	4		
Foundational research	1	T-test	3		
		Covariance	3		
		Chi-square	1	Empiric*	246
		Statistic*	60	Review	264

From Table 4, 32% (719 out of 2,229 publications) of the studies have explicitly noted the data collection methods. From this, 24% of all SE studies utilized qualitative research methods, and a little over 14% (315 out of 2,229 publications) of existing studies utilized quantitative methods in their analysis. The majority of those that adopt qualitative research utilize the case study approach. This is reasonable given the fact that the field is relatively young. Eisenhardt (1989), for instance, argues for the use of case study research in the early stages of research where the creation of novel theory provides the basis for future research. Table 4 highlights that in order to consolidate the disparate areas within the field, more empirical work examining SE essentially needs to be conducted within the SE literature.

5. Implications and future research directions

Research on the SE has evolved significantly in recent years. Being the first study that has extensively examined the systems view of the current literature on the SE (based on 2,229 academic publications on this topic), this research has several theoretical implications. First, having visual representations of the results offers a clearer and richer picture of the entire SE literature and the themes. This scientometric mapping through a systematic and holistic review of the SE literature essentially provides researchers with an integrated, systematic and holistic view of the SE as a field of study. As a way to illustrate this overall perspective of the SE, Table 5 highlights the taxonomy of the current research on the SE, indicating the main

contributions, theories and theoretical concepts, and the methods used in studies within each of the clusters. The taxonomy is derived from the most commonly utilized terms in each cluster.

Table 5. The taxonomy of the SE research with contributions, theories, and methods*

	Contributions	**Theory and theoretical concepts**	**Methods**
Red – Freelance work and its implications	Definition Typology Regulation Future research directions New model/concept	Transaction cost Justice and value theories Social innovation Open innovation Platform capitalism	(Systematic) literature review Reflection Critique
Green – Transportation and solutions for the sustainable development of the SE	Planning Logistics/travel Environmental impact and sustainability	Microeconomics (demand and supply) Supply chain Social welfare	Simulation via algorithms Feasibility studies Paper analysis
Blue – User experience and collaborative consumption	Practitioner-oriented contributions Competitive advantage analysis Behavioral analysis of consumers	Theory of planned behavior Behavioral theories Social capital Value co-creation Social exchange theory	Regression analysis Survey/questionnaire data Structural equation modeling In-depth interview Qualitative study Conceptual model
Yellow – The SE research in hospitality and tourism	Customer/demographic analysis Reputation analysis	Tourism and hospitality planning Decision making theories Information asymmetry	Content/literature analysis Website analysis Online review/comment analysis Qualitative approach

* The terms depicted in the table are directly extracted from the larger dataset of terms in each cluster

Second, in applying both a mapping review and a state-of-the-art review as part of the scientometric review, our results indicate four clusters as the main areas of existing research on the SE. The clusters suggest that existing work is mainly focused on these broad areas of foci of the SE – freelance work, transportation and solutions for the sustainable development of the SE, user experience, and the SE research in hospitality and tourism. While these findings are partly aligned with those clusters indicated in some review studies (e.g., Cheng's 2016 study), our study adds value in indicating the wider areas of research on the SE. Cheng's (2016) review, for instance, highlights the focus on hospitality and tourism within the SE literature but our results indicate that the hospitality and tourism research is only one cluster. In fact, the SE research into freelance work in the SE and the implications of the freelance work (the red cluster) is much more dominant (based on the number of terms within) than the SE research in hospitality and tourism (the yellow cluster). Our findings thus contribute to the existing reviews of the SE that are mainly constrained within a specific discipline or narrow in their scope of investigation. The findings can be used to better understand the different clusters and the themes within each of the clusters to further investigate the dynamic nature of the SE research.

Third, we contribute to the theory and research on the SE by identifying the overlaps between concepts that at present collectively represent the SE. Our review highlights that the SE phenomenon is an essentially complex construct encompassing other inter-related concepts (see Table 3 earlier). While our results confirm previous studies that attempted to conceptualize

the meaning of the SE phenomenon (see for example Acquier et al., 2017; Frenken & Schor, 2017), we further emphasize the diverse conceptualization of the SE construct by way of a typology of the inter-related concepts of the SE (see Figure 3 earlier). Acquier et al.'s (2017) study, for example, highlights that the SE is an umbrella construct based on the three cores of access economy, platform economy, and community-based economy. Our typology indicates that the application of these 'cores' varies depending on the clusters. For example, the focus on the 'access economy' is much more dominant in research examining transportation and solutions related to the SE as well as in research in the hospitality and tourism sector. The focus on the 'platform economy' is predominantly within studies examining freelance work and its implications on the SE. As highlighted by Geissinger et al. (2020), we similarly found that while there are overlaps between the concepts under the SE umbrella, there is also a need to understand that the different SE concepts are situated within specific SE clusters. This typology may consequently provide scholars with a better understanding of the SE in terms of how they could situate and advance their research within a specific SE cluster and using particular SE concepts that are largely relevant in that cluster.

Based on our analysis of the SE literature, we highlight several future research directions. First, as shown in the taxonomy of the SE research (see Table 5), the red cluster discusses the implications and involvement of the workforce within the SE phenomenon, while the blue and yellow clusters discuss the perceptions of the users and customers of the SE offerings. However, there is a paucity of research that has examined the perceptions and implications of the other SE stakeholders, including governing bodies (Berger et al., 2020; Hong & Lee, 2018), the suppliers and the value chain (Benjaafar & Hu, 2020), and bricks and mortar businesses (de Lange & Valliere, 2020). Indeed, existing research has been relatively scant on empirical evidence of the impact of the SE on society at large. This can therefore serve as a future research direction in examining the impacts of the SE on various other stakeholders.

Second, given that the existent SE research primarily focuses on employees in the SE (Gandini, 2019; Howcroft & Bergvall-Kåreborn, 2019; Wood et al., 2019), illustrated by the number of scholarly articles in the red cluster showing themes including employee protection, employee rights, or workers' conditions, future research needs to further consider topics of value creation and business opportunities in the SE (Fritze et al., 2018). Future research needs to incorporate, for example, how value is created, communicated and captured in the new economy. These aspects remain underemphasized in the scholarly literature and are needed to guide scholars, practitioners, and policymakers in facilitating entrepreneurship and the creation of business models in the sharing economy.

Third, as demonstrated in Table 5, the literature is relatively rich in depicting tourism and hospitality as well as collaborative transportation consumption (predominantly within the green cluster). However, other industries such as on-demand professional services, retail, and consumer goods, and media and entertainment are also being disrupted by the SE (DHL Customer Solutions & Innovation, 2017; PwC, 2015a, 2015b, 2018; Schroders, 2016). Nevertheless, they remain under-researched in academic literature (Sutherland & Jarrahi, 2018). For example, while Airbnb and Uber platforms appear in 442 and 261 publications, respectively, TaskRabbit and Fiverr appear in a mere 11 and 3 publications, respectively,

related to the SE. As such, future studies can further examine other industries in addition to the hospitality and transportation industries that have been the major focus of existing studies on the SE.

Finally, as highlighted in Table 5, the methods utilized in existing studies are still limited. Only a third (38%) of all studies in their titles, abstracts, and/or keywords mentioned some form of qualitative or quantitative research techniques. Case study analysis is by far the most common method in this field, and surveys/questionnaires (13%) and interviews (5%) were the other common data collection methods. The relative lack of empirical data analysis is unsurprising considering that the field is relatively young and is still in its development stages. Our taxonomy therefore indicates the need for future research on conducting more empirical research on the SE to produce generalizable findings. This is also detailed in our section on the empirical studies on the SE (section 4.2) and also in Table 4.

6. Concluding remarks

This scientometric review demonstrates four clusters of existing research. The first cluster examines freelance work in the sharing economy as new business models and a new way of entrepreneurship and innovation. The second cluster relates to applications to create effective solutions in transportation, planning, logistics, operations, as well as research in environmental and sustainability solutions related to the SE. The third cluster is tied to the marketing and behavioral science research fields, mainly investigating the SE through its user perceptions. The last cluster identified in this review is related to hospitality and tourism research, which are at present the most studied industries/sectors related to the SE.

Our review provides implications for policymakers. First, given that there is still a lack of institutional framework in regard to the SE regulation (Kirchner & Schüßler, 2020), we encourage the introduction, development, and assessment of effective government policy and regulations for the sharing economy. This could be in terms of consumer protection, competition, and labor markets. Second, our review provides the way forward for practitioners when discussing the SE. Given the typology of the SE concepts, practitioners will be more informed of the different interpretations of these concepts. For example, when discussing access economy, this would be linked to transport, information systems enablers, and sustainability as well as the environment. A clear delineation of the concepts under the SE umbrella will help practitioners to consider the use of the different SE concepts and the implications.

There are certain limitations to the method utilized and the findings inferred from the analysis. The sample we extracted from the WoS may differ from other sampling strategies. One method would be to manually go through all the publications on the SE although such manual process potentially suffers from the likelihood of ‘human factor’ error particularly when considering over 2,200 publications. Another limitation of this study is the small possibility of missing out on publications that do not contain the selected search terms in the title, abstract, or keywords within the publication. However, given that our study is one of the few that comprehensively considers the topic through a dataset of 2,229 scholarly articles based on the most expanded list of the SE-related terms, we deem the possibility of missing out on

some publications as relatively low. Additionally, there is a limitation of bias in the choice of search terms that we used as the keywords representing the SE. Arguably, the choice of the keywords was based on the literature, with our study using more keywords in describing the SE in comparison to other review studies (e.g., Ertz and Leblanc-Proulx (2018) searched for "sharing economy", "collaborative economy" or "collaborative consumption", and other studies still use these terms interchangeably, e.g. Gerwe and Silva, 2020). Finally, considering the rapid development of this topic, where over 60% of the studies on the SE were published in 2018-2019, possible changes on the clusters (with the associated terms within these clusters) are likely. In order to ensure that our method of selecting the publications was unbiased, our research protocol comprising of a multi-stage process was elaborated with the justifications of the inclusion and exclusion of articles at each step.

We hope that our contributions of the proposed taxonomy that highlights existing research directions of the SE each with its outline of key contributions, theory and theoretical concepts, and the methods utilized, as well as the proposed typology that provides the delineation of the SE concepts, are an important way forward to advance research in this area.

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