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The dark side of the sharing economy: A systematic literature review of externalities and their regulation

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The dark side of the sharing economy: A systematic literature review of externalities and their regulation

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ABSTRACT

As the sharing economy has grown, externalities, i.e., "dark sides," have also surfaced. The intricacies surrounding these externalities and their regulatory measures have garnered significant scholarly interest; however, there remains a lack of comprehensive guidance on the appropriate regulatory approaches. Based on a systematic literature review of 99 papers, we provide an overview of two regulatory approaches (government and self-regulation) to address the sharing economy's economic, social, and environmental externalities affecting multiple stakeholders. We show that government regulation entails mechanisms based on avoiding, limiting, and guiding, while self-regulation entails mechanisms related to market entry, operation, and monitoring. We develop an externalities-based regulatory framework to suggest how these two approaches and recommended regulatory mechanisms could address each externality. Furthermore, we use our regulatory framework as a base to suggest a future research agenda and to discuss managerial implications.

1. Introduction

"While some still praise the 'sharing economy' as a boon to our cities and our wallets, the term has come to symbolize, for others, a kind of willful ignorance that recasts poverty as an opportunity for innovation." (North, 2014).

Following the emergence of for-profit, sharing economy (hereafter, SE) platforms, such as Airbnb and Uber, the SE has departed from its initial idea of using idle resources for primarily economic exchanges, a move which has negatively affected and caused externalities for various stakeholders (Ertz & Leblanc-Proulx, 2018; Hassan, 2020). For instance, the SE affects incumbents and other stakeholders by avoiding existing regulations (Lee, Swindell, Vogt, & Lee, 2020; Luo, Tong, Lin, & Zhang, 2021); violating labor rights standards (e.g., employment benefits, Schor, 2016; Ganapati & Reddick, 2020); increasing the environmental burden (Guo, Xin, Barnes, & Li, 2018); promoting unethical social behaviors (e.g., discrimination) (Etter, Fieseler, & Whelan, 2019); and invading customer protection standards (e.g., privacy) (Ma, Gu, Hampson, & Wang, 2020).

Much effort has gone into mitigating the externalities associated with the SE. Increasingly, academics and policymakers are examining how regulation could address negative externalities while retaining the benefits of the SE (Martin, Upham, & Klapper, 2017; Zuo, Zhu, Chen, & He, 2019). Although academic literature does offer some guidance, it tends to focus on one particular externality, stakeholder, or context, and the research is scattered across various fields, such as business, ethics, tourism, and psychology. Additionally, extant research appears to provide conflicting guidance on the most suitable regulatory approach for the SE. For instance, some scholars advocate a self-regulatory approach (e.g., rating systems), wherein SE platforms (e.g., Airbnb), rather than the government, are responsible for designing and enforcing regulations (Cohen & Sundararajan, 2015; Schawe, 2020). These scholars argue that government intervention is becoming increasingly superfluous (Caldwell, Elliot, Henry, & O'Connor, 2020) and may even hinder the flow of innovation and socio-economic growth that the SE provides (Cohen & Sundararajan, 2015; Benoit, Wang, Teng, Hampson, & Xia, 2022). Conversely, other authors advocate more government regulation (e.g., taxes) (Chaffee & Rapp, 2012; Hartl, Hofmann, & Kirchler, 2016), suggesting that SE platforms are still too immature to self-regulate (Berkowitz & Souchaud, 2019).

Researchers point out that the externalities and regulation of the SE have not been thoroughly understood or discussed in prior literature (Eckhardt, Houston, Jiang, Lamberton, Rindfleisch, & Zervas, 2019; Mont, Palgan, Bradley, & Zvolska, 2020; Köbis, Soraperra, & Shalvi,

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2021), leading some to conclude that a framework is lacking for regulating the SE; one which would guide governments by offering a toolset (Chen, Huang, & Tan, 2021).

Thus, in this article, we argue that there is a need for a better understanding of the externalities of the SE and the current regulatory approaches designed to mitigate them. Consequently, we pose three related research questions. First, what are the externalities of the SE that affect its stakeholders? Second, what are the current SE regulatory approaches and their mechanisms? Third, which approaches and mechanisms are best suited to mitigating each of the identified externalities?

To address these research questions, we present a systematic literature review (SLR) (see Fig. 1). Extant SLRs that focus on the SE (see Web Appendix A) provide useful insights, but not one focuses on the SE's externalities and their possible regulatory mechanisms. Thus, our review presents the economic, social, and environmental externalities of the SE, which affect its stakeholders: service providers, customers, incumbents, communities, and the government (see Fig. 2). Second, we outline the two regulatory approaches of the SE, i.e., government regulation, with its mechanisms of avoiding, limiting, and guiding; and self-regulation, with its mechanisms of market entry, operation, and monitoring (see Fig. 3). Third, we develop an externalities-based regulatory framework (see Table 1) to identify how these two approaches and their mechanisms could mitigate the identified externalities.

Our paper makes four fundamental contributions. First, we provide a comprehensive overview of the dark side of the SE, by synthesizing the externalities based on extant research. Second, our SLR provides an overview of the various regulatory approaches and mechanisms of the SE. Third, we develop a regulatory framework that suggests how regulatory approaches and their mechanisms could address each externality. Fourth, our framework enables us to deduce theoretical and managerial implications and to develop a comprehensive research agenda that is aimed at stimulating research, which in turn will further enhance our understanding of the existing regulations for mitigating the externalities of the SE.

In the following sections, we present the research methodology for our SLR, followed by the results of a thematic analysis of the identified articles. These results are organized into two sections: the externalities and the regulatory approaches. Finally, in the discussion section, we present a proposed regulatory framework, as well as theoretical contribution and managerial implications. We also present the limitations of our study and propose a future research agenda.

2. Research methodology

2.1. Systematic literature reviews (SLRs)

Knowledge creation is accelerating and becoming interdisciplinary, resulting in fragmented scientific disciplines (Snyder, 2019), all of which make SLRs increasingly important. Palmatier, Houston, & Hulland (2018) argue that SLRs present a solution to disciplinary fragmentation by giving an overview of existing knowledge and can solve inconsistencies by integrating and synthesizing that current state of knowledge.

SLRs use a replicable and transparent pre-designed protocol that aims to assemble, critically evaluate, and synthesize existing research, to address a specific question (Cook, Mulrow, & Haynes, 1997). The PRISMA Protocol, i.e., Preferred Reporting Items for Systematic Review and Meta-Analysis (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009), is a well-established procedure for conducting SLRs (Akande, Cabral, & Casteleyn, 2020). It has been used extensively within many disciplines and contexts, including marketing (e.g., Kranzbühler, Kleijnen, Morgan, & Teerling, 2018) as well as those related to the SE (e.g., see Web Appendix A). It reduces bias in the identification and selection of literature, resulting in more reliable and rigorous research (Tranfield, Denyer, & Smart, 2003). It consists of five phases, as depicted in Fig. 1, and detailed below (Moher et al., 2009; Akande et al., 2020; Köbis et al., 2021).

2.2. The PRISMA protocol

2.2.1. Phase 1: Literature identification

Literature identification was carried out in two steps: first, we conducted an exploratory search to identify the relevant keywords; and followed that with a more refined and structured search using those keywords (Moher et al., 2009). In step one, and in line with common practice (Kranzbühler et al., 2018), we searched for seminal papers relating to the SE (e.g., Bardhi and Eckhardt, 2012; Belk, 2014; Eckhardt et al., 2019), externalities (Griffiths, Perera, & Albinsson, 2019; von Briel & Dolnicar, 2020), and regulation (e.g., Yeon, Song, & Lee, 2020; Palgan, Mont, & Sulkakoski, 2021), which yielded the keywords related to each stream (see Fig. 1 and Web Appendix B).

To capture the research within the various fields of our search, we included manuscripts from three databases. First, and as with earlier research into business (e.g., Schlagwein, Schoder, & Spindeldreher, 2020), we sourced articles from EBSCO's Business Source Complete, the world's most comprehensive academic business database (Zott, Amit, & Massa, 2011). Second, because home-sharing is an important sector in the SE, extensive research has been published in hospitality and tourism journals (Lim, Yap, & Makkar, 2021). Hence, we followed Guttentag (2019), and used EBSCO's Hospitality & Tourism Index database. Third, because changing consumer behavior and perception of value are very much related to the growth of the SE (Kathan, Matzler, & Veider, 2016), we employed the following consumer psychology and behavioral databases in our search: APA PsycArticles, APA PsycBooks, Psychology and Behavioral Sciences Collection, APA PsycInfo, and APA PsycTests. To ensure all relevant papers were included, our SLR covered the years 2000–2021, a period that begins long before the two pioneers of the SE, Airbnb and Uber, were founded.

A structured search was conducted using the keywords (listed in Fig. 1), appearing in either the title, abstract or article keywords, which yielded 523 publications (see Fig. 1, Identification). These publications were diverse and ranged from academic articles and dissertations to industry reports. The subject areas covered management, marketing, law, public policy, information systems, and tourism, all of which reflect the interdisciplinary nature of SE-related research (Dann, Teubner, & Weinhardt, 2019). Out of the 523 publications, 43 duplicates were eliminated, resulting in 480 publications available for screening (see Web Appendix C).

2.2.2. Phase 2: Screening

We employed two criteria in the screening phase. First, to ensure a high standard of publication and in line with Kranzbühler et al. (2018), 120 non-peer-reviewed publications were excluded (e.g., working papers or industry reports). Due to the interdisciplinary nature of the SE research field, no limitations were imposed on a certain set of journals (Trenz, Frey, & Veit, 2018). Second, following Ter Huurne, Ronteltap, Corten, & Buskens (2017), 128 non-English publications were excluded, to ensure a valid interpretation (Räisänen, Ojala, & Tuovinen, 2021). Under these two criteria, 248 publications were excluded from further analysis (see Fig. 1, Screening), which left 232 publications for the eligibility assessment.

2.2.3. Phase 3: Eligibility

Content relevance is the cornerstone of the eligibility phase (Lim et al., 2021). Thus, the full text of each article that passed the screening phase was thoroughly reviewed, to ensure that only those focusing on externalities or regulation *and* the SE were retained. For instance, several articles were excluded because they focused on regulatory issues

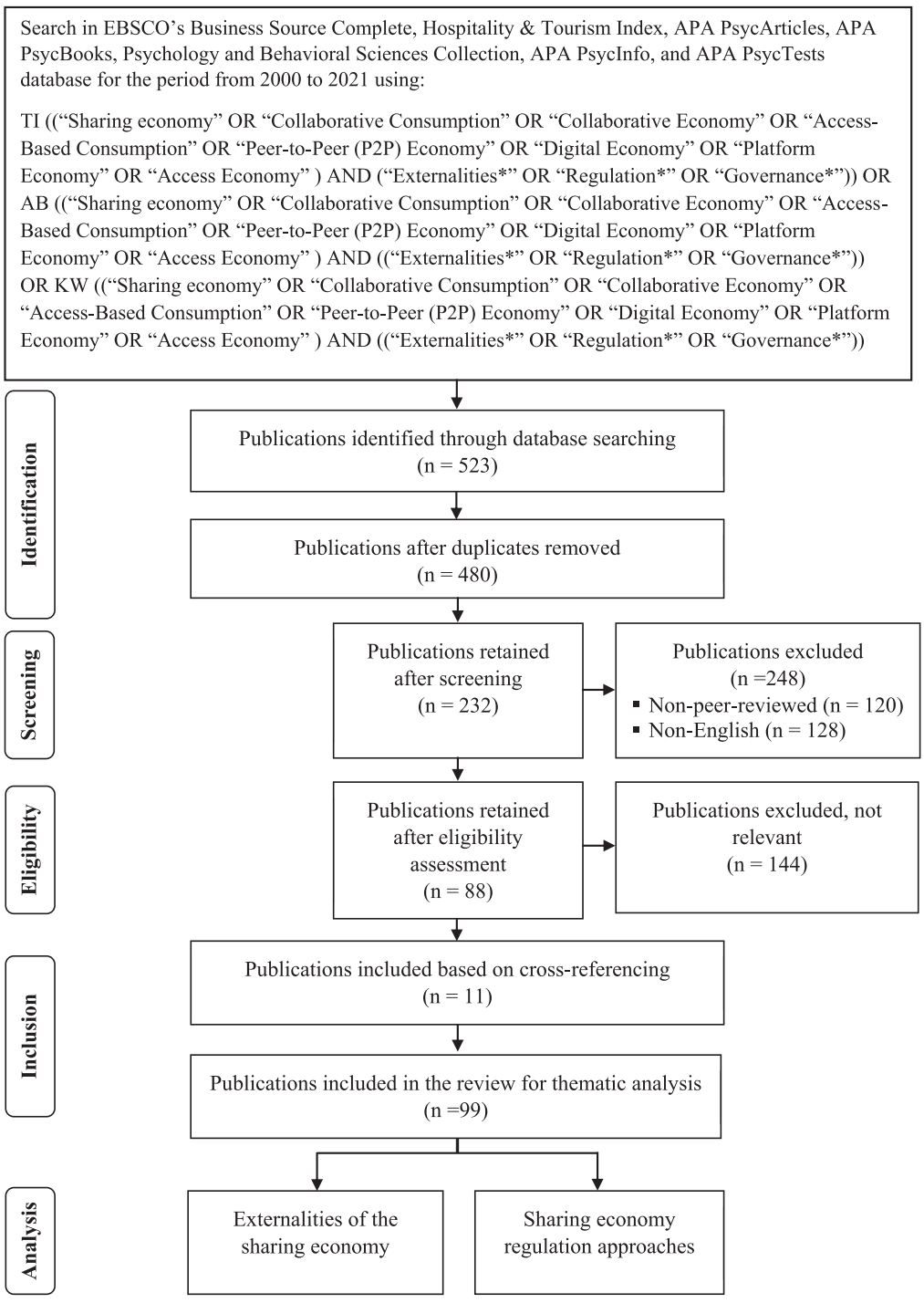

Fig. 1. Review procedure based on the PRISMA protocol.

in E-commerce (e.g., Boscheck, 2011) and/or information technology and only mentioned the SE in passing (e.g., Dhar & Sundararajan, 2007). Other papers were excluded as they focused on the SE, but not on externalities or regulation, and only mentioned either of those terms in passing (e.g., Albergaria & Jabbour, 2020). From the 232 publications left after screening, 144 were excluded for not meeting our eligibility criterion, leaving 88 publications remaining (see Fig. 1, Eligibility).

2.2.4. Phase 4: Inclusion

In the inclusion phase, following common practice (Kranzbühler et al., 2018), a further 11 publications were identified and included through cross-referencing, bringing the final total of eligible publications to 99 (see Fig. 1, Inclusion). Each of the 99 publications was read, and metadata was retrieved, including author(s)' names, publication year, country of study, context, research type, analysis, and key findings (see Web Appendix D for an overview).

2.2.5. Phase 5: Analysis

We employed an inductive analysis approach (e.g., Braun & Clarke, 2006), where the publications were classified thematically (see Web Appendices E & F). In line with the first research question and following Avdimiotis & Poulaki (2019), we extracted and classified the economic,

social, and environmental externalities of the SE against the stakeholders of interest: service providers, customers, incumbents, communities, and the government (see Fig. 2). To address the second research question, we used government regulation and self-regulation (approaches) to classify the identified SE's regulatory mechanisms (e.g., avoiding, limiting or market entry) (see Fig. 3). In response to the third research question, we merged these two literature streams and suggested what mechanisms we believed could mitigate which externality within our regulatory framework (see Table 1).

3. Results

3.1. Externalities of the sharing economy

Our thematic analysis showed that five stakeholders were affected by SE platforms' operations: service providers, customers, incumbents, communities, and the government (Uzunca, Rigtering, & Ozcan, 2018; Benoit et al., 2022). Service providers (e.g., Airbnb hosts) are those actors who allow customers (e.g., Airbnb guests) access to a particular asset (e.g., an Airbnb flat) through SE platforms (e.g., Airbnb) in exchange for monetary compensation (Benoit, Baker, Bolton, Gruber, & Kandampully, 2017). Incumbents refers to traditional service providers (e.g., hotels) that offer comparable services to the SE platforms (Avdimiotis & Poulaki, 2019). We employed the term "communities" to denote the local neighborhoods where SE platforms operate (Benítez-Aurioles, 2021). The government is understood as the entity that governs the city, state, or country in which SE platforms operate (Palgan et al., 2021). It should be noted that our analysis adopted the perspective of the SE platforms (e.g., Uber and Airbnb) in line with Köbis et al. (2021). In the following, we present an overview of the externalities of the activities of the SE platforms, structured around the stakeholders and the three pillars of sustainability (economic, social, and environmental) (see also Fig. 2).

3.1.1. Service provider-related economic externalities

Economic employment disadvantages. SE platforms frequently classify their service providers as independent contractors rather than employees, meaning they do not have access to those benefits normally available to regular employees (Eckhardt et al., 2019). For example, independent contractors do not qualify for a minimum wage (Pepić, 2018), overtime pay (Thorne & Quinn, 2017), a pension (Hossain, 2020), unemployment benefits (Chandra, Bhowmick, Chaabi, & Smith, 2018), paid leave (Quinn, Thorsteinsson & Weaver, 2021), sick pay, maternity leave, training opportunities, or career development (Davies, Donald, Gray, & Knox-Hayes, 2017). The SE's flexible nature also means that service providers usually face job instability (Rahman, 2016), earning uncertainty (Karanović, Berends, & Engel, 2021), and unfavorable working conditions and rewards related to their activities on SE platforms. For example, in ridesharing, drivers work under the pressure of being exposed to incentive-based work schemes, and they are not compensated for any extra labor carried out while not driving, e.g., maintaining their cars or waiting for the next ride (Köbis et al., 2021). Over and above the decision to work or not, service providers often exercise a low level of autonomy in their activities (Edward, 2020; Köbis et al., 2021). One driver commented on one of the ridesharing platforms, saying, "They tell you who to pick up, they tell you when you can't ride for them anymore, and they have complete economic control over you." (Cockayne, 2016, p. 79). Drivers also expressed concern about Uber's ride allocations, stating that Uber was being deceitful by seemingly only offering surge price incentives, which led drivers to circulate unnecessarily (Karanović et al., 2021). For example, an Uber driver reported that "Every time I am out and see a surge somewhere in the vicinity, I make a beeline for it and as soon as I touch the perimeter of the surge zone, it mysteriously vanishes! … No way that is a coincidence." (Karanović et al., 2021, p. 17).

Financial risks. Service providers incur financial risks when engaging in SE operations, which include losing their assets or business. For example, in several cities, the occupancy rate of home-sharing properties was impacted, as reported by a host: "Pre-Covid-19, it was rented 10 out of 30 days … Now, zero." (Hossain, 2021, p. 5). P2P lenders face similar threats, as they are not subject to consumer protection law, which puts them at risk of losing their investment, e.g., due to information asymmetry, compared to the respective borrowers (Macchiavello, 2017).

3.1.2. Service provider-related social externalities

Lack of representation. Treating SE service providers as contractors not only has economic consequences but also impacts their social standing, in comparison to regular employees. Whereas labor unions are founded to safeguard workers' rights and interests, contractors usually do not have the right to form a union (Quinn et al., 2021), thus weakening their bargaining power (Rahman, 2016) and interest representation (Keller, 2020). SE platforms often limit service providers' litigation rights, e.g., Uber requires drivers to sign arbitration contracts, preventing them from bringing class-action lawsuits (Tura & Vaskelainen, 2018).

Bias and discrimination. Service providers also express concern about fake and bias-and discrimination-motivated negative customer reviews, leading to less business and lower prices, e.g., black hosts earn 12% lower nightly rates than non-blacks (Goldkind & McNutt, 2019).

Lack of SE platforms' transparency. Currently, SE platforms hold a dominant position, relative to individual service providers. However, the information asymmetries that arise from the platforms' lack of transparency cause additional externalities for service providers (Edelman & Geradin, 2015; Prayag & Ozanne, 2018). For instance, Uber drivers are encouraged to react to a ride request within 15 s, without knowing the ride's details (e.g., destination) (Helberger, Pierson, & Poell, 2018). Similarly, Airbnb hosts express worries regarding the platform's algorithms, e.g., how guests find houses while booking on Airbnb (Cheng & Foley, 2019).

3.1.3. Customer-related economic externalities

Poor service quality. Some customers in the SE encounter a low level of service quality due to service providers' unprofessionalism and the lack of standardized service delivery. SE service providers are often amateurs (Del Chiappa, Pung, Atzeni, & Sini, 2021) or semi-professionals (Benoit et al., 2017); thus, unprofessionalism is a built-in issue that can lower service quality compared to conventional enterprises (Zuo et al., 2019). Additionally, SE service providers often lack the same professional training that is required for traditional employees or providers (e.g., Uber drivers cf. taxi drivers) (Edelman & Geradin, 2015). Some SE platforms do not set standards on how service providers should carry out their jobs, e.g., in which order TaskRabbit taskers must clean a property (Adams, 2019), thus affecting service quality (Reddick, Zheng, & Liu, 2020).

Poor customer support. Some customers suffer from insufficient service support, mainly related to the SE's decentralized business model. This results in complaints about service providers' undesirable attitudes, lack of responsiveness (Pepić, 2018) or last-minute cancellations (Huang, Coghlan, & Jin, 2020). For example, Airbnb guests need to wait for the hosts' confirmation before finalizing their reservation (Del Chiappa et al., 2021), and some hosts do this more slowly than conventional businesses. Some Airbnb guests reported not wanting to use the platform again because of last-minute cancellations. For instance, one guest reported that a host cancelled a reservation just two hours before the guest's flight (Huang et al., 2020, p. 8).

A lack of service recovery is another issue customers experience because of the SE's decentralized business model. In traditional dyadic business relationships, responsibilities are often clearer, and firms understand that customer satisfaction with service recovery is crucial to preserving strong customer relationships (Kim, So, & Mihalik, 2022). However, in triadic SE relationships, responsibilities and liabilities are

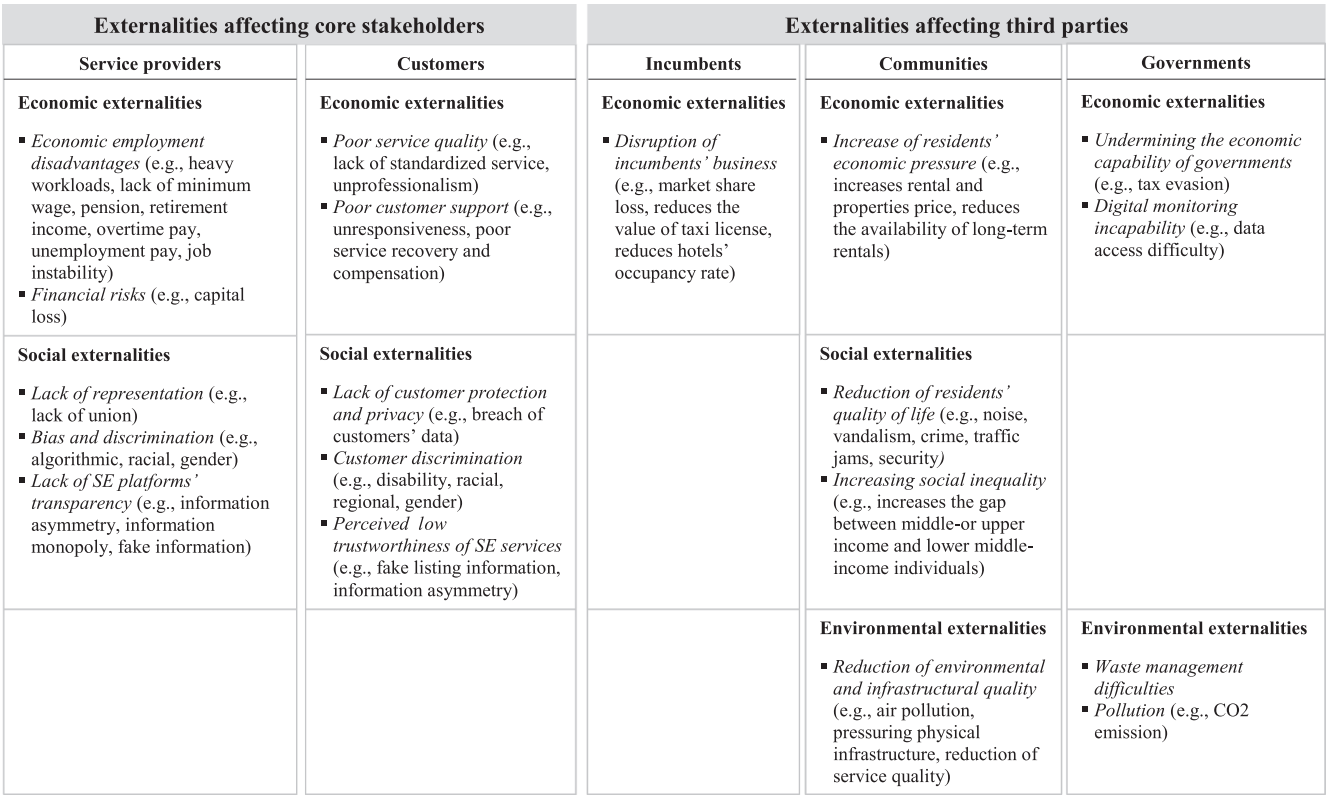

Fig. 2. The externalities of the sharing economy.

less clear (Köbis et al., 2021; Kim et al., 2022). For example, on some SE platforms, such as Airbnb, there is a perception that the platform does not adequately compensate customers who have experienced service failures with hosts (Huang et al., 2020).

3.1.4. Customer-related social externalities

Lack of customer protection and privacy. In the event of a service failure, the SE poses economic *and* social externalities for customers. Researchers and regulators have questioned customer protection in the SE (Querbes, 2018). For instance, it is unclear who should be held accountable if a customer is assaulted by a service provider (Lee et al., 2020). A lack of safety standards also affects customer protection in the SE, because its decentralized business model does not allow SE platforms to ensure the same safety standards as traditional providers (e.g., hotels) (Lee et al., 2020). As an example, food-sharing platforms that connect individuals who want to cook for others may not adhere to the same food safety and hygiene standards as restaurants (Zurek, 2016). Similarly, Airbnb hosts do not need to adhere to licensed hotels' hospitality safety standards (Lee et al., 2020). The SE business model, which relies on collecting data from service providers and customers, also raises concerns about customer privacy (Jin, Kong, Wu, & Sui, 2018). The SE differs from traditional businesses in that service providers may potentially handle customer data, often without awareness of or compliance with the appropriate regulations. Furthermore, SE platforms collect not only telephone numbers, e-mail addresses, and payment card information but also location and temporal data, allowing them to learn about their customers' lifestyles and group affiliations, which raises privacy concerns (Thorne & Quinn, 2017).

Customer discrimination. Some SE customers face discrimination, such as for disability, race, or location, partly because of the SE's lack of standards. In an experimental study, Ameri, Rogers, Schur, & Kruse (2020) examined access for disabled (e.g., blind) guests to Airbnb listings and found that hosts were less inclined to approve them. Racial discrimination is another issue in the SE (Schor, 2016; Chandra et al., 2018). For example, a field experiment in the USA found that guests' booking requests, with African American names, were 16% less likely to be approved by hosts (Edelman, Luca, & Svirsky, 2017). Customers also face location-based discrimination, e.g., TaskRabbit taskers are more likely to decline tasks in low socioeconomic areas, and even if taskers accept, they charge customers more (Goldkind & McNutt, 2019).

Perceived low trustworthiness of SE services. Customers rely on information delivered by SE platforms to make decisions (e.g., star rating, Airbnb hosts' photos, Vinod & Sharma, 2021). Conversely, SE platforms sometimes hide service providers' contact information, to prevent customers from circumventing them by directly contacting providers, and thus potentially losing commissions. This prevents customers from verifying service providers' information (Kaushal, 2017). Furthermore, customers sometimes mistrust SE services more generally, because of misleading information, information asymmetry, and information monopoly. Recent research reported evidence of deceptive service providers' listings, where customers believed that the listings' information, such as photographs, descriptions, reviews, and addresses, were misrepresented (Huang et al., 2020). In 2019, Uber's license in London was terminated after it was discovered that some drivers were using forged IDs (Palgan et al., 2021). Thus, information asymmetry, which includes information being unavailable to customers (Prayag & Ozanne, 2018), is a key problem that undermines the trustworthiness of SE services (Köbis et al., 2021). Service providers usually have more knowledge about their abilities and the condition of their shared assets than the customers (Lee et al., 2020) or platforms do. SE platforms rely mainly on their own review systems to build trust among their customers (Berg, Slettemeås, Kjørstad, & Rosenberg, 2020). However, their monopoly on controlling these systems has triggered doubts about their credibility. Fears existed that SE platforms might prevent authentic feedback from being posted on their websites as it could potentially harm their businesses (Kaushal, 2017).

3.1.5. Incumbent-related economic externalities

Disruption of incumbents' business. SE platforms are often accused of impeding the business of incumbents through unfair competition, as they provide functionally comparable services with fewer restrictions (Zhang, 2019). For example, hotels complain that home-sharing platforms operate in a similar manner to them, but without the same need to comply with taxes, safety, and zoning regulations (Wachsmuth & Weisler, 2018), effectively giving them a competitive advantage. Airbnb's arrival in Texas reduced hotel revenue in Austin by eight to 10%, especially for budget hotels (Zervas, Proserpio, & Byers, 2017). Likewise, ridesharing platforms do not pay the license fees that taxicab firms must pay (Lee et al., 2020), which reduces the value of taxi permits and drivers' wages through low-cost competition (Wang & Smart, 2020; Peetz, 2021).

3.1.6. Community-related economic externalities

Increase of residents' economic pressures. Residents in neighborhoods where SE platforms operate face higher taxes and living costs. For example, Airbnb (which operates in 81,000 cities globally) brings visitors to particular neighborhoods (Avdimiotis & Poulaki, 2019), which in turn puts pressure on the local infrastructure and amenities, sometimes leading governments to raise resident taxes in order to maintain public services (Muschter, Caldicott, von der Heidt, & Che, 2022). Due to the low entrance restrictions and significant potential returns for hosts on home-sharing platforms, the number of long-term (non-SE) rental listings for residents has declined (Avdimiotis & Poulaki, 2019; Lee et al., 2020). For example, Airbnb's arrival in Los Angeles encouraged landlords to switch 60% of their housing units from long-term rentals to short-term sharing (Rahman, 2016). Subsequently, rental and property prices rise, which limits the affordable housing that is available to residents (Shabrina, Arcaute, & Batty, 2022).

3.1.7. Community-related social externalities

Reduction of residents' quality of life. The growth of SE platforms has disrupted neighborhoods' social life in several ways; including increased traffic, gentrification, noise, pollution, and crime. SE platforms have been blamed for an increased influx of people, causing, e.g., traffic jams in the cities where they operate (Köbis et al., 2021). In NYC, Uber vehicles slowed traffic by 7.7%. Between 2013 and 2015, and the number of private cars being used for ridesharing in London climbed by 25% (Zale, 2016). In Manila in the Philippines, entrepreneurs bought small fleets of new vehicles and recruited drivers for ridesharing, adding 10,000–15,000 more vehicles to the city's traffic (Zale, 2016).

Another issue that SE platforms bring to communities is changed neighborhood lifestyles (Muschter et al., 2022). Airbnb and similar home-sharing platforms have been criticized for driving the gentrification of historic urban centers, to accommodate rising tourist demand (Benítez-Aurioles, 2021), which subsequently changes the character of those neighborhoods (Ranchordás & Goanta, 2020). SE platforms have also eroded the distinction between residential and commercial use, circumventing and challenging current zoning regulations (Biber, Light, Ruhl, & Salzman, 2017; Lee et al., 2020). Furthermore, residents frequently complain about how the increased visitor numbers impact their lives through noise and disturbances (Ferreri & Sanyal, 2018), increased foot traffic (Benítez-Aurioles, 2021), decreased service and space quality (Zale, 2016), non-civic conduct (Uzunca et al., 2018), vandalism (Major, 2016), and an increased crime rate (Murphy, 2016). For example, in Manhattan, Airbnb listings have been misused as illegal temporary brothels by customers (i.e., guests) (Murphy, 2016). This deviant customer behavior (Fombelle et al., 2020) is contagious and likely to spread within communities (Schaefers, Wittkowski, Benoit, & Ferraro, 2016), exacerbating the negative effects on residents.

Increasing social inequality. The SE also fosters social inequalities among community members (Rahman, 2016; Davies et al., 2017; Thorne & Quinn, 2017). First, because of the need for asset ownership and technical abilities, service providers in the SE are often middle- or upper-income, well-educated individuals, who are profiting from additional sources of income, which widens the economic and social gap between them and lower-income or jobless individuals (Davies et al., 2017; Wachsmuth & Weisler, 2018). For example, if highly educated individuals accept flexible occupations in the SE that require only a medium level of education, medium-educated workers may be forced to accept occupations requiring little or no education, leaving fewer jobs for low-educated workers (Davies et al., 2017). Second, compared to traditional employees, service providers in the SE, particularly those with lower incomes or the unemployed, are more likely to accept the unfavorable terms of the SE (e.g., lack of benefits) (Rahman, 2016), which raises the gap between them and traditional employees.

3.1.8. Community-related environmental externalities

Reduction of environmental and infrastructure quality. SE platforms have been criticized for aggravating ecological harm in the places where they operate. For instance, instead of reducing new private car ownership, in line with the initial idea of sharing, ridesharing platforms have encouraged some individuals to buy new cars so that they can join those platforms, which increases air pollution and CO2 and greenhouse gas emissions (Wang & Yang, 2019). Bike-sharing platforms have also been blamed for increasing pollution; for example, 78 damaged bikes, used for bike-sharing, were pulled out of the Yarra River in Australia in 2018 (Chambers, 2020).

3.1.9. Government-related economic externalities

Undermining the economic capability of governments. The arrival of SE platforms in cities has increased the pressure on infrastructure and public utilities (Muschter et al., 2022). This not only affects neighborhoods but also governments, since they require more funding for maintenance. For example, Uber drivers use roadways and parking lots, and Airbnb guests use public transport, parks, and other public amenities (Zale, 2016). However, some SE actors avoid taxation by taking advantage of legal loopholes and incomplete taxation regimes (Pepić, 2018; Avdimiotis & Poulaki, 2019), thus depriving governments and local authorities of their due revenue (Connolly, 2021). The New York Attorney General estimated that the city should have received more than $33 million in hotel room occupancy taxes from Airbnb between 2010 and 2014 (Wachsmuth & Weisler, 2018). However, due to the anonymity Airbnb gives service providers, hosts may not have paid the required taxes (Wachsmuth & Weisler, 2018).

Digital monitoring incapability. Governments face challenges in monitoring and enforcing regulations when dealing with the SE (Ranchordás & Goanta, 2020). For example, governments must obtain service providers' contact information in order to collect taxes. However, because service providers operate as independent contractors, SE platforms, such as Uber, are currently not obliged to share drivers' identities and addresses with regulators. This limits the regulators' ability to enforce legislation (Edelman & Geradin, 2015).

3.1.10. Government-related environmental externalities

Waste management difficulties. The expanding activities of SE platforms in cities have exacerbated municipalities' waste management challenges (Muschter et al., 2022). For example, shifting properties from long-term rentals to short-term (sharing) places a 21% greater strain on waste management in urban areas (Avdimiotis & Poulaki, 2019).

Pollution. The pollution caused by the growth of the SE is yet another challenge for governments. There is a need to address the air pollution generated by the growing proliferation of ridesharing vehicles (Köbis et al., 2021). In another example of pollution, the Australian government was forced to respond to water contamination, caused by people dumping damaged bikes from bike-sharing platforms in rivers (Chambers, 2020).

3.2. Sharing economy regulation approaches and mechanisms

Having identified the economic, social, and environmental externalities and the affected key stakeholders (Research Question One), we will now review the regulatory approaches and mechanisms (Research Question Two). We differentiate two regulatory approaches to the SE: government regulation, which includes mechanisms established and used by the (local or state) governments (Miller, 2016); and self-regulation, which refers to those mechanisms, designed and enforced by SE platforms (Cohen & Sundararajan, 2015).

Based on our thematic analysis, we classified three government mechanisms: (1) avoiding, (2) limiting, and (3) guiding. In addition, we classified the self-regulation mechanisms into (4) market entry, (5) operation, and (6) monitoring (see Fig. 3).

3.2.1. Government regulation: Avoiding

Avoiding is a regulatory mechanism governments use, which *fully* or *partly* bans the operations of SE platforms. For example, Berlin, Brussels, and the Northern Territory of Australia have fully banned Uber, to address the conflict with taxi companies (Murphy, 2016; Tham, 2016). In other cities, SE platforms are partly banned, e.g., in Chicago, Uber drivers' access to the airport is restricted (Blevins, 2017).

3.2.2. Government regulation: Limiting

Limiting refers to the regulatory mechanisms that governments employ to *cap* the operations of SE platforms (Avdimiotis & Poulaki, 2019; Nieuwland & Van Melik, 2020; Chen et al., 2021). For instance, in home-sharing, some governments limit the number of yearly rental nights, to ensure that homes are only used for short-term sharing occasionally (Chen et al., 2021). As an example, landlords in Paris may only rent out their homes, as short-term sharing, for 120 days per year, and Japan permits 180 nights per year (Vinogradov, Leick, & Kivedal, 2020).

3.2.3. Government regulation: Guiding

Guiding refers to the regulatory mechanisms governments use to direct the operations of the SE (Guttentag, 2015). The difference between limiting and guiding is that the former restricts the number of SE services (quantity), while the latter directs SE's operations (quality). We classified guiding mechanisms depending on which actor was expected to adhere to them: SE platforms, service providers, and customers (see Fig. 3).

3.2.3.1. Government mechanisms guiding sharing economy platforms.

Based on our SLR, we identified six regulatory mechanisms that guide SE platforms: (1) data matching and sharing, (2) employee (portable) benefits, (3) simplification of compliance, (4) deactivation policy, (5) service provider association, and (6) disclosure-based regimes.

Data matching and sharing is a regulatory mechanism that governments use to oblige SE platforms to share information about their service providers' earnings (Williams & Horodnic, 2017). This allows governments to compare service providers' earnings with their self-assessment tax returns (Williams & Horodnic, 2017).

Employee (portable) benefits refers to the regulatory mechanism governments use to compel SE platforms to offer their service providers some social security, comparable to traditional employees. This can be operationalized by offering security accounts, including overtime pay, health insurance, paid sick leave, pensions, and social security (Rahman, 2016). These benefits would need to be portable, to grant contractors flexibility, which means that they are connected to the service providers, regardless of the "employer"; i.e., the SE platform (Quinn et al., 2021). Each platform pays into the service provider's owned account on a prorated basis. These payments can be transferred, i.e., ported from one platform to another (Rahman, 2016).

Simplification of compliance is a regulatory mechanism that governments use to entrust SE platforms with the responsibility of enforcing legislation (Williams & Horodnic, 2017). For example, Airbnb has agreed with several governments to collect taxes on their behalf, e.g.,

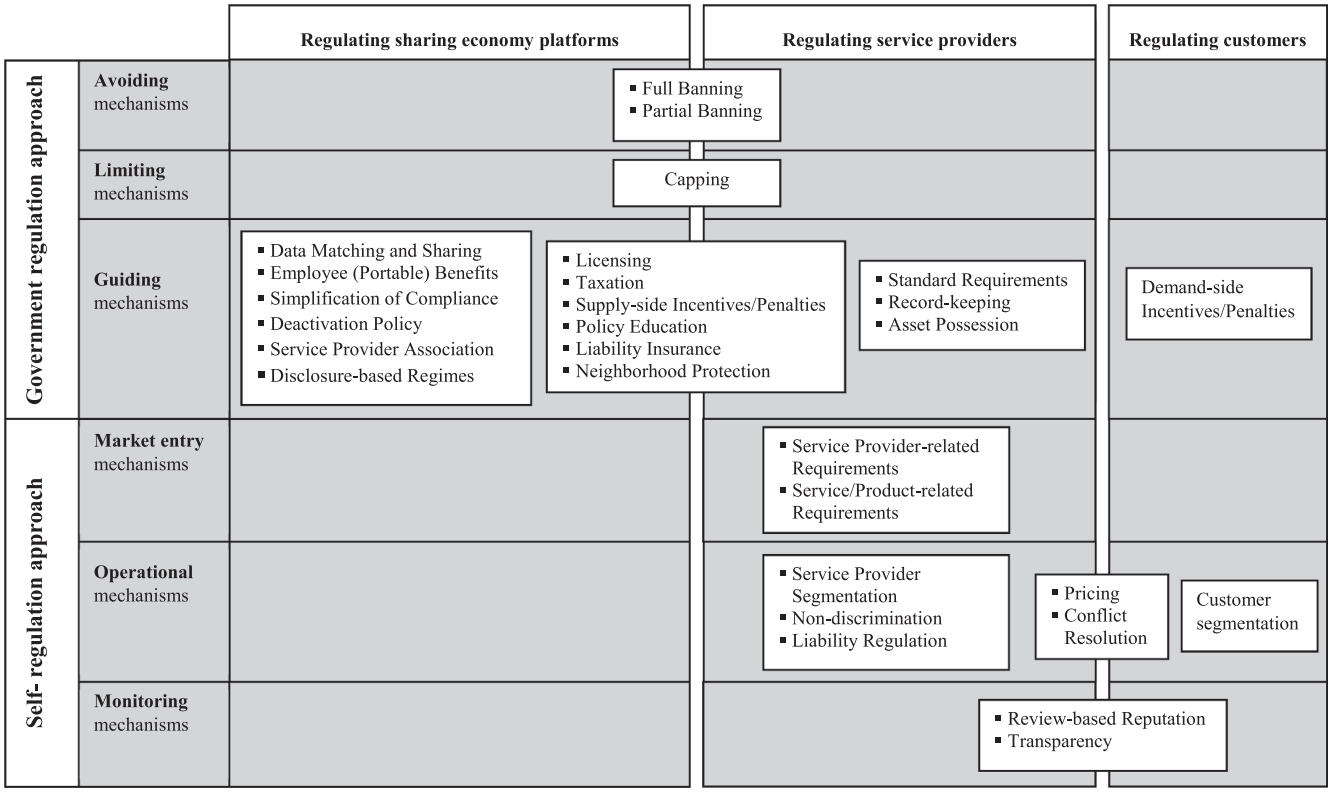

Fig. 3. Government and self-regulation approach and their mechanisms.

14% of transitory occupancy taxes in San Francisco (Miller, 2016).

Deactivation policy is a government mechanism that requires SE platforms to provide a justified and transparent deactivation process (removing a service provider from the platform) and a way for them to appeal (Lobel, 2016). For example, governments could ask SE platforms to clarify their rules and to notify service providers before deactivating their accounts after poor performance, as well as to create an independent entity that deals with possible appeals.

Governments could request that SE platforms establish or allow a *service provider association,* thus offering service providers some representation, in a similar function to employee unions (Lobel, 2016). For example, this would allow ridesharing providers to establish an entity and elect a speaker to represent them in negotiations with ridesharing platforms concerning working-related issues, such as benefits.

Governments also operate *disclosure-based regimes* to force SE platforms to meet certain standards of information and communication (Langley, 2016). For instance, P2P lending platforms in the UK must submit periodic financial reports to the Financial Conduct Authority, must develop regulations for service provider-customer disputes, and must keep an amount of regulatory capital as a buffer against any disruption caused by an unexpected drop in assets' value (Langley, 2016).

3.2.3.2. Government mechanisms guiding service providers. We identified three regulatory mechanisms for guiding service providers: (1) standard requirements, (2) record-keeping, and (3) asset possession.

When governments introduce *standard requirements*, they require service providers to meet certain operational criteria (Jiang & Zhang, 2019). For example, Uber drivers in Shanghai must have at least three years of driving experience and no more than five traffic violations or license revocations in the five years before they apply to Uber (Zhang, 2019).

Record-keeping refers to governments' requiring service providers to keep track of customers' details, such as names, contacts, and usage dates (Chen et al., 2021). Some governments require home-sharing providers (e.g., hosts) to maintain books and records of their guests for at least three years (Chen et al., 2021).

Asset possession is a regulatory mechanism that requires service providers to have owned or occupied the asset for a certain number of months/years, at least, before sharing it. As an example, in some cities, a host must have owned a property for at least five years before listing it for home-sharing (Chen et al., 2021).

3.2.3.3. Government mechanisms guiding sharing economy platforms & service providers. We identified six government mechanisms for guiding SE platforms and service providers: (1) licensing, (2) taxation, (3) supply-side incentives/ penalties, (4) policy education, (5) liability insurance, and (6) neighborhood protection.

Governments use *licensing,* which requests SE platforms and their service providers to obtain legal permission to operate (Chen et al., 2021). For instance, in Santa Monica, Airbnb hosts must register for a license (Hong & Lee, 2018).

Taxation denotes the regulatory mechanism governments use that requires SE platforms and their service providers to make similar financial contributions to incumbents (Chen et al., 2021). For example, some governments require Airbnb to collect transient occupancy tax from hosts (Zale, 2016).

Governments also employ *supply-side incentives/penalties* to reward SE platforms and their service providers for operating legally, and penalize them when they operate illegally (Williams & Horodnic, 2017). For example, in the UK, home-sharing providers can legally earn up to £7,500 per year, tax-free, by renting out a spare room (Williams & Horodnic, 2017) while at the same time, the government penalizes those operating illegally.

Governments also offer *policy education* on the importance of regulatory compliance, to upskill SE platforms and service providers (Williams & Horodnic, 2017). For example, during tax season in Ontario, Canada, the government collaborates with Airbnb to educate hosts about their responsibilities to comply with tax regulations (Williams & Horodnic, 2017).

The regulatory mechanism governments use to compel SE platforms and their service providers to cover themselves against the risk of being accountable for any cost of harm they might cause is referred to as *liability insurance* (Mosberg, 1986; Edelman & Geradin, 2015). In San Francisco, Airbnb offers its hosts $1 million of liability insurance to cover third-party bodily injury or property damage (Lobel, 2016).

Neighborhood protection refers to the government regulatory mechanism that requires SE platforms and service providers to follow the social norms within the local community regulations (Miller, 2016). For example, in some cities, the government requires that home-sharing contracts contain a copy of the local ordinances on noise, trash, and parking (Chen et al., 2021).

3.2.3.4. Government mechanisms guiding customers. Demand-side incentives/ penalties is a mechanism that rewards or penalizes customers depending on whether they adhere to or violate regulations (Williams and Horodnic 2017). For instance, in some cities, home-sharing guests are exempted from tourist tax when they disclose SE platform purchases (e.g., renting a room via Airbnb) (Williams & Horodnic, 2017).

3.2.4. Self-regulation: Market entry mechanisms

Market entry mechanisms are regulatory instruments SE platforms employ that require service providers and their products/services to meet certain operating standards on their platforms. For instance, Uber UK requests its drivers to obtain a private hire license from the council with which Uber is licensed, to be at least 21 years old, and to provide private hire insurance, a bank statement, and a driver's profile photo. In London, vehicles must be from 2011 or newer; and elsewhere in the UK, vehicles must be from 2006 or newer. They must also be four-door vehicles in good condition (Uber, 2022). Airbnb requests its host to create a profile, which includes name, age, country of residence, valid email address, phone number, and scan of government-issued ID (Leoni & Parker, 2019).

3.2.5. Self-regulation: Operational mechanisms

The regulatory mechanisms that SE platforms design and use to structure their platforms' activities and to govern the interaction between service providers and customers are referred to as *operational mechanisms*. In our thematic analysis, we identified six operational self-regulation mechanisms: (1) service provider segmentation, (2) non-discrimination, (3) liability regulation, (4) customer segmentation, (5) pricing, and (6) conflict resolution. Some mostly regulate service providers (1–3), one mostly regulates customers (4), and the others regulate service provider-customer interaction (5–6) (see Fig. 3).

3.2.5.1. Operational mechanisms regulating service providers. Service provider segmentation is a mechanism to regulate the supply side, where SE platforms group and reward their service providers, usually based on their performance or experience. For example, "Uber Pro" is a reward mechanism that offers incentives to drivers who have completed a certain number of trips, maintained a customer rating of 4.86 or above, and had a cancellation rate of less than 4% (Quinn et al., 2021). Similarly, Airbnb awards "Superhost" badges to hosts who have at least ten bookings per year, a 90% response rate, no cancellations, and 80% 5-star ratings (Liang, Schuckert, Law, & Chen, 2017).

SE platforms also employ *non-discrimination* policies to ensure service providers do not engage in discriminatory behavior toward customers. For example, Uber offers the "Uber Assist" service to its disabled customers to reduce drivers' discrimination against them (Lobel, 2016).

SE platforms *regulate liability* to protect service providers against the

risk of being held accountable for the cost of accidents occurring during service delivery (Mosberg, 1986) and to cover any damage inflicted on their assets (Miller, 2016). For instance, in 2011, Airbnb launched its $50,000 "host guarantee" against guests' vandalism of their assets, after a vandalism incident in San Francisco. Later, coverage was increased to $1,000,000 (Lobel, 2016).

3.2.5.2. Operational mechanisms regulating customers. Similar to the segmentation of service providers, SE platforms classify (and sometimes reward) their customers depending on their behavior. This is referred to as *customer segmentation* (Wang & Yang, 2019). To enhance the customer experience, SE platforms employ reward and loyalty mechanisms (Wang & Yang, 2019). For example, under "Uber Rewards," riders (i.e., customers) can gain points for their Uber rides, leading to various achievement and benefit levels, which can be "spent" on Uber Eats (Pokora & Lupini, 2020).

3.2.5.3. Operational mechanisms regulating service provider-customer interaction. To balance out supply and demand and to reduce bottlenecks or unavailability, SE platforms employ *pricing* mechanisms, particularly dynamic pricing (Eckhardt et al., 2019). Dynamic pricing is underpinned by the platforms' back-end algorithms (Wei, 2019) and considers location-based real-time demand (Chen & Sheldon, 2016). An example is Uber's surge pricing, where prices for customers rise to a multiple of the normal price at moments of peak demand (e.g., rush hours or holiday times, Cartwright, 2021). This translates into higher incomes for drivers and is intended to incentivize them to work (Lobel, 2016). Similarly, Airbnb uses smart pricing to modify nightly rates based on real-time demand (Leoni & Parker, 2019).

When incidents occur, SE platforms not only regulate liability, but some offer *conflict resolution* mechanisms to address any disputes between service providers and customers (Leoni & Parker, 2019). For instance, Airbnb established its "resolution center," which allows hosts to post monetary claims for repayment or damages, which are then communicated to the responsible guest or handled directly by Airbnb (Leoni & Parker, 2019).

3.2.6. Self-regulation: Monitoring mechanisms

Over and above market entry and operational mechanisms, SE platforms use *monitoring mechanisms* to self-regulate. These regulatory tools control and audit service providers and customers' platform-based activities, permitting undesired behavior to be detected and corrected (Leoni & Parker, 2019). Our literature analysis showed that SE platforms use two monitoring mechanisms: (1) review-based reputation and (2) transparency.

Review-based reputation allows customers to rate service providers or service providers and customers to rate each other (Spitko, 2019). Potential customers use this rating as a quality indicator to decide which service provider to consider (Proserpio & Tellis, 2017). This mechanism, based on "crowd control," enables SE platforms to maintain quality control, earn customer trust, and determine service providers' reward schemes without employees needing to monitor the platforms' enormous number of service providers (Spitko, 2019).

Transparency mechanisms enable SE platforms to build customer trust in their platforms as well as encourage confidence between customers and service providers (Andreou, Venkatadri, Goga, Gummadi, Loiseau, & Mislove, 2018). For example, the "vehicle track system" is a built-in transparency mechanism within Uber's app, which enables passengers to track and share their trips in real-time (Caldwell et al., 2020).

4. Discussion

In our overview of SE externalities and regulatory mitigation mechanisms, we structured externalities according to the affected stakeholder (service providers, customers, incumbents, communities, and the government) and the pillars of sustainability (economic, social, and environmental). We classified regulatory mechanisms depending on the approach/body that designed and enforced them (government and self-regulation) and, within these two approaches, on the actor they were directed towards (i.e., directed toward SE platforms, service providers, or customers). This structuring paved the way for us to propose an externalities-based regulatory framework, which integrates the externalities with the regulatory mechanisms. As a response to the third research question, we now identify which regulatory approach (government and/or self-regulation) and mechanisms are best suited to addressing the identified externalities (see Table 1).

4.1. Addressing sharing economy externalities through regulation

4.1.1. Addressing service provider-related externalities through regulation

As elaborated above, the service provider-related economic externalities consist of *economic employment disadvantages* and *financial risks*, whereas the social externalities consist *of lack of representation*, *bias and discrimination*, and *lack of SE platforms' transparency*.

One primary reason for service providers' *economic employment disadvantages* is their classification as independent contractors (Eckhardt et al., 2019). Governments could challenge this classification, as has been done by Transport for London in the case of Uber, and/or impose regulations for long-term contractors similar to those that exist for employees (Butler, 2021). Governments could also impose so-called *employee (portable) benefits* to strengthen service providers' positions as contractors. These ensure the establishment and continuance of benefits for service providers, who switch between platforms, thus reducing dependency on a particular SE platform (Quinn et al., 2021). For example, in Forbes, Ferenstein (2019) reported that Thumbtack, a job platform startup, partnered with the nonprofit National Domestic Workers Alliance, to test the employee portable benefits system.

To further address service providers' economic employment disadvantages by self-regulation, SE platforms could employ *pricing* (e.g., dynamic pricing) and *service provider segmentation* mechanisms. Dynamic pricing helps service providers determine the most profitable transactions, based on real-time demand (Chen & Sheldon, 2016), and could mitigate system inefficiencies, e.g., in ridesharing where idle drivers are paired with far-away passengers (Wang & Yang, 2019). Service provider segmentation recognizes variation in performance and offers more qualified service providers monetary and moral rewards. For example, under "Uber Pro," qualified drivers can earn up to 6% more on time and distance charges, 5% payback on gas, 25% off vehicle maintenance, free roadside assistance, and 100% tuition cover, through their online education arrangement with Arizona State University (Quinn et al., 2021).

Service providers bear the *financial risk* of any destruction or loss of their assets (Macchiavello, 2017). This risk could be mitigated, predominantly by governments through *disclosure-based regimes,* and *liability regulation* usually imposed by SE platforms. Disclosure reduces information asymmetry and helps service providers determine which SE platforms they prefer to join, based on the information provided under this regime (Langley, 2016). Liability regulation, such as Airbnb's host guarantee, compensates service providers if their assets are damaged (Lobel, 2016).

Service providers *lack representation* (e.g., through a labor union) because of their classification as contractors (Quinn et al., 2021). Governments wishing to address this could require SE platforms to allow their service providers to establish a *service provider association.* This association could be a starting point toward enhancing providers' representation and bargaining power, thus improving their social security.

To avoid customers engaging in *discriminatory* behavior toward service providers, SE platforms could establish a mechanism that alleviates said discrimination, like the anti-discrimination mechanism against customers to which service providers are obliged to comply.

Table 1
The Externalities-based regulatory framework.

Externalities			Government Regulation Mechanisms	Self-Regulation Mechanisms
Service Provider-related Externalities	Economic	Economic employment disadvantages	Employee (Portable) Benefits	Pricing Service Provider Segmentation
		Financial risks	Disclosure-based Regimes	Liability Regulation
	Social	Lack of representation	Service Provider Association	–
		Bias and discrimination	–	–
		Lack of SE platforms' transparency	Deactivation Policy	–
Customer-related Externalities	Economic	Poor service quality	Licensing Standards Requirements	Service Provider Segmentation Review-based Reputation
		Poor customer support	–	Conflict Resolution
	Social	Lack of customer protection and privacy	Licensing Standards Requirements Liability Insurance	Market Entry Transparency Liability Regulation
		Customer discrimination	–	Non-discrimination
		Perceived low trustworthiness of SE	–	Transparency
Incumbent-related Externalities	Economic	Disruption of incumbents' business due to unfair competition	Capping Licensing Taxation Standards Requirements	–
Community-related Externalities	Economic	Increase in residents' economic pressure	Capping Taxation	–
	Social	Reduction of residents' quality of life	Capping Neighborhood Protection	–
		Increasing social inequality	Standards Requirements	Market Entry
	Environmental	Reduction of environmental and infrastructural quality	Capping	–
Government-related Externalities	Economic	Undermining the economic capability of governments (e.g., tax evasion)	Taxation Supply-side Incentive/Penalty Policy Education Simplification of Compliance Disclosure-based Regimes Record-keeping	–
		Digital monitoring's incapability	Data Matching and Sharing	–
	Environmental	Waste management difficulties	Neighborhood Protection Capping	–
		Pollution (e.g., CO2 emission)	Capping	–

The *lack of SE platforms' transparency* is another issue that service providers encounter because of information asymmetry. A *deactivation policy,* which clearly defines the conditions under which providers can be removed from a platform, would improve SE platforms' transparency, thus reducing information asymmetry, and strengthening the position of service providers (Lobel, 2016). For instance, Uber in California must notify drivers twice, before deactivating their accounts because of their low acceptance rate (Karanović et al., 2021).

4.1.2. Addressing customer-related externalities through regulation

Customer-related economic externalities consist of *poor service quality* and *poor customer support*, whereas social externalities consist of a *lack of customer protection and privacy*, *customer discrimination*, and a *perceived low trustworthiness of SE services*.

Poor service quality is systemic and usually related to amateur or semi-professional service providers (Wang & Yang, 2019; Zuo et al., 2019). Several mechanisms could address this externality. *Licensing* could be a useful mechanism for ensuring a level of professionalism for service providers in the set-up phase. For instance, requiring a license for ridesharing drivers stimulates the participation of professional and experienced taxi drivers (Pepić, 2018). Once the service providers are operating, they could then be *segmented* according to their performance (e.g., Uber Pro, Airbnb Superhost). *Review-based reputation* mechanisms could also be implemented to give service providers feedback on how customers perceive their service quality, which enables providers to pinpoint the causes of their poor service quality (Querbes, 2018). Both mechanisms motivate service providers to improve their performance, so they may achieve higher ratings and segments, manage customer expectations, and reduce uncertainty (Doménech-Pascual, 2016; Leoni & Parker, 2019). Often, poor service quality can stem from SE platforms' operating outside the legal regulations that incumbents must adhere to, e.g., hygiene standards (Luo et al., 2021). Governments that aim to address this, could require service providers to adhere to the same or adapted *standard requirements* as incumbents, in order to ensure the service providers are qualified to provide customers with safe and high-quality services.

Poor customer support also often stems from ambiguous regulations and responsibilities (platform versus service providers), in the event of disruption or service failure (Köbis et al., 2021). *Conflict resolution* mechanisms, such as that operated by Airbnb, could help reduce this externality by establishing explicit criteria for service recovery and compensation in the event of a service failure or customer misbehavior.

Customer protection and privacy are major social externalities of the SE, and arise because of the lack of clear liability standards (Lee et al., 2020), safety standards (Zurek, 2016), and clear data protection regulations (Thorne and Quinn, 2017). Regulating access to the SE through *licensing* (government regulation) and *market entry* mechanisms (self-regulation) could improve customer protection. Licensing enables

governments to track and, potentially, remove fraudulent or disruptive service providers in the event of a customer protection breach (Miller, 2016). Market entry mechanisms that are enforced by SE platforms could play a significant role in protecting customers, by regulating access to the market. SE platforms that wish to address this issue, could establish entry requirements to ensure service providers meet minimum standards for providing a secure service.

Both governments and SE platforms could also employ mechanisms to enhance customer protection, once service providers were in operation. Governments could impose *standard requirements* to assure service providers satisfy the minimum operating requirements (Jiang & Zhang, 2019), thus ensuring customer safety during service delivery. Governments could also require SE platforms and service providers to obtain *liability insurance* to protect customers against harm (Edelman & Geradin, 2015). For example, in Colorado, Uber drivers must hold up to $1 million of liability insurance, from the time a request is approved until the passenger leaves the vehicle (Lobel, 2016). As concerns self-regulation, *transparency* mechanisms, such as a vehicle tracking system, could increase customer protection in interactions between strangers that involve asymmetric information (Wang, Ma, & Wang, 2021). Additionally, *liability regulation,* offered by SE platforms, could provide further protection to customers. As an example, Airbnb holds $1,000,000 of "host protection insurance," to cover costs in case any customer injury or property damage claims are filed by third parties, e.g., neighbors against the host (Timmons, 2021).

Customers experience *discrimination* while participating in SE activities (Köbis et al., 2021). *Non-discrimination* mechanisms, such as the Airbnb policy (Ameri et al., 2020), are designed to mitigate this. If hosts do not comply with their anti-discrimination policy, Airbnb reserves the right to suspend them from the platform (Leoni and Parker, 2019).

Perceived low trustworthiness of SE services, caused by platforms and service providers' misleading information, information asymmetry, and information monopoly, was identified as an externality. Beyond enhancing customers' protection, as mentioned above, SE platforms that wish to address low trustworthiness could employ *transparency* mechanisms (Andreou et al., 2018). One example of these mechanisms is Airbnb's identity verification, which requires hosts to authenticate their identities before listing their properties (Leoni & Parker, 2019).

4.1.3. Addressing incumbent-related externalities through regulation

Incumbent-related economic externalities arise because SE platforms avoid existing regulations, which gives them an unfair competitive advantage (Peetz, 2021). We propose that *capping* could limit the supply of SE services, offering incumbents a more level playing field. Chen et al. (2021) found that capping reduces some hosts' intention to list new properties and/or drives others to remove their listings from the home-sharing market, thus allowing the incumbents (e.g., hotels) to compete better. If governments imposed *licensing*, *taxation*, and *standard requirements* on SE activities, this could also increase competitive fairness (Posen, 2015). Some governments have begun taxing SE platforms and service providers, to align them with incumbents. For example, Portland, Oregon, compels the hosts of short-term sharing to pay taxes (Miller, 2016). Similar to the capping mechanism mentioned above, such taxes discourage new hosts from entering the home-sharing market (Chen et al., 2021), which permits existing hotels to compete more effectively.

4.1.4. Addressing community-related externalities through regulation

The SE affects the community economically, socially, and environmentally. Economically, it *increases residents' economic pressure* by raising rental prices (Shabrina et al., 2022) and taxes for residents (Muschter et al., 2022). Governments could use *capping* to reduce this economic burden on local residents. For example, the London Council has capped short-term rentals, to up to 90 nights per year, in order to address the shortages of affordable long-term housing caused by home-sharing platforms (e.g., Airbnb), (Shabrina et al., 2022). The City of Amsterdam also set an initial maximum of 60 days each year, which was later decreased to 30 days, in 2019 (Palgan et al., 2021). Enforcing *taxation* on the SE might also reduce the additional tax burden on residents, levied to maintain an infrastructure that is affected by the extensive activities of the SE. As stated above, Chen et al. (2021) found that capping and taxing reduced the number of hosts offering home-sharing listings. We expect that, when listings are withdrawn or not even offered on home-sharing platforms, they will become available for long-term rentals, which will increase supply and, eventually, decrease rents.

Socially, the SE *reduces neighborhood residents' quality of life*, e.g., traffic, gentrification, noise and disturbances, and crime. These externalities could be mitigated by *capping* and *neighborhood protection* mechanisms. For example, to alleviate the disturbance that Airbnb and its guests caused in neighborhoods (e.g., noise or traffic jams) and to preserve the city's authentic character, the City of Amsterdam reached an agreement with Airbnb to limit guests to four at a time as well as the number of days per year per accommodation (Uzunca & Borlenghi, 2019). Neighborhood protection could encourage SE platforms and service providers to adhere to "good neighbor" standards, thus ensuring calm evening hours, coordinating street parking, managing waste (Miller, 2016), and providing a hotline for neighbors to report non-emergency complaints (e.g., noise) (Chen et al., 2021).

Increasing social inequality between community members is another social externality of the SE, which arises because service providers within the SE are often middle- or upper-income, well-educated individuals with additional sources of income beyond the SE (Davies et al., 2017; Thorne & Quinn, 2017). Governments that wish to alleviate this issue could consider employing *standard requirements,* while SE platforms implement *market entry* mechanism by, e.g., prioritizing the market entry of service providers without alternative sources of income.

Environmentally, the SE *reduces the conditions and infrastructural quality* in communities through the extensive activities of service providers and customers within those neighborhoods, e.g., pressuring facilities and air pollution (Wang & Yang, 2019). From among the identified mechanisms, *capping* could be the most suitable option for reducing such externalities, as it limits the SE's activities.

4.1.5. Addressing government-related externalities through regulation

The SE affects governments in several ways. Economically, it *undermines governments' capability* to finance public projects and maintain facilities, by avoiding tax regulations (Thorne & Quinn, 2017). We propose several regulatory mechanisms to address this.

First, *taxing* SE platforms offers governments a revenue stream that could be used to finance public projects. For example, in 2015, Airbnb paid the City of San Francisco $25 million in delinquent hotel taxes (Lobel, 2016) and is expected to pay an annual temporary occupancy tax of $11 million (Miller, 2016). Second, *supply-side incentives/ penalties* could encourage SE platforms and service providers to reveal their activities, thus enabling governments to keep a better track of taxable income (Williams & Horodnic, 2017). Third, *policy education* could enhance compliance, by informing SE platforms and service providers about the consequences of non-compliance as well as taxes' general importance in ensuring the quality of public services and facilities (Williams & Horodnic, 2017). Fourth, some governments already *simplify and enforce compliance* by shifting the tax obligation or duty of collection from the service providers to the SE platforms. For example, in NYC, Airbnb has promised to pay $65 million in hotel and tourist taxes on behalf of its hosts (Lobel, 2016). Finally, *disclosure-based regimes and record-keeping* could also increase government tax revenue and reduce economic externalities. They allow governments to track the financial position of SE platforms and service providers' taxable income.

Governments also encounter *difficulties enforcing and monitoring regulations* in the SE because of a lack of data (Edelman & Geradin, 2015). *Data matching and sharing* mechanisms could address this issue by providing governments with the required relevant data.

Environmentally, governments are confronted with *waste management difficulties* and *pollution* caused by the increasing activities of SE in cities (Chambers, 2020; Muschter et al., 2022). *Neighborhood protection* and *capping* could alleviate the waste management problem, and *capping* could reduce pollution by limiting the activities of SE platforms.

4.2. Theoretical contribution

Our externalities-based regulatory framework contributes to the literature in three main ways. First, prior work has largely focused on a specific sector (e.g., home-sharing, Chen et al., 2021), a specific regulatory approach (e.g., government regulation, Williams & Horodnic, 2017), or a specific stakeholder (e.g., incumbents, Ginindza & Tichaawa, 2019). Our framework provides an overview of the externalities of the SE across sectors (e.g., ridesharing, home-sharing), affecting multiple stakeholders, and frames them within three sustainability pillars. Second, most of the previous research has focused on the externalities of the SE (e.g., Köbis et al., 2021) *or* on regulation (e.g., Chen et al., 2021), whereas our framework is the first to integrate and identify several regulatory approaches and mechanisms, and to propose which of them could address the multitude of externalities. Third, the externalities-based regulatory framework is a first step toward understanding how to regulate the SE. Understanding the externalities and their proposed regulatory mechanisms meets the recent call, from Eckhardt et al. (2019), to examine the current regulatory mechanisms in governing SE activities.

After having examined, at length, the externalities of the SE that affect its stakeholders and identifying potential regulatory approaches and mechanisms, we also identified several areas that require further investigation. They are elaborated in the Future Research Agenda, below.

4.3. Managerial implications

Through our work, we derive implications for governments, service providers, and SE platforms. Governments have been caught off guard by the rapid growth of SE platforms, which has left them unprepared for their potential externalities (Mont et al., 2020). The appropriate regulation of SE platforms, to alleviate their externalities, represents a new challenge for governments worldwide (Qi, Fu, Li, & Xie, 2020). Hence, governments, particularly those in countries where the SE is less developed, could use this framework to understand the potential externalities of the SE better, and to gain an overview of the mechanisms that could be employed to address them, i.e., to avoid, limit, or guide SE activities. This could help governments plan and control SE market entry and growth. For example, in historical cities, governments could employ limiting mechanisms (e.g., capping) to shield the community from the gentrification externality, caused by the SE, which threatens the authenticity of such locations (Ranchordás & Goanta, 2020). Governments might also learn how SE platforms self-regulate their operations, which could provide them with future insights into collaborating with SE platforms to mitigate the SE's externalities. For example, the integration of standard requirements for service providers that are enforced by governments, with market entry requirements that are imposed by SE platforms, could improve service providers' performance, and increase customer protection.

Service providers' employment position is poor in the SE, due to their classification as contractors rather than employees (Eckhardt et al., 2019). Our framework provides an overview of the main disadvantages of this classification and offers a comprehensive toolset of mechanisms to improve their position. For instance, service providers could begin petitioning governments and SE platforms to enable them to establish legal service provider associations, akin to labor unions, to enhance their social and economic standing. Notably, some informal service provider associations have already been established, such as UberPeople, one of the largest online Uber drivers' forums (Chan & Humphreys, 2018). However, currently, these associations are not organized as labor unions and lack government legal support.

Maintaining stakeholder relationships is often lucrative for businesses (Matuleviciene & Stravinskiene, 2015; Mosaad, AbouAish, & Elsharnouby, 2022). For example, the SE is enabled by the willingness of service providers to grant access to their assets or through customers opting for access rather than ownership (Benoit et al., 2017). This implies that a good relationship with these stakeholders is a necessity (Elbedweihy, Jayawardhena, Elsharnouby, & Elsharnouby, 2016). Our framework enables SE platforms to grasp how their business affects numerous stakeholders negatively, and provides several regulatory mechanisms which could alleviate these externalities. For example, in order to maintain a good relationship with service providers, SE platforms could offer them employee (portable) benefits, to reduce their employment disadvantages as compared to traditional employees. SE start-ups could gain an overview of the main externalities of the well-established platforms, in order to avoid them. They could also obtain a full toolset of the regulatory mechanisms employed by those platforms and apply them. For example, they could learn about the market entry requirement that well-established SE platforms enforce and could use them as their own guidelines for establishing criteria when selecting service providers.

4.4. Limitations and future research agenda

The nature of SLRs placed certain limitations on our research, such as the criteria for article inclusion (e.g., peer-reviewed articles in the English language), which in turn limited our findings somewhat. In addition, our findings may be susceptible to context bias, given that most of the literature focused on the two principal sectors of the SE: ridesharing (Uber) and home-sharing (Airbnb). However, we attempted, nonetheless, to develop a broad externalities-based regulatory framework that is applicable to a broad set of SE sectors.

We propose three major future research avenues. First, with our externalities-based regulatory framework (see Table 1), we provide the foundation for research into the comparative effectiveness of regulatory approaches and mechanisms in mitigating SE externalities. Second, we envisage a strong requirement to expand our knowledge of the regulatory desirability of the SE to cover the perspectives of various stakeholders. Third, we illustrate the regulatory gap that exists in the self-regulation approach in mitigating specific stakeholder-related externalities.

4.4.1. The effectiveness of regulation approaches and mechanisms

Numerous opportunities arise to research the effectiveness of regulation related to the five major stakeholders of the SE: service providers, customers, incumbents, communities, and the government (see Table 2). Below we discuss some selected research questions from Table 2, which offers an additional and more detailed list of research questions.

First, we recommended several mechanisms for how governments and SE platforms could address the poor position of *service providers* within the SE. Future research could evaluate and compare the efficacy of these mechanisms, such as employee (portable) benefits or service provider segmentation, in enhancing their economic position. Scholars might like to investigate how customers perceive this service provider classification, whether they know and/or care about the sometimes mediocre working conditions of the service providers with whom they directly interact, and how this impacts their attitudes and purchase intentions.

How SE platforms consolidate and deactivate service providers is a topic that is often neglected during high-growth periods. Future research could investigate the optimal balance between the negative impact of low-performing service providers and deactivation; and which deactivation terms are perceived as fair by customers and service providers.

Second, we showed that *customers* encounter a series of externalities in the SE, one of which is the perceived risk to them. We suggested that

Table 2
Future research agenda.

Stakeholders	Future research questions
Service Providers	■ To what extent can employee (*portables) benefits* be applied to SE? Who should fund these benefits (e.g., SE platforms, service providers, governments)? What is the role of employee (portable) benefits in enhancing service providers' employment positions? ■ How do service providers perceive SE platforms' pricing mechanisms (e.g., surge pricing)? How can these mechanisms mitigate the economic employment disadvantages of service providers? ■ Do service provider segmentation mechanisms intend to improve their employment position? ■ How can service providers (i.e., independent contractors) form legal associations (e.g., unions) be authorized by the law? How can these service provider associations increase their representativeness and negotiate leverage? ■ What factors contribute to discrimination against service providers? What are the regulatory mechanisms that might help to alleviate this discrimination? ■ How do SE platforms deactivate their service providers? To what extent do these deactivation policies affect SE platforms' transparency?
Customers	■ How can governmental standards requirements improve customers' perceived service quality? ■ What is the role of a review-based reputation mechanism in improving providers' service quality? How can customers' perceived risk in the review-based reputation mechanism be reduced (e.g., due to biased reviews, platforms' monopoly on system management, fear of retaliation)? ■ What kind of conflict resolution mechanisms can improve customers' support? Should the conflict resolution be left mainly to the service provider? To what extent should the platform get involved? ■ What is the role of governmental licensing, liability insurance, and/or standard requirements in reducing customers' perceived risks in SE services? ■ To what extent can SE platforms' transparency and liability mechanisms protect customers in the event of violations? ■ What role can non-discrimination policies play in reducing service providers' discriminatory behaviors toward customers? To what extent can governments interfere to mitigate discrimination against customers? ■ What is the effect of service provider segmentation mechanisms (e.g., Uber Pro, Airbnb Superhost) on improving service providers' performance?
Incumbents	■ What is the impact of taxation, licensing, and/or standard requirements on the supply of SE services?
Community	■ To what extent can capping sharing services (e.g., Airbnb) reduce the costs of accessing resources (e.g., housing)? ■ What role does capping and/or neighborhood protection play in reducing neighborhood disruptions (e.g., noise, vandalism, and waste)? ■ How can the government standard requirements and SE platforms' market entry mechanisms be modified to prioritize the SE market entry for the unemployed? To what extent can this reduce social inequality? ■ What is the role of capping SE services in reducing environmental and infrastructural pressures in neighborhoods?
Government	■ To what extent can supply-side incentives/penalties, policy education, simplification of compliance, disclosure-based regimes, and/or record-keeping increase government tax revenue from SE? ■ What role does neighborhood protection play in mitigating waste management issues? How do SE platforms and providers adhere to this mechanism? ■ To what extent can capping SE services reduce the overuse of resources causing, e.g., pollution?

licensing, liability insurance, and/or standard requirements could alleviate such a risk. Part of this risk is related to the potential conflicts that arise in the, currently unclear, responsibilities within the triadic actor structure of the SE. Thus, customer expectations of a service provider and a platform, as concerns conflict resolution, is another area requiring more attention. Scholars could examine how these mechanisms affect customers' perceived risks in SE services and compare their effectiveness.

Third, another fertile research stream would be investigating how regulating the SE affects *incumbents*. We encourage further research to examine how imposing several government regulatory mechanisms on SE platforms would affect incumbents' business. For instance, scholars could investigate the optimal level of SE capping for a "fair" competitive landscape, or examine how different licensing models might affect the competition with incumbents to retain the positive competitive effects of the SE while alleviating unfair competition. It could also prove useful to investigate the levels of taxation and standard requirements where SE platforms and incumbents have similar competitive environments.

Fourth, the literature indicates that some *communities* suffer from the externalities of the SE, for instance, an increase in rental prices. Prior research discovered some positive effects of capping (decreasing new home-sharing listings and stimulating the removal of current ones) versus taxing (reducing just new listings, Chen et al., 2021). However, the actual effect on long-term rental prices remains unclear, which offers future research opportunities. Additional research could compare the efficacy of a government limiting mechanism, i.e., capping, with the government guiding mechanism, i.e., neighborhood protection, in preserving communities' livability and authentic character. It would also be interesting to understand SE platforms and service providers' compliance with the neighborhood protection mechanism.

Finally, it is unclear how *governments* could increase the compliance of SE platforms and service providers to regulations (e.g., taxation). Scholars could examine the extent to which supply-side incentives/penalties and policy education encourages them to follow regulations.

4.4.2. *The regulatory desirability of the sharing economy*

Despite the debate between scholars concerning regulating the SE, the regulatory desirability of the SE from multiple stakeholders' perspectives, has been neglected in the literature (Newlands & Lutz, 2020; Connolly, 2021). Given that the SE affects various diverse stakeholders, further research could consider their perspectives on regulating the SE (Uzunca et al., 2018). The SE offers opportunities and benefits, but also causes externalities. For example, service providers benefit from lower market entry barriers, compared to traditional industries, and customers benefit from lower prices (Köbis et al., 2021). It could be prudent to explore when and for which externalities service providers and customers desire regulation in the SE, even if such regulation may deprive them of some benefits.

4.4.3. *The regulatory gap of the self-regulation approach*

Our externalities-based regulatory framework revealed that self-regulatory mechanisms mainly address the externalities impacting service providers and customers while neglecting those that impact incumbents, communities, and government (see Table 1). This suggests that SE platforms strongly focus on the economic aspects within the triad at the expense of the social impact of their doing business. For example, there was no mention of a self-regulatory mechanism to mitigate the increasing rental prices in areas where home-sharing platforms operate. An additional investigation could explore how SE platforms might be encouraged to create mechanisms that reduce the externalities related to other stakeholders, e.g., communities, and how their existing economic focus might damage their reputation in the long run.

CRediT authorship contribution statement

Mohamed Mosaad: Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Visualization, Formal analysis, Methodology. **Sabine Benoit:** Writing – review & editing, Supervision. **Chanaka Jayawardhena:** Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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Appendix A. Supplementary data

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