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Understanding the Sharing Economy: Exploring Consumer Behaviour, Drivers, and Changes Influenced by COVID-19

Patrycja ŻEGLEŃ¹, Aldona KLUCZEK², Kristína ŠAMBRONSKÁ³

- ¹ University of Rzeszow, College of Social Sciences, Rzeszow, Poland
- ² Warsaw University of Technology, Faculty of Mechanical and Industrial Engineering, Warsaw, Poland
- ³ University of Prešov, Faculty of Management, Prešov, Slovakia

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Abstract

The impact of COVID- 19 has had a significant and multifaceted effect on the hospitality sector, which is closely intertwined with numerous digital platforms and the SE. The dissemination of data from online platforms will be instrumental in determining the distribution of the benefits derived from the value created by the digital economy to the broader society. The objective of this paper is to examine the impact of the COVID-19 on various initiatives within the SE in the service industry. This paper examines the extent of interest among the general public in utilising contemporary digital platforms. The methodology employed in this study comprises the following: a questionnaire, desk research, and the utilisation of statistical tools. The results demonstrate that COVID-19 has precipitated significant shifts in consumer attitudes and behaviours, with these changes exhibiting a more nuanced impact than previously assumed. The findings indicate that the service industry's trajectory in the SE is characterised by a positive trajectory. The data-driven approach reflects the dynamism of SE innovation, which is both disruptive and socially oriented. This contribution serves as a crucial foundation for companies seeking to advance their SE business models.

Keywords

Sharing economy, service industry, COVID-19 impact, organizational changes, sustainability.

Introduction

The entry of digitalisation into business operations has opened up a set of potential possibilities and challenges for the tourism industry, involving a fundamental change in organisational and distribution models (Filipiak et al., 2020; Perelygina et al., 2022). This revolution has resulted in the development of a range of shareable resources, some of which are based on technologies. The concept of Industry 5.0, as put forth by the European Commission, assumes that such technologies will play a pivotal role in the future of industry.

The concept of Industry 5.0 seeks to harness the potential of emerging technologies, aiming to foster prosperity that extends beyond mere job creation and economic growth. At the same time, it strives to ensure that these developments are aligned with

Corresponding author: Aldona Kluczek – Warsaw University of Technology, Faculty of Mechanical and Industrial Engineering, Poland, e-mail: aldona.kluczek@pw.edu.pl

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planetary boundaries and prioritises the well-being of industry workers at the core of the production process (EC Directorate-General for Research and Innovation, 2021). The sources encompass a range of digital platforms, applications, and collaborative participants. This has given rise to the phenomenon of the SE (SE).

The concept of collaborative consumption, which aims to address social issues and offer associated benefits, is based on the shared use of products or services to transform unsustainable consumption into sustainable and rational consumption and development (Lamberton, 2016; Luri Minami et al., 2021; Wróblewski & Dacko-Pikiewicz, 2018). The relationship between sustainable development and economic sustainability is inextricably linked, underscoring the pivotal role they play in contemporary collaboration.

The impact of COVID-19 has prompted a shift in business models, with an increasing focus on trust and cooperation. This is evidenced by the emergence of new innovative models or the dissemination of existing ones (Breier et al., 2021; Cheng et al., 2019). Furthermore, Covid-19 has precipitated new dynamics of sharing and co-action, as well as novel approaches to the coordinated management of companies' resources and

the development of new competencies and skills. As posited by various authors (Chen et al., 2020; Cheng et al., 2019; Gigauri, 2021; Hamari et al., 2016; Vinodh et al., 2014), the act of sharing may constitute a pivotal element of an innovative business model within the context of a post COVID-19economic reality.

Consequently, the aforementioned activities constitute an indispensable aspect of the SE (Belk, 2014; Hossain, 2021; Zvolska et al., 2019). However, an examination of these business models' performances not only delivers data on potential monetary benefits but also helps companies to predict economic results such as inflation, and unemployment (Sedkaoui & Benaichouba, 2019).

Despite the recent proliferation of literature on the SESE (Pouri & Hilty, 2021), as well as its applications in tourism (Bin, Qiang, & Law, 2016; Mondal & Samaddar, 2020; Perkumienė et al., 2021; Roblek et al., 2016), there remains a paucity of theoretical frameworks that adequately address its implications (Petrini et al., 2017).

This paper presents a detailed account of behavioural changes among service industry participants due to COVID-19. A data-driven methodology was employed in order to achieve the desired outcome. A data-driven approach is one that is based on the analysis of data, and which informs decision-making and action. In this framework, decisions are informed by the systematic collection, processing, and analysis of relevant data. The objective of this paradigm is to utilise factual evidence and empirical observations as a basis for the formulation of strategies, processes, and decision-making.

As practices of the SESE via online platforms utilise data to identify individuals' behaviours, the research also extracts values from detailed data analysis in terms of the conjunction of several fields in the service industry, including hospitality, gastronomy, transportation, and others.

The article represents an effort to underscore the significance of the SESE phenomenon from the vantage point of various sectors within the service industry. This research gap will be addressed through the utilisation of original research and a comprehensive review of existing literature on the subject. In this context, potential determinants of SESE promotion include financial benefits (Akande et al., 2020; Böcker & Meelen, 2016), sustainability (Daunorienė et al., 2015), and social aspects (Davlembayeva et al., 2020). The aforementioned factors are formulated based on the subject-matter literature (Erickson & Sorensen, 2016; Key, 2017; Mai et al., 2020), including trust (Ert et al., 2016; Räisänen et al., 2021), relations with other people (Curtis et al., 2020; Engin & Vetschera, 2022),

and so forth. A plethora of potential determinants or drivers were not effectively exploited (Kuhzady et al., 2021; Pouri & Hilty, 2021), nor were they referenced in the context of the ongoing Covid-19 (Chen et al., 2020; Dabija et al., 2022; Hossain, 2021). This presents an opportunity for further investigation in this research. The authors of this paperthis paper identify qualitative and quantitative deficiencies in the source literature about digital transformation in the context of the SESE phenomenon.

This paper makes a novel contribution to the field by examining the behaviour of participants in the SESE through digital platforms, with a particular focus on the impact of the COVID-19 This area of research is timely and relevant as it provides detailed information about gaps in the current literature. It is crucial to highlight the existing knowledge regarding the relationship between consumers behaviour and digital transformation in the context of SE platforms. Although the SESE offers a number of advantages, it also gives rise to concerns pertaining to regulatory issues, labour rights and the possibility of an uneven distribution of benefits. It is essential to strike a balance that optimises the positive aspects while addressing these challenges and insights in order to facilitate the continued growth and positive impact of the SE. From a theoretical standpoint and in consideration of existing knowledge, it is reasonable to conclude that the motivation is justifiable and that the study can be replicated under new conditions. Further investigation into this topic is warranted.

Literature review

The theoretical foundations of a data-driven approach are drawn from a variety of fields, including, but not limited to probability theory, or decision theory. The application of probability theory is essential to the management of uncertainty, which was particularly evident during COVID-19 It is frequently utilised in data-driven methodologies to refine beliefs in accordance with novel evidence. Nevertheless, decision theory provides a conceptual framework for making decisions in situations of uncertainty. It entails the evaluation of a range of potential actions, their probable outcomes, and the associated probabilities in order to facilitate the formulation of rational decisions based on the available information. A data-driven approach entails the collection of data from a variety of sources, including surveys and databases, in order to obtain accurate and pertinent information. It is of the utmost importance to comprehend the data and to derive ac-

tionable insights from the analysis thereof. This step involves connecting data findings to specific decisions or actions. One of key elements of a data-driven approach is continuous improvement which helps organisations are capable of adapting to changing circumstances and improving their performance over time.

A literature review on the tourism services industry (Kuhzady et al., 2021) demonstrated the emergence of SESE based on data sharing (Daglis, 2022; Richter & Slowinski, 2019; Standing et al., 2019), particularly within the hospitality sector (Cheng et al., 2019; Gursoy et al., 2022; Kuhzady et al., 2021). This transformative approach facilitates an enhancement of these studies which in turn enables an investigation of the factors and changes in tourism caused by the COVID-19 pandemic. A comprehensive review of the literature on the SESE and related concepts was conducted by Prayag & Ozanne (2018). Although the concept of the tourism metaverse has been discussed in academic and practical contexts (Gursoy et al., 2022), it has not previously been employed to identify and subsequently comprehend the shifts in consumer behaviour that have resulted from the pandemic. The changes manifested as an increased utilisation and significance of digital technology (Dabija et al., 2022; Mouratidis et al., 2021; Pouri & Hilty, 2021).

The growth of the digital economy means that sharing data between consumers and producers/sellers has become crucial not only for the improvement of living standards but also for practical and security reasons. The wider and wider public are being engaged in the process of data sharing which influences almost all aspects of our lives. Participation in the SESE typically requires users to provide personal information, including their location, consumption habits, and photos of personal items, credit card information, and travel habits. However, the speed at which the SESE is evolving will require agile responses from a data privacy perspective (globaldata.com). Companies are now using GPS, data analytics, and artificial intelligence (AI) to connect consumers with owners in real time. The acceleration of digital transformation has been amplified by the COVID-19 pandemic. Therefore, technology has emerged as the key enabler for the adoption of the SE. COVID-19 accelerated the digital transformation of society, facilitating the emergence of data-sharing platforms that have become integral to social and economic activity. A considerable number of tourist companies are currently engaged in the process of integrating digital platforms into their basic business models. In this context, the implementation of innovative digital interfaces can facilitate the creation of a sustainable environment (Guandalini, 2022). The deployment of models that require collecting and

analysing extensive data provides users with actionable insights which should contribute to the development and evolution of a sustainable SESE .

In the context of the literature review (Duric et al., 2021; Gursoy et al., 2022; Julião et al., 2022) the phenomenon of sharing accommodation has emerged as a significant aspect of the SESE. Furthermore, it is referred to as peer-to-peer accommodation, home sharing, and short-term rentals (Koster et al., 2021; Kuhzady et al., 2021). The hospitality industry has been profoundly affected by COVID-19, resulting in significant disruptions and ripple effects across the SESE, particularly in the context of digital platform use and sustainable development.

The authors of this paper emphasised the significance of SE relations in the hospitality sector. However, they also highlighted the broader impact of this phenomenon on other service industries, including gastronomy, transportation, and others (Table 1).

In their analysis, the authors identify three key areas of focus within the service sector, demonstrating the multifaceted nature of the driving forces behind the SESE. They highlight the role of practitioners, industries, policymakers and academics as crucial elements in its propagation. In relation to the principal objective of this paper and research question, it is crucial to emphasise the significance of sustainability considerations in the context of the SESE, and the potential for positive impact (Curtis & Lehner, 2019; Zeng et al., 2023). Nevertheless, the sustainability impact of the SESE remains a relatively understudied area, particularly in light of the potential for rebound effects. A literature review concerning the relations of the SESE with sustainability from the perspective of the most important service branches (hospitality, gastronomy, and transport) is also presented in Table 2.

The authors of this paper conducted an analysis of the SESE phenomenon based on the concept of sustainability which plays a significant role with regard to core service industries such as hospitality, transport, and gastronomy. From the perspective of the hospitality industry, sustainability, particularly in relation to the environment, represents a pivotal consideration in terms of service quality. This is due to the fact that the hotel industry has a considerable impact on the natural environment and the wider region. The influence of the SE on the quality of the service or product in question can be observed from a number of different perspectives [94] (Zeng et al. 2023). It is possible that the impact may vary depending on the nature of the sharing platform, the type of the service or product involved, and the frameworks that are in place. In the context of SE, platforms frequently rely on user-



 $\begin{array}{c} \text{Table 1} \\ \text{Source literature on the SESE} \end{array}$

Subject areas				
Hospitality	Gastronomy	Transportation	Other	
Roblek et al., 2016; Williams et al., 2017; Petropoulos, 2017; Altinay & Taheri, 2018; Akbar & Tracogna, 2018; Roma et al., 2019; Cheng et al., 2019; Kuhzady et al., 2021; Juliăo et al., 2022)	Belk, 2014; Guttentag et al., 2018; Kraus et al., 2020; Orabi, 2019; Atsız et al., 2022; Ruan & Liang, 2022;	Bardhi & Eckhardt, 2012; Wang et al., 2016; Centobelli et al., 2017; Standing et al., 2019; Geissinger et al. 2020; Andreu et al., 2020; Mouratidis et al., 2021; Castellanos et al., 2022	Dredge & Gyimóthy, 2015; De Stefano, 2016; Puschmann & Alt, 2016; Christofi et al., 2017; Narasimhan et al., 2018; Bucher et al., 2018; Belarmino & Koh, 2020; Castellanos et al., 2022; Avital et al., 2015	

Subject areas			
Hospitality	Gastronomy	Transportation	
Melissen, 2013; Higgins-Desbiolles et al., 2019; Tanford et al., 2020; Duric et al., 2021; Gursoy et al., 2022	Forney & Häberli, 2016; Smith et al., 2016; Rinaldi, 2017; Madaleno et al., 2019; Zeng et al., 2014	May & Crass, 2007; Centobelli et al., 2017; Wang et al., 2019; Raymand et al., 2021	

generated reviews and ratings. Such reviews and ratings may thus serve as a quality assurance mechanism, allowing users to make informed decisions based on the experiences of others. It can be reasonably assumed high-quality products and services will receive positive reviews, whereas low-quality offerings may be flagged by users, thereby creating incentives for providers to maintain or improve quality. Moreover, the implementation of transparent feedback mechanism enables, service providers in the SE to be held accountable for the quality of their offerings. Additionally, intense competition among service providers on sharing platforms can stimulate innovation and improvements in the quality of their offerings. A further factor to consider is that of trust and reputation. Trust is a pivotal factor in the SE, and a favourable reputation can markedly influence a provider's success. Providers with a history of delivering high-quality services/products can cultivate trust among users, which may result in repeat business and positive word-of-mouth referrals. It is important to note that adherence to regulatory standards guarantees that services and products meet the minimum quality and safety standards, thereby providing a foundation for consumer protection. Additionally, information asymmetry presents a challenge. In certain instances, it may prove difficult to ascertain the quality of a product prior to the conclusion of a transaction, particularly in the context of peer-to-peer transactions. Information can be a significant concern for consumers, and online platforms may therefore be required to implement measures to address this issue. Such measures could include the provision of detailed service or product descriptions, photographs, and user reviews. It is important to note that while the SESE can incentivise providers to maintain or improve service/product quality, challenges such as varying standards, regulatory gaps, and the potential for opportunistic behaviour also exist (Zeng et al. 2023). Effective regulations and the establishment of clear standards can play a role in ensuring consistent service/product quality across SESE platforms. It is therefore recommended that service/product providers should take advantage of the opportunities presented by the SESE to cultivate competitiveness as a key priority within their future economic strategies and business models.

The concept of sustainability offers a multitude of advantages to the natural environment, facilitating the preservation of natural resources and promoting balanced development (Duric et al., 2021). Additionally, it provides benefits at the social level, as evidenced by the sharing of practices such as timesharing. The concept of sustainable development is also of significance in the field of gastronomy, as it pertains to the authenticity and differentiation of food and food cul-



ture (Zeng et al., 2014). The gastronomy industry can be considered sustainable when it comes to the production of authentic food cultures, the involvement of local producers, and the promotion of local traditions. Local heritage can be preserved and shared throughout the food production process and the entirety of gastronomic services. In light of the environmental impact of transportation and the potential of the SESE to address it, the concept of transportation resource sharing has emerged as a promising avenue for reducing or eliminating pollutants such as air pollution and congestion, while simultaneously enhancing the efficiency of transportation logistics (Wang et al., 2019). Furthermore, the integration of SESE with other service sectors, the pursuit of sustainability, and the advent of digital technologies have also been illustrated in Figure 1.

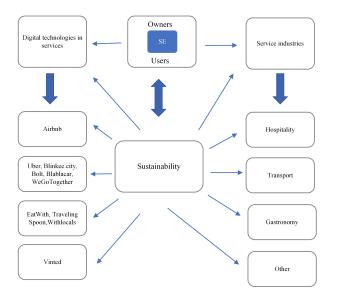


Fig. 1. Sustainable SE model towards digital technologies

Figure 1 illustrates the conceptual framework for the sustainable model of SE. The three main dimensions of the SE, sustainability, and digital technologies are identified as being used in different branches of service industries to characterise sharing ideas. The framework encompasses both users and owners or providers of SE, who make sustainability a key factor in selecting the sharing service phenomenon. Digital technologies are integral to the dissemination of information and the promotion of sustainable development. They facilitate the dissemination of knowledge and encourage the adoption of sustainable practices simultaneously. The most prevalent facilities and tools for data sharing are applications and platforms, as illustrated in Figure 1, which have been introduced in the hospitality, gastronomy, and transportation sectors. Digital platforms are the central nexus of online activities, facilitating connections between multiple market participants engaged in the exchange of diverse goods and services. The role of data in such platforms is of considerable importance, given that it facilitates value creation, which is reinforced through data deployment. The aforementioned platforms facilitate data sharing between producers/sellers and consumers, thereby enabling the creation of more comprehensive, innovative, competitive, sustainable digital markets.

Management and Production Engineering Review

Although the phenomenon of SESE is frequently discussed by scholars from a generic perspective, without paying attention to any specific industry (Curtis & Lehner, 2019; Ranjbari et al., 2018) or focused on a particular one (Cheng et al., 2019), it remains unclear to practitioners from the service industry. The effects of COVID-19, which were not clearly defined, were influencing firms to integrate the concept of the SESE (SE) into their existing business models in order to attract a larger customer base. In this context, an investigation into people's interest in the SESE and its recent changes in terms of volume and content is being considered. This would help to fill a knowledge gap in the current literature on the topic. In addition, the application of the data-driven approach methodology is indicative of the evolving characteristics of the SESE, which is defined by a disruptive and social nature.

Materials & Methods

Inspired by more and more theoretical and conceptual research on the SE, the authors were trying to investigate consumers' attention to digital platforms of SE and their perceptions and behaviours across a diverse set of geographical locations. The study specifically targeted tourists from Eastern European countries, including but not limited to Poland, the Czech Republic, Hungary, and Romania. These areas were chosen for their diverse cultural backgrounds and varying degrees of engagement with the SE. The survey areas included both urban and rural regions to capture a comprehensive understanding of how geographical location influences consumer behaviour in the SE.

Considering the above, two research questions have been formulated:

- 1. How do people perceive the services provided under this concept?
- 2. How is the SE perceived in the context of the impact of COVID-19 on sustainability?

According to the authors of this paper, these questions remain unanswered in the source literature. In light of these question, the following hypotheses were formulated: (1) The concept of the SE is perceived in differentiated ways, depending on various conditions,

and (2) COVID-19 positively influenced the dissemination and perception of SE ideas in service industries with reference to sustainability and data-sharing by developing digital service technologies.

In order to address the research gap identified in the subject-matter literature, it is necessary to formulate research questions. Accordingly, this paper employs both qualitative and quantitative research methods. The choice of the research tools was driven by the necessity of addressing the research questions in an efficacious manner. The questionnaire was meticulously designed to collect data on several key indicators, including socio-demographic characteristics (age, gender, education level, place of residence), frequency of engagement with SE platforms, and attitudes towards sustainability and the impact of COVID-19. For example, questions were included to ascertain both the extent of participation and the underlying motivations or concerns, such as "How often do you participate in SE activities?" and "What factors influence your decision to engage in SE services?" The aforementioned indicators were selected on the basis of their established reliability as measures of consumer behaviour in the context of the SE as evidenced in the relevant academic literature. These indicators were specifically designed to capture the distinctive dynamics of the SE in the context of the COVID-19 and the urgent need to address sustainability concerns. The sources for these indicators included established questionnaires from prior studies on the SE and sustainability, as well as expert consultations to ensure their relevance and accuracy.

Data collection & Time

Data concerning tourist perceptions was obtained through the administration of structured question-naires during the peak tourist season, spanning the months of June to August in 2022. Interviews were conducted online. The duration of the interviews ranged from 15 to 25 minutes. Following a comprehensive assessment of the data's quality and depth, the authors elected to concentrate their analysis on individual tourists. This decision enabled the authors to conduct interviews with encompassing a broad geographical scope, encompassing Eastern European countries.

Sample procedure

In spite of the fact, that non-probability methods are frequently subject to criticism due to their absence of the statistical underpinnings associated with probability methods (Brown, 2010; Given, 2008). The respondents were selected using a non-probability sampling method, with the specific objective of

recruiting tourists from major urban areas in Eastern European countries. This deliberate approach focused on individuals with varying levels of familiarity with SE platforms, thereby ensuring a diverse and engaged respondent pool. By targeting respondents who were actively engaged in or aware of the SE, the data collected was relevant and informative, providing a comprehensive picture of consumer behaviour across different socio-economic and cultural backgrounds. This method was particularly useful given the broad geographical scope, where random sampling might not have yielded the desired diversity. This allowed the authors to capture a more comprehensive picture of consumer behaviour across different socio-economic and cultural backgrounds.

Moreover, the primary research was conducted on a relatively modest sample of 300 participants who completed the survey over a six-week period. In this research, the authors employed a meticulously designed questionnaire to collect data, covering a wide array of questions related to participants' demographic details, education, place of residence, and their perceptions as tourists. The questionnaire was structured to include both closed and open-ended questions, allowing for both quantitative analysis and qualitative insights. The questions were developed based on a thorough literature review, focusing on indicators such as frequency of platform use, attitudes towards sustainability, and changes in behaviour due to the COVID-19. Prior to full deployment, the questionnaire was pre-tested with a small sample to ensure clarity and relevance. Based on the feedback obtained, adjustments were made to the questionnaire. This approach guaranteed that the data gathered was both exhaustive and directly aligned with the study's research questions and hypotheses. Interviews were conducted using the Computer Assisted Web-based Interview (CAWI) method. This study targeted 125 respondents aged between 16 and 65, with a focus on their engagement and familiarity with SE platforms. The final dataset was obtained after meticulously filtering out incorrectly filled or unreturned questionnaires, which had originally been distributed to over 300 potential respondents (as above). The age range of people over 65 years old was not examined due to low online activity While this sample size may have limitations, it was selected based on budget and time constraints as well as resource availability.

The chosen research sample was determined with a 96% confidence level and presupposed 9% maximum error to be authoritative according to the formula (1) (Pang & Yuan, 2019):

$$=\frac{u2\alpha\cdot\frac{m}{n}\cdot\left(1-\frac{m}{n}\right)}{d^2}\tag{1}$$

where:

u – value of accepted significance level,

m – fraction size,

n – sample size,

- estimated population proportion,

 $\frac{n}{d}$ maximum error.

A 5-point Likert scale was adopted to answer the questions (mentioned in Introduction, where 1 means the lack of acceptance, 5 - the highest level of acceptance of changes in tourist behaviour). Respondents were asked to rate the level of acceptance based on their judgment, but in the face of the unknown, it is difficult to predict all the changes that will occur.

Data analysis

- In order to employ the quantity approach, the data was input into Microsoft Excel and subsequently analysed with the SPSS (Statistical Program for Social Science). The objective of the analysis stage was to conduct a statistical examination of the tourist profile. In order to assess tourist perceptions, the following statistical methods were employed for the analysis of the data, as outlined below: Pearson's chi-squared test χ^2 was applied to sets of qualitative variables to evaluate the likeliness of differences between observed sets. The confidence of sex distribution amongst the interviewees with the general population was stated. Value p = 0.99(p = probability) indicates the lack of significant differences between the research sample and the general population. In addition, the authors have assessed comparisons between homogeneity and independence of the analysed data sets.
- Mann-Whitney U test was used for randomly selected values X (gender) and Y (frequency of using platforms); the probability of X being greater than Y is equal to the probability of Y being greater than X.
- Another test was ANOVA Kruskal–Wallis test was applied to compare two independent samples (respondents' age and their activity in SE). It extended the Mann-Whitney U test.

The distribution of the respondents by age group is presented in Fig. 2. Moreover, more women than men have participated in the study with a minimal preponderance of women (52% vs. 48% of men).

The largest group of respondents was at the age of 18–25 (35 %), and the smallest interest in the research was observed in the youngest respondents, that is at the age under 18 (14% of respondents). The underage influences the decisions of their parents/caretakers although they often are financially dependent on adults.

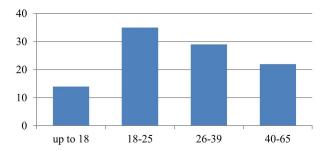


Fig. 2. The distribution of respondents by age group (in

The research did not include people over 65 because of technical difficulties (for example no computer and Internet access, lack of social media profile). The economic and demographic structure of the respondents is presented in Table 3.

Table 3 Economic and demographic structure of the respondents

Div	vision criterion	Share (in %)
	Primary/lower secondary	18
Education	Vocational qualification	7
	Secondary education	27
	Higher education	47
	Pupil/student	35
Professional	Employed	49
status	Unemployed	7
	Retired/annuitant	8
	Village	42
Place of residence	Town up to 50 thousand inhabitants	13
	City 50–100 thousand inhabitants	14
	City over 100 thousand inhabitants	30
Subjective	Very good	10
assessment	Rather good	31
of material	Average	51
status	Rather bad	8
	Unsatisfactory	0

The research sample equals 42% and 58% relatively. Chi-squared Pearson's test χ^2 indicates significant correspondence (p > 0.05) between the research sample

and the general population, and it makes it a representative one. Whereas the subjective assessment of material status shows that more than half of the respondents (51%) perceived their material situation as average, 41% – as good and very good. Only 8% of the respondents pointed out their unsatisfactory material status. Using the above-mentioned characteristics, the authors have underlined that the research sample is heterogeneous and there is observed relatively proportional distribution of the most characteristic features. The sample size and its choice determine a lower level of correspondence with the general population.

Based on the literature review (Anglada & Hernández Lara, 2020; Arcidiacono et al., 2018; Curtis & Lehner, 2019; Dillahunt et al., 2017; Görög, 2018; Kraus et al., 2020) within SE phenomenon, the authors have isolated potential factors enforcing SE. The potential benefits are as follows: financial gains, caring for the environment, social aspects, trust, and relations with other people.

Results

The researchers focused on the relationship between the service industry and consumer activity., with a particular focus on the changes brought about by COVID-19 and their impact on sustainability. As illustrated in Figure 3 the accompanying diagram, COVID-19 serves as a pivotal factor influencing both consumer activities and the service industry, with sustainability being a crucial outcome of these interactions. COVID-19 has led to the emergence of new activities, solutions, and attitudes towards the SE among respondents, reflecting the interconnectedness of these elements.

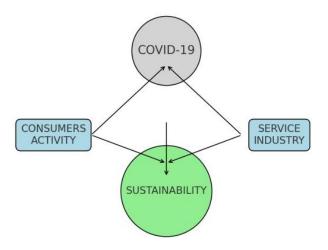


Fig. 3. Relationships between COVID-19, consumers' activity, the service industry, and sustainability

One of the criteria for choosing the research sample was respondents' education, employment, and place of residence. While analysing data, one can see that the largest group (47% of the respondents) has a higher education, then secondary education (27%), and 26% of the respondents with vocational and lower education together. A dominant group of respondents were employees (49%) as well as retired and unemployed – 8% equally.

The results were discussed according to this paper's goals as follows:

Respondents' Activity in the Field of the SE

This part of the study presents the results of consumer activity and engagement in the SE, along with its benefits (presented in Table 6). To achieve this, the questionnaire included items designed to capture a wide range of behaviours and attitudes. For instance:

- Respondents were asked about their participation in variousSE activities, such as mutual borrowing, transportation sharing, and renting cars.
- The authors assessed their perceptions of the benefits, such as cost savings, environmental impact, and community building.

Through the analysis of consumers' engagement in the sharing phenomenon (Figure 4), the authors observed that the consumers were the most active in the field of mutual borrowing of various things (for example furniture, equipment, tools, etc.) from neighbours, friends, and relatives (73%). The respondents declared also common means of transportation due to financial and ecological benefits (71%). It is a visible new, positive, and responsible trend in the fashion industry where people buy and sell pre-owned and second-hand clothes (60%). Concerning the hospitality industry, every fifth respondent declared private house' renting once at least. Barely 3% of the respondents claimed that they use the home swapping idea. Behaviours and attitudes towards various solutions within the SE concept were determined also by research using the Likert scale. The highest level of acceptance equals 5 and the lack of acceptance equals 1 (Table 4).

The analysis of respondents' opinions using the arithmetic mean has revealed that two aspects of the SE are of particular significance: caring for the environment (4.1) and outreach (3.95 and 3.94). Furthermore, the respondents indicate that financial benefits resulting from the SE concept are of considerable importance (3.92). Some respondents (with an average score of 3.47) indicated that they engage in the online sharing of opinions and recommendations. The opinions may be a reliable source of information for other consumers. The respondents unwillingly borrow/loan various products from/to other users of the Internet (2.15). In what



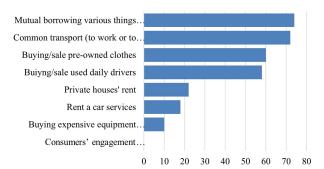


Fig. 4. Consumers' engagement in the SE activities (in %)

Table 4 Attitudes toward these

Statements	Average	Standard deviation
I prefer to sell/give needless things due to environmental protection	4.10	0.97
I gave clothes/food to charity organizations at least once last year	3.95	1.19
I share products with others and thanks to it I can help people in worse material sit- uations	3.94	0.98
I buy pre-owned products or buy them together with others to minimize costs	3.92	1.32
I reduce consumption because I feel I have quite enough	3.49	1.18
I share opinions and recom- mendations on Internet to be used as a reliable source of information	3.47	1.34
I like to be a volunteer get- ting to know new people si- multaneously	3.40	1.13
I buy eco-friendly prod- ucts/services in spite of the fact that I have to pay more	3.08	1.29
I loan people various things to get additional income, even with the use of so- cial media and Internet plat- forms	2.15	1.32

follows the authors of the research conducted Mann-Whitney U test to verify sex's influence on consumers' decisions (Table 5).

Table 5 Sex and attitudes towards sharing ideas according to Mann-Whitney U test

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Statements	Women	Men	Probability test (p)
I gave clothes/food to charity organiza- tions at least once last year	4.22	3.67	0.011464
I buy eco-friendly products/services al- though I have to pay more	3.53	3.78	0.012140

Mann-Whitney U test was used to show that sex influences consumers' attitudes significantly. Women have more positive attitudes towards eco-friendly products than men and they are more interested in giving clothes/food to charity organizations. However, it should be underlined that the values are very low on a five-point scale.

The next step of the research was to verify a familiarity with SE concept. Digital solutions introduced in hospitality and transport industries and their recognisability and benefits were outlined in Table 6.

The most widely recognised and frequently utilised platforms are Uber, BlaBlaCar, Bolt, and Vinted. The first three are classified as transportation platforms, while Vinted operates within the clothing industry. In terms of recognition, Airbnb was identified as the most prominent platform in the hospitality industry by nearly half (42%) of the respondents. Furthermore, the Blinkee.city platform, which offers rental services for electric scooters and city bikes, also garnered notable interest (15%) among the respondents. The data indicate that respondents perceive a growing interest in platforms that offer financial, environmental, and social benefits through the concept of sharing.

Sharing Economy Changes in Hospitality Caused by the COVID-19

Changes caused by the COVID-19 in SE were analysed in detail in the hospitality industry because accommodation is the most popular sector among SE users and researchers (Kuhzady 2021). Airbnb's platform to communicate with house/flat or room owners was examined because of its popularity and accessibility. It has over 5 million listings worldwide covering 192 countries and more than 34.000 cities (Belk 2014). The responses concerning the frequency of using this platform were varied. More than half of

 $\begin{array}{c} \text{Table 6} \\ \text{Familiarity and using SE platforms} \end{array}$

Platform	Recognisability and use of platforms (in %)	Industry/Branch	Benefits
	83	Transport	Soc.: safety
Uber			Eco.: lower costs
			Env: sustainability
	78	Transport	Soc.: fellowship
BlaBlaCar			Eco.: low costs
			Env.: less CO ₂ emission
Bolt	70		Soc.: association
		Transport	Eco.: low costs
			Env.: alternative to taxi
Vinted	64	Clothing	Soc.: community
			Eco.: saving
			Env.: sustainability
Airbnb	42	Hospitality	Soc.: comfort,
			Eco.: cheap
			Env.: sustainability
	15	Transport	Soc.: speed, comfort
Blinkee.city			Eco.: low costs
			Env.: alternative
*** 0	7	Transport	Soc.: safety
WeGo Together			Eco.: efficacy
			Env.: sustainability

the respondents (62%) used this form of booking at least once. More than one-third of the respondents (33%) declared that they use the platform sporadically. The others said that they rent a house once a year (6%) and more often (14%).

Further, the Mann–Whitney U test was conducted to find a correlation between gender and the frequency of using the platform to book accommodation. The results showed that there was a statistically significant variation between gender and the frequency of using the SE platform. Based on the accepted significance level (p>0.05) gender influences the use of platforms to book accommodation significantly (Table 7).

In the next step of the analysis, women were classified as group # 1 and men – as group # 0. The median at level 2 shows that half of the women used the platform once and they are not sure if they use it again in the future, whereas the others use the

Table 7 Mann–Whitney U test's results

Range	Women	Men	Probability test (p)
Frequency of using the platform to book accommodation (1 – did not use; 5 – a few times a year)	1 2 1	2.9	0.0069357

platform occasionally or more often. Among men, the range of answers from 1–5 was very broad which means that the frequency of using the platform amid men is differentiated. The further stage was to analyse the significance of social and demographic values in the SE phenomenon, a.o. respondents' age with applying ceteris paribus rule. It means not to have investigated other determinants while analysing the

importance of social and demographic values within SE. Additionally, it was assumed that these determinants do not influence the phenomenon significantly. Therefore, the ANOVA Kruskal–Wallis test was applied for this purpose The null hypothesis (H0) put in this paper was that COVID-19 positively influenced the dissemination of the SE idea in the service industry. The alternative hypothesis (H1) was that both pandemics, as well as social and demographic (age, education) determinants, do not correspond to SE. The value of test statistic (p) equalled 0.0007 which suggests rejecting the null hypothesis (H0) in favour of the alternative hypothesis (H1).

The test's results indicated that there is a significant correlation between respondents' age and their activity in the SE. Minor respondents were included in group 1, 18–25 years old belonged to group 2, 26–39 years old to group 3, and 40-65 to group 4, as depicted in Figure 5.

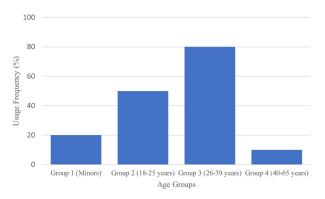


Fig. 5. Engagement in the SE by age group

Age determines the attitudes towards SE in a significant way. The respondents in the age range 25–39 used the idea more often than other age groups. The oldest respondents (in the age range 40–65) used the SE more seldom or never, which means that they are not interested in it.

The education analysis presents the approach towards SE in a less surprising manner, indicating that individuals with higher levels of education are more likely to be aware of and utilise the concept of SE in various ways. The higher education sector is conducive to a high rate of employment, which results in SE users among the employed being more visible than those who are unemployed. ANOVA Kruskal–Wallis test was repeated according to subsequent social and demographic values (place of residence, education, employment, and material status) analogically. The results (p < 0.05) showed that the place of residence and material status of the respondents have a significant influence on choosing services within the SE concept. The respondents from country areas used ser-

vices within the SE more rarely than those from urban areas which seems to be justifiable. An interesting relation has been observed between respondents' material status and their willingness to share various services.

A higher material status is associated with a greater willingness to adopt the SE idea. It can result from looking for authenticity or inimitable experiences.

The respondents were also asked about the frequency of using SE services during the COVID-19 The analysis showed that more than half of the respondents had not changed their attitudes towards the concept of sharing. Almost one-third of the respondents declared that COVID-19 influenced their use of the services negatively.

Around 10% of respondents reported using the SE more frequently than before. The attitudes of 54% of respondents were primarily influenced by financial factors, followed by anxiety about getting sick (25%), legal limitations (10%), caring for the environment (5%), mobility restrictions (2%), and unwillingness to use the services (1%). Trust plays a crucial role in the SE, as all activities within this concept are fundamentally based on mutual trust. This trust is established through an assessment and opinion system involving both buyers and sellers. Key determinants of trust include positive opinions on social media (70%), acquaintances' recommendations (60%), personal experience (46%), and family recommendations (32%). Conversely, only 10% of respondents felt no need to verify the honesty of trade partners.

As depicted in Figure 6, trust determinants such as social media opinions (70%) and acquaintances' recommendations (60%) are highly influential, while fewer respondents consider factors like "No Verification Needed" and "Unwillingness to Services" (less than 2%) as significant. Financial considerations as a significant attitude factor were identified by 54% of respondents as influential, reflecting the importance of cost-effectiveness in decisions related to the SE.

The main socio-demographic determinants (sex, age, education, place of residence, etc.) determined the attitudes in a statistically significant way. For instance, women declared pro-ecological behaviours more often than men. It was observed that men utilised the accommodation facilities within the SE more frequently than women. The respondents from rural areas declared less interest in hospitality within SE in comparison to the respondents from urban areas which is rather understandable and predictable. The highest interest in the SE was observed among the respondents within the 25–39 age range, and the lowest – among the respondents at the age to 40.

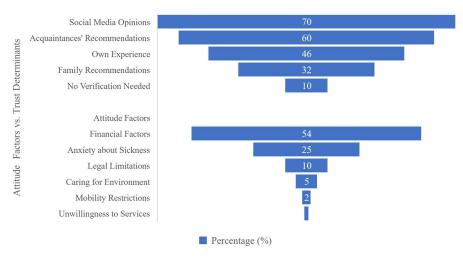


Fig. 6. Consumers' engagement in the SE activities

Discussion

The authors of this paper, in conjunction with other researchers and scientists, emphasise the significance of sustainability in the utilisation of SE solutions. In contrast, the findings of the research study do not corroborate or align with the prevailing trajectory of sustainable development. It is somewhat surprising and concerning, particularly when one considers that the majority of respondents were young people. Additionally, the research indicated that respondents tend to rely on the opinions and recommendations of other users, a phenomenon that was also highlighted in the source literature. The authors highlight the significant degree of differentiation observed in the responses provided by the respondents. The disparate outcomes may be attributed to the continued prevalence of COVID-19, which continues to exert an influence on human decision-making. It is challenging to evaluate the results and make projections regarding future developments, particularly in the near term. Nevertheless, the respondents demonstrated a high level of compliance with the growing significance of the SE, with 86% expressing confidence in its future importance. Others perceived the phenomenon as incomprehensible and indicated that they do not anticipate a greater interest in the SE. The conducted research has led to the conclusion that participation of new service providers or technologies (especially apps) operating as a part of the SE has increased drastically nowadays. The applications are particularly attractive to the young generation who actively use the advancements of technologies. The results should also be interpreted from the perspective of previous studies (presented in Table 1 and Table 2) on the considered topic made by

many researchers all over the world. Although the SE is broadly analysed, the perspective of potential consumers' behaviours is not so well-recognized, especially in the context of COVID-19 situation and its consequences. The choices that the consumers make are very sensitive and uncertain. Therefore, it was legitimate to conduct a sensitive analysis responsive to changing values and determinants. The service sectors (for example hospitality, transport, and gastronomy) are very quick to respond to changing conditions and depend on them. This paper showed these correlations and uncertainties in the process of delivering services. In response to the research questions initially posed, the authors emphasise the growing significance of sustainable tourism development in the context of the SE. As evidenced in the literature review (Boar, Bastida, & Marimon, 2020), the SE is conducive to sustainability, exerting a positive influence on sustainability from economic, social, and environmental perspectives. There is a positive perception of SE in service industries, which creates new possibilities in various aspects of our lives. The results also enabled the authors to ascertain that the tourism sectors most significantly impacted by COVID-19 were accommodation, gastronomy, and transportation services. The research findings indicate that the SE presents a series of challenges that must be addressed in order to facilitate sustainable tourism development. This can be achieved through the implementation of future digital platform business models that align with the 17 Sustainable Development Goals (SDGs). The investigation of sustainable models has been less extensive than that of other models (Perelygina et al., 2022). As technology advances, travellers are becoming increasingly aware of their ability to exchange travel-related information, opinions, and content.

Key Insights and Contributions

This paper presented an analysis of the fundamental principles of the SE and the behaviours of consumers, with a particular focus on the factors that drive it and the impact of COVID-19 on sustainable development. The objective of the study was accomplished by illustrating the interrelationships between a range of attitudes (including willingness towards SE solutions, lack of familiarity with contemporary technologies, apprehension about novel digital solutions, and so forth) towards innovative sustainable technologies and solutions in the tourism sector within a comprehensive framework. Data-driven study has empowered academic achievement to date in the field of the SE. Having regard to the fact, that increased tourist companies are sharing their data and incorporating online platforms (even massively) into their digitalized business models through data sharing, security mechanisms, economic benefits, and social motivation are the key factors affecting the sustainability of the SE. Furthermore, the findings indicate that SE-based platforms exert the greatest influence on the sustainability of the SE. The authors of this paper identified security mechanisms as the most prevalent concern across all three sectors (hospitality, gastronomy, and transport). This finding aligns with the respondents' expressed interest in this topic. The importance of safety and security in the context of modern technologies cannot be overstated. It underscores the necessity for the adoption of sustainable methods and techniques that can foster a harmonious balance between the physical and virtual realms.

According to the research, the pandemic influenced the service industry both in a negative and positive meaning because some people (who were not interested in the SE) started to be, and what is interesting, some started to be more engaged in the phenomenon in comparison to the period before COVID-19. The service industry and all the linked branches are influenced by extraordinarily strong social and health tendencies. The decisions made by consumers are susceptible to a multitude of factors, including economic, environmental, social, and health-related influences. The demand is highly responsive to changes and trends, whereas the supply tends to be more gradual due to the influence of various costs. The service industry is particularly susceptible to disruption, as evidenced by the impact of COVID-19 on this sector. However, there are opportunities for growth and innovation in other areas (Travlou & Bernát, 2022).

The article presents a valuable opportunity for comprehensive research into the collaborative economy, which can be defined as a broader aspect of the SE.

Implications

The research evidence suggests that practitioners should be expected to establish regulations for SE models through sustainable platforms in order to meet sustainability goals. This topic continues to be a source of growing concern (Morell et al., 2020) or a subject of intense debate (Hellemans et al., 2022; Niehoff, 2022).

From an academic standpoint, a research paper presents empirical analysis regarding the correlations between various attitudes and digital travel platforms, with a particular focus on drivers and the growing debate on the impact of SE on sustainable development in terms of economic, environmental, and social factors. Therefore, this study provides the potential to extend the research done by (Dabbous & Tarhini, 2021) considering the impact of the SE on the economic dimension of sustainable development only. By incorporating social and environmental considerations, the study may contribute to the existing empirical evidence on the impact of the SE on sustainability when economic, social, and environmental dimensions are considered. Furthermore, it assists potential travellers in making more sustainable decisions or choices, thereby providing additional practical implications regarding the positive impact of the SE on service activities that fall within the digital platform economy. This is achieved by encouraging the selection of eco-friendly digital products and for-profit services in conjunction with one another. An understanding of the sustainability impact on services enables the dynamics of the digital platform economy to be grasped, thus facilitating gains in terms of environmental responsibilities, economic outcomes, and social benefits. The significant impact of the SE as a factor in economic assessments highlights the necessity for the identification of reliable solutions through research in order to achieve reasonable assessment and modelling outcomes. It is therefore imperative that future evaluations are based on detailed data pertaining to the SE. Such definitions must be clearly delineated in terms of both spatial and temporal context, in order to align with the specific parameters of individual assessment scopes. To this end, the authors propose the establishment of an open access monitoring system for the SE over a period of several years, with a local resolution.

Further Research and Limitations

COVID-19 presented significant challenges for the SE and the wider tourism sector. presented significant challenges. The crisis and development of technology have contributed to the growing popularity of emerging digital platforms, which have the potential to facili-

tate travel innovations and convenience. This approach will encourage new potential users and SE companies (tourist firms) will be encouraged to use online platforms and applications as a primary source of travel information, rather than relying on tourism boards and traditional leaflets. Therefore, such platforms may provide inspiration for their application in developing and emerging economies enabling market entry without significant barriers or lower barriers to entry, as well as access to data. On the other hand, it brings opportunities and challenges to answer the following questions (1) how to deal with captured data on those platforms delivering useful information to better manage the data by tourist companies; (2) how these (emerging) technologies can provide more beneficial outcomes with concerns about their sustainable impacts contributing to development of sustainable tourism; (3) are these digital platforms accessible for emerging countries. In this context, it may lead to shared prosperity.

Consequently, further studies are required to enable companies to meet the technological challenges of their growing and changing environment. Moreover, this disruption may also address the issue of trust regarding potential SE users who are engaged in the economy. It can be perceived as a limitation when recommendations and available opinions of digital platforms used (for example in online transactions) are not positive.

It would therefore be beneficial to include an investigation of the trust placed in digital platforms for measuring the intention of SE users and their influence on the SE in the next research paper. While the SE has transformed traditional economic models, as discussed in this paper, new considerations such as unfair competition, reliance on technology, and inadequate protection of consumer data in online transactions (from the perspective of the SE user) have yet to be addressed in relevant studies.

The SE, defined by the peer-to-peer sharing of resources and services facilitated by digital platforms, has experienced a period of rapid growth recent years. In order to facilitate the further development of the SE (SE) and address the associated challenges, it is recommended that a series of policy recommendations be proposed. Developing policies for the SE involves finding a balance between encouraging innovation, ensuring consumer protection, and addressing potential regulatory deficiencies. For instance, the development of transparent and adaptable regulatory structures is essential to facilitate the evolving nature of SE platforms while maintaining a conducive environment for innovation. Moreover, it is essential to establish clear guidelines for registration, licensing, and compliance to ensure that SE businesses adhere to the relevant laws and standards. In order to safeguard consumer

interests, it is essential to establish benchmarks for service quality, safety, and transparency. Policy makers should also establish mechanisms for addressing issues such as liability, insurance, and warranties to protect both consumers and service providers. It is also important to implement guidelines for the collection, storage, and sharing of user information on sharing platforms. ensuring compliance with data protection laws. Other recommendation is to develop clear tax regulations for SE platforms and participants to ensure fair and consistent taxation. Moreover, it would be beneficial to investigate potential avenues for enhancing compliance and revenue collection, such as the implementation of simplified reporting or the consideration of tax withholding. A further issue that requires consideration is the question of collaboration with digital platforms. Collaboration between regulators and SE platforms should be fostered to ensure ongoing dialogue and information exchange. It is recommended that investment be made in research with the objective of developing a more comprehensive understanding of the social, economic, and environmental impacts of the SE. Decision-makers can establish monitoring mechanisms to regularly evaluate the effectiveness of policies and make adjustments as needed. The implementation of these selected policy recommendations enables, governments to facilitate the expansion of the SE while guaranteeing its operation within a framework that protects consumers, workers, and the public interest. It is incumbent upon policymakers to engage in a continuous process of reassessment and adaptation of regulations in order to maintain alignment with the evolving nature of the SE.

Furthermore, the new concept has the potential to enhance the outcomes of the SEs by carrying out research on the sustainability impact on services. This research would aim to ascertain the effects of SE on performance models that support the closed-loop economy. In particular, this paper aims to address the limitations of the existing economic performance model towards sustainability which often impedes the development of sustainable business models that are both theoretically sound and practically applicable. The next challenge for the SE is to integrate data processing regulations into policies and to consider the impact of COVID-19 on data protection and the development of digitalised sustainable business models.ls. It is thus recommended that existing SE business models can be subjected to further examination (Curtis & Lehner, 2019; Curtis et al., 2020) with a view to fostering digital infrastructure or platforms. The business models that have been developed based on the SE are undergoing a dynamic process of evolution and currently exert a considerable influence on our lives. A data-driven approach is frequently associated with industries such

as business and technology, where substantial quantities of data are generated and can be harnessed to gain a competitive advantage and enhance efficiency. Such an approach enables organizations to make more informed and objective decisions, which in turn leads to improved outcomes. Moreover, the data-driven approach may result in the emergence of numerous business models. However, this is unlikely to occur in the service industry due to the impact of the COVID-19. In this manner the value creation for tourism companies will be achieved in a structured way.

Conclusion

The findings indicated that the respondents demonstrated a proclivity towards the SE, albeit with a relatively neutral attitude during COVID-19. This indicates the necessity for consideration of the behavioural intention of individual-level (user) adoption of the SE, especially among the younger generation. The analysis presented in this paper was conducted using selected research methods and techniques with the aim of answering the research questions outlined in the introduction. The theoretical framework introduced in this paper appears to align with the majority of the research findings analysed in the article. The largest proportion of respondents fell within the 18–25 age brackets, due to a number of factors including place of residence, Internet access, educational status. Additionally, the source literature indicates that younger individuals tend to use digital platforms and applications due to their qualifications, abilities, and willingness. The majority of respondents were mostly active in the field of mutual borrowings (approximately 75%) and the common use of various means of transportation (71%). A review of the literature concerning the transport industry and its relations to the SE corroborates the findings and demonstrates the significance of the SE in the context of transportation solutions. The most popular platforms in the transport sector were Uber (83%), BlablaCar (78%), and Bolt (70%), whereas the most recognisable platform in the hospitality industry is Airbnb (42%). The primary motivations for utilising SE platforms were financial (54%) and ecological (5%)with the latter being a notably low proportion.

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