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How sustainable is the sharing economy? On the sustainability connotations of sharing economy platforms

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ABSTRACT

The sharing economy has evolved and spread to various sectors of the economy. Its early idea linked to the creation of more sustainable uses of resources. Since then, the development of the sharing economy has included a professionalization with self-employed suppliers rather than peers, and the question is whether the platforms following this development maintain the focus on sustainability. This paper describes and classifies the sustainability connotation of sharing economy platforms. It analyses 121 platforms derived through social media analytics to figure out whether they describe themselves as sustainable. The findings suggest that the sustainability connotation closely connects to specific sectors such as fashion, on-demand services and logistics. Meanwhile, the dominant role model platforms do not communicate about being sustainable. These findings contribute to previous research through (1) giving a systematic empirical account on the way various sharing economy platforms describe themselves in terms of sustainability, (2) pointing out the differences among the platforms, and (3) indicating the diversity in sustainability connotation among various sectors of the economy.

1. Introduction

The sharing economy, that is, digitized platforms for peer-to-peer exchanges (e.g., Belk, 2014; Hamari et al., 2016; Piscicelli et al., 2015), has gained momentum in several sectors of the economy (Geissinger et al., 2017; Matzler et al., 2015). Its early ideals included how individuals shared vehicles when travelling to the same destination, or accessed resources not currently used by the owner. Together, this created more efficient use of resources while also keeping consumption down, since what would have traditionally been acquired and consumed could now easily be accessed (Davidson and Infranca, 2016; Stephany, 2015). Sustainability, namely, the system that with a respect for resources remain productive indefinitely and without compromising future resource needs (Brundtland, 1987; Cohen and Muñoz, 2016), was early linked to the sharing economy idea of accessing rather than acquiring and consuming resources (Heinrichs, 2013).

While the efficient use of resources and accessing as opposed to acquiring and consuming could quite easily be understood from a sustainability point of view, the development of the sharing economy indicates several paths: the separation between those accessing and those owning resources, individuals (and companies) operating the sharing economy as professions and businesses, and peers participating in the sharing economy for profit and financial reasons (see, e.g., Acquier et al., 2017; Mair and Reischauer, 2017). The true meaning of "sharing" has become questioned alongside these developments (e.g., Cockayne, 2016). Yet, we know very little about whether and how this development has changed the way the sharing economy platforms consider sustainability aspects. This is what this paper sets to investigate. The purpose of the paper is *to describe and classify the sustainability connotation of sharing economy platforms*. The platforms here refer to the intermediary functioning to create the accessing or exchanges, payments, and evaluations among the peers or companies. These platforms are those to put forth the ideas of what products and services to share

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and how the processes of exchange should be designed (Constantiou et al., 2017; de Rivera et al., 2017).

Based on how the sharing economy has spread into different sectors of the economy (Geissinger et al., 2017; Matzler et al., 2015), and also as a result of the different development paths of the sharing economy (Acquier et al., 2017; Mair and Reischauer, 2017), it is relevant to address similarities and differences among different platforms, both as individual instances and related to each sector of the economy they belong to. The following research questions are addressed:

- How can the sustainability connotation of the sharing economy be understood based on the platforms' communication?
- What differences and similarities are there among different platforms and among different sectors of the economy?

Addressing these questions is important, since the sharing economy has indeed spread and also impacted traditional businesses and their ways of operating (Xie and Kwok, 2017), and because sustainability is a main concern in today's society (e.g., Gonzalez et al., 2015). The sustainability aspect of the sharing economy has been discussed on the meta level (Cohen and Muñoz, 2016; Martin and Upham, 2016) and been highlighted as one of several rationales among consumers for participating in the sharing economy (Gullstrand Edbring et al., 2016; Hamari et al., 2016; Hellwig et al., 2015). Less, however, remains known about whether the sharing economy *platforms* acknowledge a possible link to sustainability, a dimension that is important since the platforms design the exchanges.

The paper contributes to previous research by giving a systematic empirical account on the sharing economy platform expansion, with the main contribution of the paper being whether and how the sharing economy platforms as of today describe themselves as sustainable. Through focusing on similarities and differences in the sustainability connotation among platforms and the sectors of the economy they belong to, the paper adds knowledge to the ongoing discussions on the pluralization of the sharing economy (cf. Mair and Reischauer, 2017), and whether the sharing economy is (still) about sharing (cf. Cockayne, 2016). The practical relevance consists of how the number of sharing economy platforms has increased, where possible disconnections from the sustainability idea would have negative (long-term) effects for society.

The remainder of the paper is structured as follows: The next section presents a brief background concerning the sharing economy and sustainability. Subsequently, the research design is described. Next, the results are presented and analyzed. Finally, the paper provides some concluding remarks together with directions for future research.

2. Elements of the topic

In this section, we describe the main research streams on the sharing economy, and then briefly introduce sustainability and link it to the sharing economy.

2.1. A background on the sharing economy

The sharing economy as digitized platforms for peer-to-peer exchanges (Belk, 2014; Hamari et al., 2016; Piscicelli et al., 2015) has several implications for exchanges, or the accessing of resources (cf. Kathan et al., 2016). These include entirely new understandings about the interaction between users and producers; the ability to connect otherwise unconnected individuals; users appearing as both supplying and using parties; individuals, rather than companies, being the central unit of exchange; and the transactional characteristic of exchanges as users and producers are matched via the platform, rather than producers being pre-selected by the users. The peer-to-peer description of the sharing economy defines the individuals as users and producers while also indicating their overlap of roles, where digitalization has enabled the transactional characteristic of exchanges. Information and communications technologies based on web-based solutions have lowered transaction costs, making it increasingly possible for users and producers to meet through the platforms (Felländer et al., 2015) and enabling new forms of exchanges and solutions (Linder, 2013). As for what the individuals do, the literature refers to sharing, accessing, and so on (Belk, 2014) to mark that goods may not change owners and not be consumed by any one party.

Much research on the sharing economy focuses on the motivation of users. Scholars such as Hamari et al. (2016) and Hellwig et al. (2015) have noted how users may participate in the sharing economy out of ideological reasons, because services are different to what is offered elsewhere, but also for economic reasons. Pisano et al. (2015) indicate how the sharing economy may change users' mindsets to increased transparency, openness, collaboration and sharing. While it has thus been noted that the motives of users extend to sustainability (Martin and Upham, 2016), it is not known whether this also applies to the platforms.

Research on the sharing economy has also concerned how it spreads among sectors of the economy and how it affects traditional businesses. From having largely been talked about as, for example, *Uber* and *Airbnb*, the number of platforms – global and local – steadily increase, often as adaptations and modifications of the original platforms (Geissinger et al., 2017). Along the development and spread of the sharing economy is also a development at least partly moving away from the accessing and sharing between individuals towards professionalization and platform capitalism (see e.g., Banning, 2016). While this may partly be a change of rhetoric, it implies a development where producers engage in the sharing economy as full or part-time self-employed individuals, and to earn income rather than to make use of resources they contain but do not use at the moment. Furthermore, it has introduced companies as both users and producers in the sharing economy (Öberg, 2018).

The legal issues and the impact of their changes have been researched in relation to the sharing economy. More specifically, the literature has concerned itself with taxation issues and contractual norms, as well as with how crimes have affected the use and supply of the sharing economy, among other things, leading to evaluation systems as part of the sharing (Ert et al., 2016) and also of the professionalization.

Thus, previous research has concerned motivations (e.g., Hamari et al., 2016), the spread of the sharing economy (Geissinger et al., 2017), and how regulations and the participation of companies have caused the sharing economy to change shape (e.g., Leiren and Aarhaug, 2016). The early idea of sharing and accessing for better resource use and non-consumption could quite easily be linked to sustainability as would motives of sustainability, while the more recent development may well lead to a questioning of the sharing economy's sustainability connotation. Yet, we know very little about whether and how this development has changed the way the sharing economy platforms consider sustainability aspects, and the sustainability aspects have thus far not been systematically related to the sharing economy platforms.

2.2. Sustainability

As stated previously, sustainability denotes how developments

allow for present uses while not causing harm to set the future at play (Brundtland, 1987). Sustainability is often described in its social, economic, and environmental aspects (Carter and Rogers, 2008). Research is extensive in the area, and without the ambition to capture all its various aspects it stretches from highly technical descriptions on emissions to various business aspects of social, economic, and environmental sustainability orientations.

In terms of business aspects, these primarily include how sustainability may be used to position a firm or its offerings or how it comprises values of a firm affecting its operations. Sustainability has, for instance, been studied in how it fosters innovation, embeds in strategies, and invites to a multi-stakeholder concern (e.g., Amir-Aslani, 2009; Bolis et al., 2017; Kemp et al., 1998; Sharma and Henriques, 2005). Legitimacy is one aspect discussed related to sustainability, then pointing out how sustainability orientation may create competitive advantages, while also how activities of the company may lead to it being seen as sustainable (Alrazi et al., 2015). Environmental effects, their measurements and consequences of various sustainability interventions have been captured to conclude how resources should best be used, and how the level and time span of analysis affects outcomes (Epstein and Roy, 2001; Öberg et al., 2012; Walter and Stützel, 2009).

Öberg (2012) presents a study focusing on the link between sustainability and innovation in various sectors of the economy. It concludes that raw material suppliers largely tend to adhere to regulations in the context of their business operations, doing only what is required from them based on laws and regulations. The more refined the company's products and services become (the more downstream the supply chain), however, the more sustainability is manifested as an important way in which to position the offering. Focus also moves from environmental concerns to social sustainability along the same axis of refinement. Service firms, for instance, concentrate their efforts on ethics of operations, while retailers describe how their products have been manufactured to take both ethical work requirements and environmental effects into account.

2.3. Sustainability in the sharing economy

In the early ideas of the sharing economy, with its focus on coriding and accessing rather than transferring, the link to efficient use of resources and non-consumption could thus be seen as quite explicit (Botsman and Rogers, 2011; Kaplan and Haenlein, 2010; Laurell and Sandström, 2017; Möhlmann, 2015; Wang and Zhang, 2012). Research suggests how the sharing economy may positively impact sustainability by reducing consumption-induced resource depletion when consumer products are shared instead of owned individually (Bartenberger and Leitner, 2013). The sharing economy has been suggested to offer the potential of transitioning societies into a post-ownership economy (Belk, 2014). Users (thus sometimes overlapping with producers) would also be motivated by factors other than profit, including altruistic values related to sharing, helping others and contributing to a more sustainable way of life (Bauwens and Kostakis, 2014; Gullstrand Edbring et al., 2016; Prothero et al., 2011; Sacks, 2011). Also focusing on users (and producers), crowdfunding can be regarded as a form of sharing economy solution in the financial sector. Here, researchers have highlighted the potential of such solutions to transition the society towards sustainability (Bartenberger and Leitner, 2013), and that crowdfunding "represents a potentially revolutionary application of social networking with direct consequences for sustainability" (Goodman and Polycarpou, 2013, 27).

While such first-order effects have been pointed out, very little research has been done concerning the second-order effects of how the "freed" monetary capital is in turn distributed. Freed up resources may be used for further consumption and resource depletion, and therefore it is unclear whether the sharing economy has any positive effect on the environment (Codagnone et al., 2016).

And, there is the shift in how the sharing economy is operated that may have changed its sustainability connotation. More precisely, *Airbnb* and *Uber,* for instance, have created platforms for commercial exchanges between individuals. Having received hundreds of millions in venture capital (Alsever, 2013), these platforms induce both competitive and institutional turbulence in several established industries (Laurell and Sandström, 2016). Being motivated by profit (Schor, 2014), the platforms compete against both incumbent firms and vested interest groups by redefining notions of work and employment, also including how companies have become users and producers in the sharing economy. The separation between producers and users constitutes a professionalization of the sharing economy, which includes how more parties take on the task of producers as a profession. In parallel, the literature has increasingly recognized such motives as economic gains and the non-substitutability aspects of offerings (cf. Hamari et al., 2016; Milanova and Maas, 2017; Möhlmann, 2015).

While economic gains may not necessarily contradict the sustainability connotation of the sharing economy, separations of those using and producing offerings (also linked to the professionalization) would, as would the transfer of resources, rather than the sharing and accessing (cf. Belk, 2014). This comes about as the separation and transfer would no longer mean that present resources are used more efficiently, but rather acquired for the purpose of consumption. The difference between two individuals coriding a car and someone providing taxi-like service and thereby driving someone else to a destination that the driver does not aim for him/herself is evidence thereof. A second example would be how houses are built to accommodate tourists, rather than tourists renting someone else's home. Changed motivations may lead to those changed behaviors, while also indicating changed orientation in values of users and producers in the sharing economy.

Some scholars have pointed out that the sharing economy may be "a potential new pathway to sustainability" (Heinrichs, 2013, 228), while other researchers are more skeptical (e.g., Martin and Upham, 2016). More research is needed concerning how the sharing economy is related to sustainability as suggested by Daunorienė et al. (2015), and there is still very limited research focusing on the platforms in the sharing economy. Focusing on users (and producers), most studies still concern *Uber* and *Airbnb*, respectively, while the development of the sharing economy contains many new platforms. How these platforms and the role models *Uber* and *Airbnb* link to sustainability is important, as the sharing economy expands and also increasingly affects traditional businesses and their ways of operating. Based on how previous studies have noted differences in sustainability orientations among sectors of the economy (cf. Öberg, 2012), this paper thus asks: How can the sustainability connotation of the sharing economy be understood based on the platforms' communication? And: What differences and similarities are there among different platforms, and among different sectors of the economy? The paper thereby juxtaposes differences among sectors in their orientations to economic, social, and environmental sustainability with the development of the sharing economy and its various platforms. Fig. 1 illustrates our research model.

3. Research design

This paper uses social media analytics and text analysis of sharing economy platform websites. The former is used to trace the

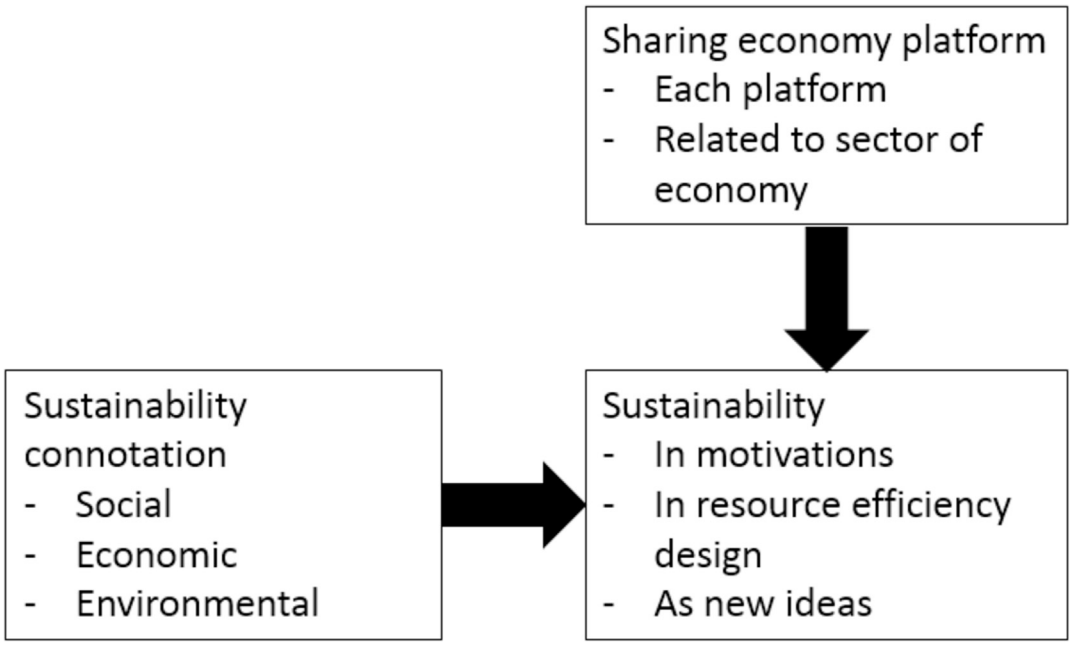

Fig. 1. Research model.

development of the sharing economy in terms of the creation of platforms, the latter to determine their sustainability connotation.

3.1. Data collection

Social media as a means to capture various platforms was considered suitable based on how social media and the sharing economy have many overlaps in terms of users (Dahlin and Öberg, 2017), the digital solution underpinning them (Felländer et al., 2015), and how social media includes up-to-date communication about issues. Data collection in social media has in recent years become popular, resulting in the emergence of social media analytics (SMA). SMA is an interdisciplinary approach that combines, extends and adapts methods for analysis of social media data (Jung et al., 2017; Stieglitz et al., 2014), thus enabling content analyses, for instance, of individuals' entrances in social media (*Facebook* posts, blogs, etc.).

As a means to deal with the deficiencies of social media (the fragmented social media landscape and the lack of standardized ways to gain access to user-generated content across social media platforms), this paper used a data analytics tool named *Notified* to track user-generated contents published on a diverse set of social media platforms. To use the tool, the researcher first enters a keyword or a set of keywords. After the keyword or the set of keywords are entered, all publically posted user-generated contents from *Twitter, Instagram, Facebook*, blogs, forums and *YouTube* are collected in a database in real time. The main benefit of using services like *Notified* is to gain direct access to data from all major social media platforms directly (cf. Stieglitz et al., 2014). Another benefit relates to the possibility to collect data with the help of specific filters, which, for instance, enable the researcher to focus on specific topics of interest. One of the drawbacks of using these services, however, relates to potential changes in *application programming interfaces* (APIs) during the data collection process. To handle this, the researcher needs to stay abreast of changes and ensure that data is collected using the same procedure throughout the whole data collection period.

In this paper, the search was delimited to platforms operating in Sweden (but thus also including global platforms present there). During the last two decades, Sweden has demonstrated high levels of internet penetration and use of digital technology among its 10 million inhabitants (cf. Davidson and Infranca, 2016). Felländer et al. (2015) illustrate how *Airbnb* and *Uber* early became dominant platforms in Sweden's sharing economy, but that local platforms have reacted to this dominance by developing new platforms.

A dataset from social media was collected covering all publically posted user-generated content published on the dominant social media outlets available that included the keyword "*delningsekonomi(n)*" (the direct translation of "(the) sharing economy" in Swedish) between April 1st, 2016 and March 31st, 2017. Filtering data collection to a specific language and user origin allowed for a more focused approach. This is important because certain keywords can have several connotations in different languages as well as being rare or common in the everyday vocabulary across languages. The usage of "*delningsekonomi(n)*" in the Swedish language is strongly limited outside of the scope of its meaning as the sharing economy. Therefore, user-generated contents including this keyword were assumed to have a relatively high degree of relevance in relation to the intended phenomenon under study.

The social media data collection generated a dataset amounting to 5185 social media posts. These were then used in two ways: to identify sharing economy platforms and to create an estimate for the individual platforms' dominance (measured through the relative number of posts). Bearing the high usage rate of digital technology and social media in Sweden in mind, it can be hypothesized that a large number of social media posts concerning a particular platform indicates a greater impact of it. The 5185 social media posts were reviewed to exclude user-generated contents relating to other phenomena than the one intended. This review identified 344 user-generated posts in the social media dataset referring to other phenomena. These contents were therefore excluded from the social media dataset, resulting in a total of 4829 remaining user-generated posts. Table 1 presents the distribution of collected relevant social media data per social media platform.

Each user-generated post was coded according to whether these

Table 1
Collected and publicly posted user-generated contents per social media platform.

Social media	n	%
Blog	177	3.7%
Facebook	403	8.3%
Forum	16	0.3%
Instagram	486	10.1%
Twitter	3747	77.6%
Total	**4829**	**100.0%**

included references to any sharing economy platform, and in such instances, which sharing economy platform or platforms were referred to. This resulted in 1515 posts referring to 121 unique platforms. The further data collection contained the text capturing from each of these platforms' websites to decide whether and how they presented themselves as sustainable. Additional textual sources were used to support the decisions on the platforms as sustainable/non-sustainable-oriented, if the websites did not provide enough clarity.

3.2. Data analysis

Following the initial steps of social media analytics to capture the various platforms and text analysis of the platforms' websites, qualitative content analysis (Silverman, 2006) was applied in sequential steps.

To determine the sustainability connotation of the 121 platforms, the communication on their websites was thus searched for traces of sustainability connotation. If sustainability or sustainability-oriented values relating to the triple bottom line of sustainability (that is, sustainability oriented towards economic, environmental, or social objectives, or the full integration of the triple bottom line in terms of general objectives associated with sustainability (Lozano, 2008)) were explicated in the way the platform presented itself, the platform was coded as being sustainability-oriented. A clear indication for sustainability was assumed when phrases such as “climate smart”, “sustainable”, “green” or “to make a difference for society” were used to describe the platform or its operations. In cases where no such or related attributes were presented, the platform was coded as being non-sustainability oriented. If a specific website was only available in languages besides English, German or Swedish, these instances were coded as “not applicable” for further analyses as their sustainability orientation could not be verified (12 instances).

The next step of analysis focused on mapping the sectors of the economy where the individual sharing economy platforms operated. This step also entailed the construct of sub-sectors of the economy as a means to refine the sectors and capture potential intra-sector variances. The sub-sector analysis was included to give the sharing phenomenon justice by scrutinizing various sharing activities within a sector. For instance, the sector “mobility” includes the sub-sectors personal transportation, car rentals, ride sharing, bike rentals, and mobility platform services that represent quite different ways to operate and where the underlying resource would expect to have or not to have a negative impact on sustainability (such as the difference between cars and bicycles as mode of operation).

The platform, sector and sub-sector analyses were followed by a quantitative content analysis. This was carried out by analyzing the number of platforms being sustainability and non-sustainability oriented, their share of the platforms in each sector and sub-sector, and their importance based on number of posts. The analysis thus focused on number of platforms in each sector and sub-sector and how many of the platforms that indicated a sustainability orientation. The analysis was also performed by weighting the individual platforms' impact based on the number of social media posts including each platform, also summarizing this for the sectors and sub-sectors.

Iterating from the results of the previous steps of the analysis, we drew conclusions through comparing the various platforms, sub-sectors, and sectors and their sustainability connotation through tracing patterns between characteristics of the platforms and sectors, and the sustainability connotations (cf. Jessop, 2005). This resulted in empirically-derived relations between sectors and sustainability/non-sustainability, as well as between dominant platforms and recent ones and non-sustainability/sustainability as presented in the analysis and conclusion sections. Decisions on what was considered a dominant and more recent platform were made based on (1) the number of entrances in the social media (dominant platforms) and (2) the year of their foundation (newness of platforms), where the dominant role model platforms *Uber* and *Airbnb* were founded in 2008, and most new platforms from 2015 onwards.

In the final step of analysis, instances in which sharing economy platforms were referred to in the material were qualitatively reviewed in further detail to assess the ways in which user-generated content attributed value and meaning to both sustainability-oriented and non-sustainability-oriented sharing economy platforms found in the dataset. This step was done to verify the findings produced from the preceding steps of the analysis. Table 2 summarizes these various steps of the data capturing and analysis.

4. Findings

Below, the findings are presented in two sequential steps. First, an overview of the data material regarding the sustainability connotation of platforms is provided. Second, the distribution of sustainability connotation in sectors of the economy, sub-sectors and among platforms compared to the overall data is presented, along with the result weighted by indicated impact of each platform (weight thus based on number of social media posts about each platform and summarized for each sector/sub-sector).

4.1. Overview

Fig. 2 presents a visualization graph of the overall data material as a flow illustration. To the left, the monthly number of social media posts including references to the identified sharing economy platforms is illustrated. Next, a list of the identified platforms ordered by their importance (number of posts referring to them) is portrayed. The platforms (and their importance) are then subsequently summarized into sub-sectors. To the right, the sustainability connotation is portrayed as well as the distribution of sustainability connotation by sector of the economy for the identified platforms. Based on how each platform is referred to a specific sub-sector and sector, and based on if each platform is sustainable oriented or not, it is possible to trace the sustainability/non-sustainability connotation to each platform in the graph.

The flow illustration indicatively points at how fewer posts (that is, on total, the impact of platforms) describe platforms referring to themselves as sustainability oriented, and the illustration also shows how the division between those who do and do not describe an orientation to sustainability are quite sharply separated among sectors and sub-sectors. Table 3 presents further details on these observations, providing a numerical overview of the material identified in the dataset. Of the 121 identified sharing economy platforms, 35 platforms (or 29 percent) referred to any type of sustainability orientation on their websites. These 35 platforms are

Table 2
Data capturing and data analysis.

Step	Analysis	Description	Number of identified items
1	Identification of platforms	Coding of platforms mentioned in the social media data set	Of the 5185 social media posts, 1515 posts mentioned sharing economy actors
2	Reviewing sustainability orientation	Coding identified platforms through reviewing their websites for sustainability indicators	121 separate platforms mentioned in the 1515 posts
3	Sector-level analysis	Definition of sectors and sub-sectors for the platforms	54 sub-sectors; 16 sectors for the 121 platforms
4	Frequency analysis	Per-sector frequencies of sustainability/non-sustainability indicators	121 platforms, 54 sub-sectors; 16 sectors. The 1515 social media posts used as "weight" of importance for each platform, sector, and sub-sector
5	Patterning	Search for patterns in data related to sectors and platforms. Iteration of differences among sectors and platforms.	121 platforms; 16 sectors
6	Verification	Qualitative analysis of data sources and data capturing	Iterative analysis containing all sources, platforms, sub-sectors and sectors

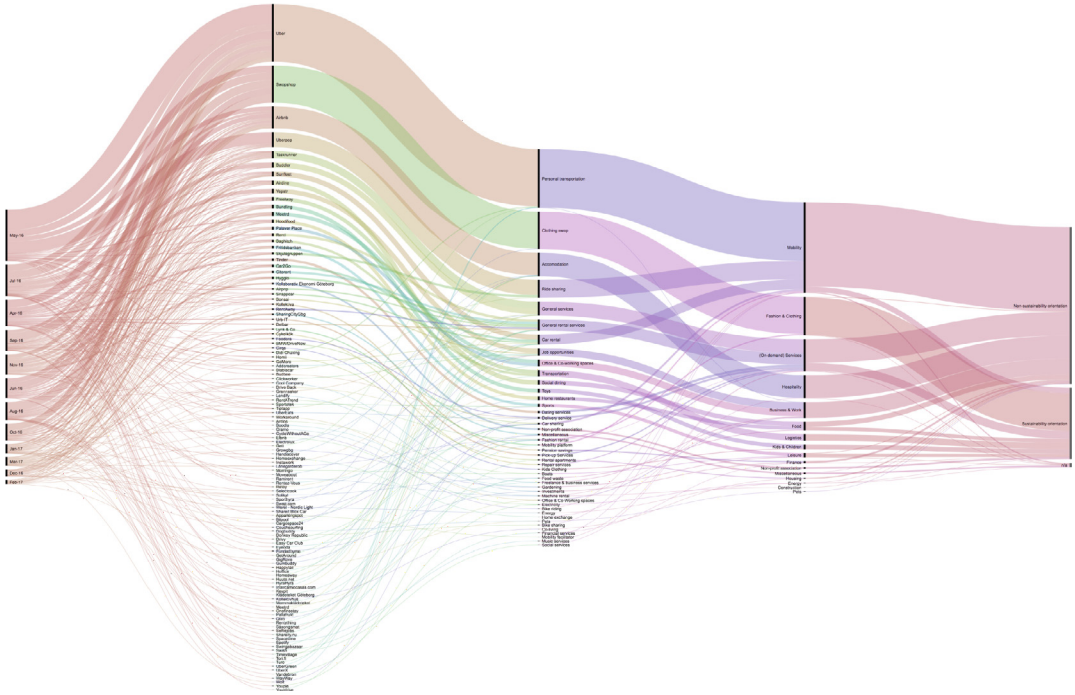

Fig. 2. Data flow over studied time period by platform, sub-sector and sector, and sustainability orientation.

Table 3
Overview of identified platforms and sustainability orientation.

Overview platforms			Overview social media posts		
Sustainability	Total	in %	Sustainability	Total	in %
Platforms referring to sustainability in their descriptions	35	29%	Platforms referring to sustainability in their descriptions	467	31%
Platforms not referring to sustainability in their descriptions	74	61%	Platforms not referring to sustainability in their descriptions	1022	67%
n/a	12	10%	n/a	26	2%
Total	**121**	**100%**	**Total**	**1515**	**100%**

described in 467 social media posts (out of the 1515 posts referring to any platform), making up 31 percent of the total number of posts.

4.2. Comparison of sector, sub-sector and platform distribution in social media with sustainability connotation

As indicated by Table 4 and referring back to the right-hand side of Table 3, from the total number of identified platforms (n = 121), the top 50 platforms (defined by number of posts that mention them) attribute to 93.7 percent of the overall posts in the analyzed social media. Of these 50 top platforms in the data set, only 17 platforms are characterized with a sustainability orientation based on the analysis of their websites. So, while these platforms represent 93.7 percent of the posts, the sustainability portion of them is only 34 percent. This low portion is also seen when comparing the platforms in the left and right-hand columns in Table 4. Few platforms overlap between these lists, and the 35 platforms describing a sustainability orientation also only represent 31 percent of the total posts.

Table 5 continues by presenting the platforms by sub-sectors. The 121 platforms could be said to represent 54 sub-sectors (sub-sectors thus empirically determined by descriptions of the

Table 4
Distribution of top 50 identified platforms in social media compared to sustainability platforms.

All platforms (Top 50)			Sustainability (Total 35)		
Platform	Frequency	Share	Platform	Frequency	Share
Uber	374	24.7%	Swopshop[a]	242	16.0%
Swopshop[a]	242	16.0%	Freelway[a]	25	1.7%
Airbnb	143	9.4%	Bundling[a]	24	1.6%
Uberpop	99	6.5%	Hoodifood[a]	21	1.4%
Taskrunner	47	3.1%	Rentl[a]	17	1.1%
Buddler	36	2.4%	Baghitch[a]	16	1.1%
Sunfleet	33	2.2%	Fritidsbanken[a]	16	1.1%
Airdine	30	2.0%	Skjutsgruppen[a]	15	1.0%
Yepstr	30	2.0%	Citorent[a]	14	0.9%
Freelway[a]	25	1.7%	Kollaborative Ekonomi[a]	11	0.7%
Meetrd	25	1.7%	Snappcar[a]	9	0.6%
Bundling[a]	24	1.6%	RentAway[a]	8	0.5%
Hoodifood[a]	21	1.4%	Delbar[a]	7	0.5%
Palaver Place	19	1.3%	Cirqs[a]	5	0.3%
Rentl[a]	17	1.1%	GoMore[a]	4	0.3%
Baghitch[a]	16	1.1%	RentATrend[a]	3	0.2%
Fritidsbanken[a]	16	1.1%	Tiptapp[a]	3	0.2%
Skjutsgruppen[a]	15	1.0%	Boodla	2	0.1%
Tinder	15	1.0%	Gett	2	0.1%
Car2Go	14	0.9%	Growgbg	2	0.1%
Citorent[a]	14	0.9%	Moveabout	2	0.1%
Hygglo	13	0.9%	Retoy	2	0.1%
Kollaborative Ekonomi[a]	11	0.7%	Solikyl	2	0.1%
Airpnp	9	0.6%	Sporthyra	2	0.1%
Snappcar[a]	9	0.6%	Swap.com	2	0.1%
Bonsai	8	0.5%	Werel - Nordic Light	2	0.1%
Kollektiva	8	0.5%	Bilpool	1	0.1%
RentAway[a]	8	0.5%	Cargospace24	1	0.1%
SharingCityGbg	8	0.5%	Fundedbyme	1	0.1%
Urb-it	8	0.5%	HyraHyra	1	0.1%
Delbar[a]	7	0.5%	Klädoteket Göteborg	1	0.1%
Lynk & Co	7	0.5%	Säsongsmat	1	0.1%
Cykelkök	6	0.4%	Swingabazaar	1	0.1%
Foodora	6	0.4%	UberGreen	1	0.1%
BMW/DriveNow	5	0.3%	WayWay	1	0.1%
Cirqs[a]	5	0.3%			
Didi Chuxing	5	0.3%			
Homii	5	0.3%			
GoMore[a]	4	0.3%			
Addcreators	3	0.2%			
Blablacar	3	0.2%			
Budbee	3	0.2%			
Clickworker	3	0.2%			
Cool Company	3	0.2%			
Drive Back	3	0.2%			
Grannsaker	3	0.2%			
Lendify	3	0.2%			
RentATrend[a]	3	0.2%			
Sportotek	3	0.2%			
Tiptapp[a]	3	0.2%			
Total	**1420**	**93.7%**	**Total**	**467**	**31%**

[a] Platforms with sustainability orientation in the top 50 sharing economy platforms on social media.

platform's operations). As the table illustrates, the top three sub-sectors (personal transportation, clothing swap, and accommodation) amount to around 50 percent of the overall posts. Among these, only clothing swap has a high (100 percent) portion of platforms describing themselves as sustainability oriented. As indicated by the right-hand side of the table, seven sub-sectors are entirely constructed by platforms describing themselves as sustainable: clothing swap, transportation, toys, non-profit associations, children's clothing, gardening, and energy, but in addition to the mentioned clothing swap sub-sector, these other sub-sectors indicate a low impact of importance (expressed as a limited number of posts).

Table 6, lastly, presents the identified sectors of the economy that the platforms could be regarded to belong to. A total of 16 sectors are predominant in the data material. The largest number of social media posts are associated with platforms in the mobility sector (38.9 percent), followed by fashion and clothing (16.6 percent) and on-demand services (13.9 percent). As the table further illustrates, when analyzing only platforms characterized by sustainability connotations, the most frequently mentioned sectors in the data material are fashion and clothing (16.3 percent), followed by on-demand services (3.4 percent) and logistics (2.8 percent). Furthermore, comparing the total number of posts per sector with the total posts for sustainable platforms, three sectors are dominated 100 percent by sustainable platforms, namely logistics, youth and children, and non-profit associations.

5. Analysis and discussion

This paper describes and classifies the sustainability

Table 5
Distribution and comparison of identified sub-sectors' total platforms and sustainable platforms.

Total social media			Sustainability platforms			
Sub-sector	Frequency	Share	Sub-sector	Frequency	Share (total data)	Share (total sub-sector)
Personal transportation	384	25.3%	Clothing swap	244	16.1%	100%
Clothing swap	244	16.1%	Transportation	42	2.8%	100%
Accommodation	149	9.8%	Toys	26	1.7%	100%
Ride sharing	117	7.7%	Non-profit association	11	0.7%	100%
General services	91	6.0%	Children's clothing	5	0.3%	100%
General rental services	75	5.0%	Gardening	4	0.3%	100%
Car rental	65	4.3%	Energy	2	0.1%	100%
Job opportunities	48	3.2%	Home restaurants	21	1.4%	91.3%
Co-working spaces	48	3.2%	Sports	18	1.2%	85.7%
Transportation	42	2.8%	Food waste	3	0.2%	75.0%
Social dining	30	2.0%	General rental services	48	3.2%	64.0%
Toys	26	1.7%	Fashion rental	4	0.3%	44.4%
Home restaurants	23	1.5%	Investments	1	0.1%	25.0%
Sports	21	1.4%	Car rental	15	1.0%	23.1%
Dating services	15	1.0%	Ride sharing	15	1.0%	12.8%
Delivery service	13	0.9%	Car sharing	1	0.1%	8.3%
Car sharing	12	0.8%	General services	3	0.2%	3.3%
Non-profit association	11	0.7%	Personal transportation	4	0,3%	1.0%
Miscellaneous	10	0.7%	Accommodation	0	0%	0%
Fashion rental	9	0.6%	Job opportunities	0	0%	0%
Mobility platform	8	0.5%	Co-working spaces	0	0%	0%
Pension savings	8	0.5%	Social dining	0	0%	0%
Pick-up Services	8	0.5%	Dating services	0	0%	0%
Rental apartments	6	0.4%	Delivery service	0	0%	0%
Repair services	6	0.4%	Miscellaneous	0	0%	0%
Children's clothing	5	0.3%	Mobility platform	0	0%	0%
Boats	4	0.3%	Pension savings	0	0%	0%
Food waste	4	0.3%	Pick-up Services	0	0%	0%
Freelance services	4	0.3%	Rental apartments	0	0%	0%
Gardening	4	0.3%	Repair services	0	0%	0%
Investments	4	0.3%	Boats	0	0%	0%
Machine rental	4	0.3%	Freelance services	0	0%	0%
Electricity	3	0.2%	Machine rental	0	0%	0%
Bike riding	2	0.1%	Electricity	0	0%	0%
Energy	2	0.1%	Bike riding	0	0%	0%
Pets	2	0.1%	Pets	0	0%	0%
Bike sharing	1	0.1%	Bike sharing	0	0%	0%
Co-living	1	0.1%	Co-living	0	0%	0%
Financial services	1	0.1%	Financial services	0	0%	0%
Home exchange	1	0.1%	Home exchange	0	0%	0%
Home swaps	1	0.1%	Home swaps	0	0%	0%
Mobility facilitator	1	0.1%	Mobility facilitator	0	0%	0%
Music services	1	0.1%	Music services	0	0%	0%
Social services	1	0.1%	Social services	0	0%	0%
Total	**1515**	**100%**	**Total**	**467**	**31%**	

Table 6
Distribution and comparison of identified sectors' total platforms and sustainable platforms.

Total Entries			Sustainable platforms			
Sector	Frequency	Share	Sector	Frequency	Share (total data)	Share (total sector)
Mobility	589	38.9%	Logistics	42	2.8%	100%
Fashion and Clothing	252	16.6%	Youth and Children	31	2.0%	100%
On-demand services	211	13.9%	Non-profit association	11	0.7%	100%
Hospitality	151	10.0%	Fashion and Clothing	247	16.3%	98.0%
Business and Work	104	6.9%	Leisure	22	1.5%	75.9%
Food	57	3.8%	Food	24	1.6%	42.1%
Logistics	42	2.8%	Energy	2	0.1%	40.0%
Youth and Children	31	2.0%	On-demand services	52	3.4%	24.6%
Leisure	29	1.9%	Finance	1	0.1%	7.7%
Finance	13	0.9%	Mobility	35	2.3%	5.9%
Non-profit association	11	0.7%	Hospitality	0	0%	0%
Miscellaneous	10	0.7%	Business and Work	0	0%	0%
Housing	7	0.5%	Miscellaneous	0	0%	0%
Energy	5	0.3%	Housing	0	0%	0%
Pets	2	0.1%	Pets	0	0%	0%
Construction	1	0.1%	Construction	0	0%	0%
Total	1515	100%	Total	467	31%	

connotation of sharing economy platforms. The importance of such an analysis follows from how the sharing economy has been described as moving away from early ideas on sharing and accessing for efficient resource uses, towards separations of users and producers, professionalization, and thereby also an increased emphasis on consumption. Along with this also follows a possible change in motivations from altruism, towards economic gains (Hamari et al., 2016; Hellwig et al., 2015). While such developments would indicate a possible distancing from sustainability as ideal, there is nothing that says that this would really be the case. This paper is the first to provide a systematic account of sharing economy platforms and their sustainability connotation.

5.1. Platform-level analysis

Based on the analysis of 5185 social media posts, 121 separate sharing economy platforms were identified. Among these, 35 platforms presented themselves as sustainability oriented. The orientation also denotes a strong orientation to environmental sustainability specifically. Looking at Table 4, these platforms are among the smaller ones (accounted for as number of social media posts), while the dominating platforms do not refer to themselves as sustainable. Among the latter platforms are the role models *Airbnb* and *Uber*. Many of the dominating platforms have existed several years, while the smaller ones are more recently established. Hence, there seems to be a pattern between dominating platforms that have existed for some years and non-sustainability, and the reverse: small and new platforms and the orientation to sustainability.

This could be explained by how the sustainability orientation of sharing economy platforms may be in a state of flux and potentially represents an early phase of the development of the platform rather than the overall sharing economy level. Again, this would mean that the development from early ideas of sharing and accessing to transactions and professionalization does not occur on the meta-level of the sharing economy (cf. Cohen and Muñoz, 2016; Martin and Upham, 2016). Rather, it would be a transition on the platform level in which platforms potentially become increasingly focused on issues other than sustainability as they develop and attract other users and producers. When the professionalization of the platforms occurs, the accessing and sharing – as a means to achieve resource efficiency (cf. Heinrichs, 2013) – would no longer present itself.

Additionally, this development may follow from how the dominant platforms fall under increased regulations and scrutinization (not the least in media) and are no longer allowed to describe themselves as sustainable or “dare” to do so following negative press, etc. The newer platforms may not have caught as much media interest, and would therefore – and based on how they are organized – present themselves as sustainable.

5.2. Sector and sub-sector level analysis

In terms of sectors and sub-sectors, Fig. 2 indicates how the sectors of the economy in which the platforms operate either fall strongly into sustainability orientation or non-sustainability orientation, based on how the platforms present themselves. It should be noted for the sub-sectors that these were partly created to describe similarities/differences in sustainability orientation based on how they represent various ways to operate, such as the car versus the bicycle as a means of transportation. However, the sector level refers to more traditional classifications of sectors in the economy. Tables 5 and 6 provide further examples of the sector and sub-sector division of platforms, with the tables indicating that the sectors and sub-sectors either have very high or low shares of platforms (percentage of platforms in the sector) referring to themselves as sustainable. More specifically, and on the sector level, logistics, youth and children, and non-profit associations are those sectors with all identified platforms being sustainability oriented, while clothing swap, transportation, toys, non-profit associations, children's clothing, gardening, and energy were the sub-sectors where all platforms were described as sustainability oriented.

Interesting here is how the sectors and sub-sectors represent ownership transfer (clothing, youth and children (toys and clothes, largely), etc.), while the sharing economy has been described to represent post-ownership (Belk, 2014) and how they refer to swapping rather than accessing. Furthermore, they orient to logistics and transportation – though without *Uber* being part of the sustainability connotation – which traditionally would relate to sectors (and sub-sectors) marked by high emission impact (cf. Öberg et al., 2012). Thus, the sectors and sub-sectors would in part relate to sectors where legal requirements are high (cf. Öberg, 2012), or sectors where sustainability would be a means to position the platform against regular businesses marked by high environmental or negative social impact (for example, clothing, often connected with the exploitation of child labor and negative environmental impact).

An explanation to this pattern would be that when the sharing economy spreads to sectors that traditionally have environmental or social issues (such as emissions in logistics, and child labor and extensive resource exploration in the clothing sector), sustainability orientations become more emphasized. The sustainability orientation would in that regard be the consequence of legal requirements (cf. Öberg, 2012), while also denoting how these sectors with high legal requirements may engage to a lower extent in the sharing economy (seen as these platforms not dominating the social media posts). Swapping – as in the exchange of vintage clothes among individuals – could also be a considered as a means to position the platform against clothes manufacturers and consumption of new materials, while it would still entail the transfer of goods.

To summarize, our study reveals two quite distinct patterns between sharing economy platforms and sustainability/non-sustainability: one of new and small platforms being more eager to present themselves as sustainable, and one of sustainability descriptions being present among platforms in sectors of the economy marked by legal requirements and/or sectors often criticized for their environmental (and ethical) whereabouts. The former pattern dominates over the latter in how dominating role model platforms, despite operating in criticized and regulated sectors of the economy (such as *Uber*), do not describe their operations as sustainable. And, the dominance of platforms describing themselves as sustainable in these sectors corresponds well to them being quite new platforms, where these sectors may not have been seen as those predominately fitted for the sharing economy, and where a previous study on the spread of the sharing economy (Geissinger et al., 2017) reveals that the sharing economy tends to first spread to unoccupied sectors to later turn to those sectors already occupied by sharing economy platforms (such as *Uber* in the case).

These patterns indicate interesting aspects to the sustainability orientation of sharing economy platforms. Firstly, and as described above, the platforms may develop from sustainability oriented to not referring to any sustainability orientations as they develop. Societal pressure, professionalization, and the entrance of companies to the sharing economy would explain this development. Secondly, new platforms may be founded with sustainability

ambitions, less squeezed by societal pressure at the start, or actually the reverse: they are founded in sectors of the economy where the sustainability orientation becomes a prerequisite and thereby may not orient heavily to sustainability themselves, but do so as society requires that from them.

6. Conclusions and further research

The introduction of this paper raised two questions: *How can the sustainability connotation of the sharing economy be understood based on the platforms' communication?* And: *What differences and similarities are there among different platforms and among different sectors of the economy?* Adopting a combination of social media and text analyses, the paper indicates how the sharing economy platforms depict a variety in terms of sustainability connotation. Most sustainability aspects are referred to as environmental concerns, while the variety among platforms is evident. Thus, the development of the sharing economy on the meta-level does not reflect a homogeneous development from sustainability towards non-sustainability, although research has indicated a shift from sharing and accessing to acquiring and consuming.

As pointed out in the paper, sustainability-oriented platforms are still emerging in the sharing economy. These are strongly connected to specific sectors, while the findings also point at how dominating role model sharing economy platforms put less emphasis on sustainability orientations.

These findings, in turn, shed new light on the current development and spread of the sharing economy (cf. Geissinger et al., 2017). Firstly, they indicate that the development from accessing and sharing to acquiring and consuming may rather be the consequence of the development of individual platforms than an overall development in the sharing economy. Furthermore, the sustainability orientation of sharing economy platforms as new platforms emerge, suggests following the legal requirements of those traditional sectors of the economy that they establish themselves in. This would imply that the sharing economy does not drive a sustainability movement, but rather adjusts to those circumstances it aims to become a part of. Expectations for the future would be that sustainability orientations of sharing economy platforms would continue as the sharing economy spreads into new sectors, but then be based on legal requirements connected to these specific sectors, while further developments of individual platforms may put sustainability orientations beyond (and even as part of) such legal requirements at risk.

Hopefully, our results contribute to the ongoing debate on sustainability in the sharing economy by pointing out that in platforms' presentations, sustainability is actually taking a back seat; this is especially true compared to earlier discussions about how the sharing economy can positively impact sustainability – both in public and academic debate as well as claimed by self-reported positive impact studies by platforms such as *Airbnb* and *Uber* (Codagnone et al., 2016).

In terms of limitations, we departed from Swedish social media posts. The represented platforms are therefore only those operating in Sweden in part of full, which may have impacted the generalizations to other contexts. In addition, the dataset was collected by utilizing the keyword "*delningsekonomi(n)*" (the direct translation of "(the) sharing economy" in Swedish). As the empirical phenomenon at hand has been illustrated to encompass several other interrelated terms as well (Acquier et al., 2017), this approach may also have imposed constraints upon data capturing. Focusing on how the platforms present themselves is potentially different to how they behave, which creates a possible further constraint. The discussion above indicated how societal pressure (including media) may have meant that the role model platforms turn away from describing themselves as sustainable, and there is thus the risk that sustainability descriptions rather refer to platforms that have not (yet) been scrutinized in the debate. With the link to the subsectors, there are however indications of the diversity of platforms also when it comes to their sustainability connotation.

For further studies, it would be interesting to follow the development of individual platforms to grasp when and how they potentially disband from sustainability orientations, and what (in addition to societal pressure and professionalization) causes such disbanding. It would also be interesting to explore in-depth the sustainability impact of the sharing economy on the meta level. The spread of the sharing economy into new sectors, reasons for patterns of spread, and how new platforms emerge are further routes for interesting future studies. All in all, the sharing economy continues to expand and thereby impact the business life, and further studies capturing this growing phenomenon and its impact on business life are necessary to create understanding for the business landscape of today and its potential long-term impact on society.

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