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## Escalar empresas sociales: El caso de las innovaciones sociales digitales

Müge Ozman et Cédric Gossart

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La production des innovations sociales à l'ère de la créativité et du numérique

Producing social innovations in the creative and digital age

La producción de innovaciones sociales en la era creativa y digital

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Résumé de l'article

De nombreux travaux examinent comment les entreprises sociales hors ligne augmentent leur impact social, mais peu analysent comment les innovations sociales numériques accroissent leur impact. Cette question est importante car les entreprises sociales numériques disposent de ressources spécifiques pouvant faciliter ou entraver les stratégies de passage à l'échelle des entreprises sociales. Trois stratégies de passage à l'échelle (par le champ d'action, la portée, et l'enracinement) nous permettent de développer des indicateurs sur le passage à l'échelle des entreprises sociales numériques, qui nous amènent à analyser la concentration des données de 189 plateformes d'engagement civique en Europe. Nous identifions trois types de plateformes au passage à l'échelle spécifique : les plateformes communautaires, celles fournissant des technologies, et celles basées sur les données.

# Scaling in social enterprises: The case of digital social innovations

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Escalar empresas sociales: El caso de las innovaciones sociales digitales

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## ABSTRACT

While a significant body of research examines how offline social enterprises scale social impact, research on scaling in the case of digital social innovations is limited. This is an important issue to address because digital social enterprises have different resources at their disposal, which may facilitate or hinder various scaling strategies used by social enterprises. Distinguishing between three scaling strategies (scaling out, scaling up, scaling deep), we develop indicators to account for scaling in digital social enterprises. Using these indicators, we carry out a clustering analysis on a dataset composed of 189 civic engagement platforms in Europe. Our research reveals three types of platforms in terms of their scaling orientations, which are grassroots, technology provision, and data-based.

**Keywords:** digital social innovation, civic engagement, societal problems, digital platforms, scaling social impact

## Résumé

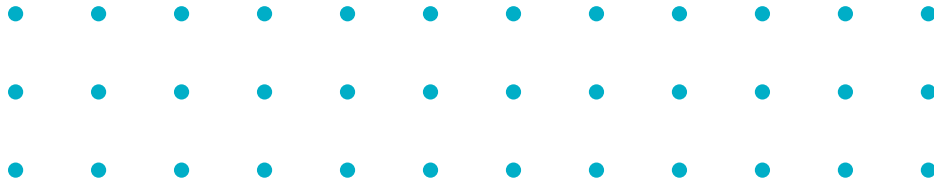
De nombreux travaux examinent comment les entreprises sociales hors ligne augmentent leur impact social, mais peu analysent comment les innovations sociales numériques accroissent leur impact. Cette question est importante car les entreprises sociales numériques disposent de ressources spécifiques pouvant faciliter ou entraver les stratégies de passage à l'échelle des entreprises sociales. Trois stratégies de passage à l'échelle (par le champ d'action, la portée, et l'enracinement) nous permettent de développer des indicateurs sur le passage à l'échelle des entreprises sociales numériques, qui nous amènent à analyser la concentration des données de 189 plateformes d'engagement civique en Europe. Nous identifions trois types de plateformes au passage à l'échelle spécifique : les plateformes communautaires, celles fournissant des technologies, et celles basées sur les données.

**Mots-clés :** innovations sociales numériques, engagement civique, problèmes sociétaux, plateformes numériques, passage à l'échelle de l'impact social

## Resumen

Muchas investigaciones examinan cómo las empresas sociales offline amplían su impacto social, pero pocas investigan como escalan las innovaciones sociales digitales. Es una cuestión esencial porque las empresas sociales digitales disponen de recursos específicos que pueden facilitar o dificultar las estrategias de ampliación de empresas sociales. Distinguiendo entre tres estrategias para escalar (en términos de ámbito, alcance y raíces), desarrollamos indicadores para dar cuenta como escalan las empresas sociales digitales. Con estos indicadores llevamos a cabo un análisis de agrupación en datos sobre 189 plataformas de compromiso cívico en Europa. Nuestra investigación revela tres tipos de plataformas en términos de sus orientaciones de ampliación: de base, de provisión de tecnología, y las basadas en datos.

**Palabras clave:** innovaciones sociales digitales, compromiso cívico, problemas sociales, plataformas digitales, ampliación del impacto social



The rapid rise of digital platforms addressing social and ecological issues across the world reflects changes in the ways societies deal with these issues. Digital platforms span across various sectors like, among others, governance and civic engagement (Coleman & Blumler, 2014; Gilman, 2017), civic crowdfunding (Davies, 2015), crowd science (Franzoni and Sauermaann, 2014), collaborative consumption (Möhlmann, 2015), or climate change (Pearce *et al.*, 2019).

Digital platforms open new possibilities in enhancing society's capacity to act, facilitate participation to generate new ideas, mobilise actors' collaboration, and enable them to use their own resources and capabilities more efficiently. However, the extent to which digital social enterprises can leverage these possibilities depends on their capacity to scale social impact, which is defined as the "*process of expanding or adapting an organization's output to better match the magnitude of the social need or problem being tackled*" (Desa & Koch, 2014, p. 48). While an important body of literature examines scaling for offline social enterprises, research is limited for those aiming to achieve social goals using digital technologies. In this paper we aim to fill this gap. Entrepreneurs involved in digital social innovations (DSI) have different sets of resources, skills and tools available at their disposal compared to their offline counterparts. Consequently, some strategies of scaling identified in the literature for offline social enterprises might be more challenging to undertake, while others can be more readily achieved thanks to digital technologies.

Research on scaling distinguishes between two overarching strategies (Desa & Koch, 2014; Islam, 2022, Westley *et al.*, 2015). While the first one relies on reaching out to a wider audience through organizational growth, the second one is based on catalysing welfare-enhancing systemic change through institutional and/or community focused initiatives (Islam, 2022). However, the former does not guarantee the latter, as expanding the user base is seldom equivalent to the social innovation's potential for deeper transformations (Uvin *et al.*, 2000; Nardini *et al.*, 2022). This dilemma can even be more pronounced in the case of digital platforms as they rely on specific algorithms, increasing their potential to reach a maximum number of people. On the other hand, the same processes that increase efficiency of diffusion can cause difficulty when adapting to local culture and institutions, hence reducing platforms' efficacy. Consequently, for deeper societal transformations the scaling strategies of digital enterprises have to consider not only the material technology underlying the platform, but also the fit between this technology and the local context where it is used.

Based on these considerations, in this paper our research questions are the following: (1) How do digital technologies facilitate or hinder scaling social impact in digital social enterprises? (2) How do digital social enterprises scale social impact?

Addressing these questions will help managers develop strategies that leverage technology to diffuse on a larger scale, while not jeopardizing their potential for deeper

societal transformations. It will also help them better evaluate their strengths, pinpoint their weaknesses, and develop new skills in line with their social goals.

In addressing these questions, we are particularly concerned with platforms generating social innovations. To unleash them, empowering actors is particularly important (UNDP, 2020, Chapter 4), which is why we are focusing in this study on civic engagement platforms. They have been influential in generating social innovations for a wide range of social and public issues (Saldivar *et al.*, 2019).

To address the first research question above, we were guided by the following motive: how to apply offline scaling concepts to civic engagement platforms? For this purpose, an in-depth literature survey on scaling social impact in offline social enterprises was first carried out. This survey revealed three broad mechanisms to scale social impact: scaling out, scaling up, and scaling deep (Bolzan *et al.*, 2019, Moore *et al.*, 2015; Westley *et al.*, 2014). Scaling out corresponds to the replication of solutions in different geographical locations. Scaling up refers to macro level transformations in institutional and policy frames. As for scaling deep, it is community oriented and refers to the extent to which social innovation transforms places by changing the beliefs, practices and culture of people in specific geographical places (Bolzan *et al.*, 2019; Moore *et al.*, 2015; Westley *et al.*, 2014; Nardini *et al.*, 2021). By drawing upon the past research on civic engagement platforms and on the economics of digital platforms, we developed 10 indicators of scaling social impact for these three types of scaling, in the case of civic engagement platforms.

While it is important to develop theoretically grounded indicators for scaling in digital enterprises, it is not sufficient. Such a study would not provide insights into actual scaling strategies used by digital social enterprises. What types of strategy mixes do they use? Is it possible to differentiate platforms based on their scaling strategies? Therefore to address our second research question above (How do digital social enterprises scale social impact?), we carried out an empirical analysis to explore their scaling strategies by collecting data on the 10 aforementioned indicators for 189 civic engagement platforms in Europe. We used clustering analysis, which enables the identification of qualitatively different subgroups within populations, with respect to a set of indicator variables (Weller *et al.*, 2020). The clustering analysis revealed three broad classes of digital social enterprises, according to their scaling strategy. These are, data-driven, technology-driven, and grassroots-driven scaling.

The paper is organised as follows. In the second section we provide a definition of civic engagement platforms and present the theoretical framework in the context of previous research on scaling in offline social enterprises. We also highlight the differences between offline social enterprises and digital ones that might influence scaling activities. In the third section, we explain the methodology and data used in the study. The fourth section is allocated to results and discussion. The final section concludes with policy and managerial implications, and directions for future research.

## Theoretical background

### General context: civic engagement platforms

We take a “digital platform” as a governed technology, in the sense that its organisation and functionality (design), as well as data analyses and algorithms automating the management of stakeholders, are essentially embedded in the digital code (Kitchen, 2017). These digital platforms can be deemed specialised algorithms (ibid.) designed to enable people to exchange, access and provide data for local development; share opinions, views, resources and skills; participate in the governance of their communities; and address problems related to social and ecological problems faced in their living environments. We take DSI as a generic term concerning a variety of different sectors and social problem areas (Ozman & Gossart, 2017). In this paper, we are concerned with civic engagement platforms, which aim to increase the capacity of civic society to formulate a social or environmental problem, bring it to the fore of public arenas, and engage a variety of stakeholders to jointly frame and solve this problem (Ozman & Gossart, 2019). An example is “civic tech”, which refers to platforms that are connecting governments and citizens (e.g. <https://get.flui.city>). In civic engagement platforms, solutions might emerge through the self-organisation of a community, the increased capacity of direct communication with other stakeholders, or the expansion of their reach (Gilman, 2017).

This definition of civic engagement platforms also builds upon the social innovation literature. Although social innovation is a contested concept (Ayob *et al.*, 2016), there are regularities across definitions. First, social innovations explicitly aim at solving societal (social &/or ecological) problems. Second, like standard innovations they bring novelty to their local context. Third, in most cases they facilitate a redefinition of power relations between actors (Moulaert *et al.*, 2005; Mulgan, 2006). What distinguishes civic tech is their reliance on digital technologies, which can serve users’ needs all over the world or meet specific needs tied to a local context.

Societal issue addressed	Explanation	Examples
Governance (city, political, volunteering, petition)	Participatory systems that incentivise citizens to engage in decision making processes (civic techs)	Decide Madrid, Liquid democracy, Writetothem, Fragdenstaat
Transparency & information disclosure	Participatory open data systems	Opencorporates, Wheelmap
Finance (civic crowdfunding, genre-specific crowdfunding)	Crowdfunding for community projects or projects focusing on a particular excluded group (e.g. microfinance)	Co-city, Goteo, Buonacausa, Spacehive
Social inclusion (homeless, immigrants, women, youth, disability, aged population)	Platforms that aim to empower a certain group of people	Moncopilote, Calm by Singa, Streetlink

Table 1 shows the main societal issues of civic engagement platforms that we take in this paper, with some examples from Europe. In particular, we distinguish between four fields of activity.

The first field is governance, where platforms enable citizens to participate in open debates and provide opinions and discussions. We take civic agency similar to Allen & Light (2015), as “*the activities through which people pursue political efficacy*”, without necessarily involving in formal political membership or having a legal status. As such, civic agency is “*oriented towards how people live together –whether locally or globally–, shape their worlds together, especially in conditions of diversity, working both through and outside political institutions*” (ibid, p. 5).

In the “Governance” societal issue are also included platforms focusing on local issues in a particular city or town, and facilitating idea generation and implementation in the local context through the participation of residents to local governance. Digital platforms matching associations searching for volunteers with candidate volunteers are also included in that issue (e.g. <https://www.tousbenevoles.org>). Finally, online petition platforms (Puschmann *et al.*, 2017) are also included.

The second issue concerns digital platforms promoting transparency and information disclosure to address problems related to social, institutional and geographical issues (Fung *et al.*, 2007) (e.g. <https://alaveteli.org>). Given that many governments put in place transparency policies to foster the performance of institutions, digital technologies have been widely used to disclose information in many spheres like food safety (e.g. <https://fr.openfoodfacts.org>), financial information (e.g. <https://opencorporates.com>), or physical accessibility conditions in geographical places for people with disabilities (e.g. <https://wheelmap.org>).

The third field concerns “Finance”, which includes civic crowdfunding platforms (e.g. <https://www.spacehive.com>). These DSI are mainly designed for civic projects:

*“A civic crowdfunding project can be defined as one that develops a shared resource that is accessible to the community either as a public asset, a community-owned resource or a public-private partnership, and may or may not involve government.”* (Davies, 2015, p. 83).

Finally, social inclusion platforms facilitate inclusive living and working conditions for vulnerable people, as *Mon-copilote* for people with disabilities (cf. <https://mon-copilote.com>).

### Scaling social impact in social enterprises

Scaling has been deemed a major indicator of performance for social enterprises (Bloom & Smith, 2010; Dees *et al.*, 2004; Islam, 2022). Desa & Koch (2014) define scaling as “*process of expanding or adapting an organization’s output to better match the magnitude of the social need or problem being tackled*” (p. 48). Research about scaling social impact for social enterprises spans across various disciplines, including management and entrepreneurship (Bauwens *et al.*, 2020; Desa & Koch, 2014), marketing (Bloom & Smith, 2010; Epstein & Yuthas, 2012), third sector studies (Lyon & Fernandez, 2012; Uvin *et al.*, 2000), and social innovation (Westley *et al.*, 2014; Mair *et al.*, 2023; Bolzan *et al.*, 2019). This literature broadly highlights three types of scaling (Moore *et al.*, 2015; Nicol, 2021), which are scaling out, scaling up and scaling deep. In the next sections, we examine each of these in more detail, in relation to digital platforms.

## Scaling out

Scaling out refers to various mechanisms used by social enterprises to replicate a successful model (Bolzan *et al.*, 2019; Moore *et al.*, 2015; Westley *et al.*, 2014), so that small enterprises operating at local scale evolve into national or global organizations (Nardini *et al.*, 2022; Islam, 2022; Lyon & Fernandez, 2012). Various terms have been used to refer to this type of scaling including organizational growth (Islam, 2020), horizontal integration (Uvin *et al.*, 2000), breadth scaling (Desa & Koch, 2014), quantitative scaling, or organizational scaling (Uvin, 1995; Andre & Pache, 2016). This type of scaling has been criticised on the grounds of undermining social enterprises' capacity to address societal problems, by focusing solely on the growth of the social enterprise itself (Lyon & Fernandez, 2012; Nardini *et al.*, 2022; Westley *et al.*, 2014; Uvin *et al.*, 2000).

**Common strategies for scaling out:** Scaling out usually involves strategies like diversifying product and services, franchising (Tracey & Jarvis, 2007; Lyon & Fernandez, 2012), or duplicating programs to serve beneficiaries in a broader geographic area (Islam, 2022; Bauwens *et al.*, 2020). Here, the organization increases its efficiency of diffusion by leveraging economies of scale (Desa & Koch, 2014).

**The case of digital social enterprises:** These can scale out fast thanks to their technology, which helps them leverage economies of scale. Digital platforms classify, sort, categorise, and manage interactions through the algorithmic management of the data they produce (Gillespie, 2014; Steiner, 2012). The more data are collected, the more efficient is algorithmic management. This explains why platforms favour the replication of standardised algorithms in different locations: thanks to digital technologies diffusion is faster and yields higher efficiency gains, sometimes at the expense of local practices and institutions. As a result, DSI scaling bears important differences compared to offline social innovations. By definition, the central role of digital technology facilitates scaling out, but it also incurs costs of adaptation to local contexts, thereby reducing its potential to scale up and scale deep.

In the case of digital platforms, there are additional mechanisms that can make diffusion even faster, notably by leveraging network externalities. The performance of most platforms depends on the extent to which they facilitate interactions between participants, by **matching** users who benefit from what others offer (Evans & Schmalensee, 2016; McIntyre *et al.*, 2021; Gawer, 2009; Piskorski, 2011). Most digital platforms rely on a multisided model, where there are typically more than one group of users engaging in mutually beneficial interactions through the platform (Rochet & Tirole, 2003). Therefore, the utility obtained by one group of users depends on the number of participants in the other group. For example, for a platform matching association with volunteers, the more associations that can be reached through the platform, the more volunteers it will attract, and vice versa. This mechanism, called network externalities (Arthur, 1989; David, 1986), initiates a self-reinforcing growth cycle of the platform, which can be strategically exploited to rapidly increase its number of users.

Another mechanism that can facilitate scaling out is **crowdsourcing data** from many different sources as in the case of open data. Many people can participate to such data pooling because of low barriers to entry, and the data is open to anyone wishing to access information resources. The more data is available, the more new users are drawn to it, maintaining a self-reinforcing growth mechanism. Such data pools are relevant to tackle

problems that can effectively be solved by collecting dispersed pieces of information, as well as problems that require collective intelligence. User commitment can range from collaborative to spot users (e.g. *Wheelmap*, *OpenFoodFacts*).

Platforms that scale out can operate anywhere in the world thanks to digital technologies, hence gaining access to a very large pool of potential users. This requires capabilities to reach out to a **global** audience as well as specific algorithmic practices. However, not all social entrepreneurs wish to scale out. Contributing to institutional change and empowering their local community may suffice them (Andersson, 2020).

## Scaling up

The second type of scaling is concerned with the extent to which a social enterprise can develop and sustain a supportive ecosystem at macro or meso levels around the problem tackled (Islam, 2022). Termed "scaling up" (Westley & Antadze, 2010), catalysing institutional and policy-level change through networks with ecosystem actors is at the heart of this scaling process. Other terms have also been used for this type of scaling, including political scaling (Uvin, 1995) or depth scaling (Desa & Koch, 2014). Scaling up a social innovation to a supporting ecosystem refers to the effectiveness with which social innovations contribute to transformative social change (Avelino *et al.*, 2017; Westley *et al.*, 2014). Here the aim is catalysing institutional and policy-level change at the macro level. Scaling up strategies support the ecosystem as a whole (Islam, 2022), by "*bringing in other organizations, corporations, and/or institutions to help spread the social impact*" (Weber, 2012).

**Common strategies for scaling up:** Social enterprises carry out advocacy activities to influence policy and legislations around the cause, organize campaigns that involve other actors to influence public policy makers and other organizations (Islam, 2022; Uvin *et al.*, 2000; Uvin, 1995; Bloom & Smith 2010; Bauwens *et al.*, 2020), as well as participate in awareness raising campaigns around a given cause (Islam, 2022). Another way to scale up involves developing infrastructure for the benefit of other actors in the ecosystem (Islam, 2022). This might include developing a welfare-enhancing technology made available to other organizations, providing open-source materials (Lyon & Fernandez, 2012; Bhatt *et al.*, 2016), or developing ICT infrastructure to be used by ecosystem actors (Bhatt *et al.*, 2016).

**The case of digital social enterprises:** Empowering actors is particularly important to unleash transformation (UNDP, 2020, chapter 4), which is easier when one has access to **technological tools**. Digital social innovations' building blocks are the material technologies aiming to address a social or ecological problem. Making these technologies available to other organizations contributes to building and growing an ecosystem around the given problem, by helping other organizations address the same problem. While they can scale up by providing their technology to other organizations, whether the latter can adapt the solution to their own context highly depends on whether the technology is open source or not.

Digital platforms based on centralised proprietary algorithms tend to adopt a closed participation model (Eisenmann *et al.*, 2009), and give little room to the participation of users (Gümüşay *et al.*, 2022), and to other social enterprises so that they can adapt the software to their own needs and context. On the other hand, **open source** projects have another model, seen as a paragon of user-as-innovator collaborative projects (von Hippel & Krogh, 2003). Being more transparent and realised through the participation of a



distributed set of actors, they can be used to prevent central platform owners to decide alone what is revealed or kept secret when the platform is adopted by different parties. The governance of digital platforms based on open source codes tends to be more democratic, in the sense that they permit developers and local stakeholders to incorporate locally anchored knowledge into the algorithm. This knowledge is highly relevant to address local problems or find local solutions to grand challenges. Such objectives tend to be more easily reached with open-source technologies that are available to all, since “*Collective agency has the greatest potential to change social norms*” (UNDP, 2020, Chapter 4, p. 145).

In addition to technology provision and open sources choices, digital technologies can help for **advocacy** and awareness raising, notably by enabling the diffusion of information on a large scale and establishing communication channels between different actors (Allen & Light, 2015). Some civic engagement platforms facilitate advocacy by helping other organizations diffuse information, or access information and resources that support advocacy activities. In addition, beyond technical support to its users, a social enterprise can be involved in advocacy work itself. For example, *Opencorporates* is a digital platform that supports corporate transparency by providing open data on corporations, which can be used by other organizations to tackle corruption and criminality. But *Opencorporates* does not only support other actors to accomplish their missions, it also carries out “*data-based advocacy*” (Charalabidis *et al.*, 2018).<sup>1</sup> In the case of the French DSI *OpenFoodFacts*, in which users provide data about the ingredients present in industrial food products, it is not only backed by a dynamic and international open-source community, but it is also involved in several movements promoting healthy nutrition. It can do so through a very active network strategy, enabling it to work with many local civic collectives.

### Scaling deep

If scaling up aims at global and macro level changes, scaling deep is local and community oriented (Bolzan *et al.*, 2019). It refers to the extent to which social innovations transform local places (Moore *et al.*, 2015). With this strategy, DSI empower local communities by involving them in the transformation process by “*changing relationships, cultural values and beliefs*” (Moore *et al.*, 2015, p. 75). This enables them to tackle social or ecological problems, since shaping established worldviews, values or identities tends to reinforce “*environmentally significant individual behaviors*” (Stern, 2000).

Here, learning and connectedness are critical (Desa & Koch, 2014). Scaling deep involves second order learning (Geels & Schot, 2007; Schot & Steinmueller, 2018; van Mierlo & Beers, 2020), by which actors change their worldviews, values or identity. Second order learning practices deepen the capacity to reshape established practices, beliefs, and routines that triggered social problems at first hand (Seyfang & Haxeltine, 2012), such as the belief that agency to solve grand challenges only lies in the hands of governments. These are important, as they can ultimately change people’s practices regarding how they deal with socio-ecological problems in the long run.

**Common strategies for scaling deep:** These include aiming at social change in physical places (Moore *et al.*, 2015), fostering collaboration between community members, and building community cohesion through social capital (Emery & Flora, 2006). These are essential because creating social bonds within neighbourhoods helps effective community

organizing, and social change begins locally (Mandell, 2010). In addition to fostering exchanges between community members (Bloom, 2021), transformative learning opportunities can be provided through joint training centres, training and apprenticeship programs (Lyon & Fernandez, 2012; Islam, 2022). It has been highlighted that scaling deep requires a very good understanding of localities to generate social change (Nardini *et al.*, 2022; Desa and Koch, 2014).

**The case of digital social enterprises:** For digital social enterprises, scaling deep can be difficult to achieve, because digital technologies are by definition related to “*killing the distance*” (Cairncross, 1997). While digital and real spaces are now very much intertwined and can be taken as a “*social fact*” à-la-Durkheim (Ling, 2012), when it comes to social and ecological problems the distinction is sharp. Indeed, problems such as ecological damages, poverty, health or inequalities are experienced in physical spaces. Social entrepreneurs need to work actively with target populations in the field to develop solutions and encourage the participation of stakeholders at local level. However, in the case of DSI, social entrepreneurs’ risk is encapsulated in technological bubbles isolated from other actors operating in real life, which eventually undermines their capacity to reach the social goals they aim for. In this sense, their digital attributes might turn into a disadvantage. It is therefore essential to better understand the benefits and risks yielded by using digital technologies to scale digital social enterprises. To balance this adverse effect of their technology, social entrepreneurs need to learn how to deepen social capital and infra-structural capacity in the local social economy, by forming new networks or strengthening existing ones in offline contexts, and not be confined to the online sphere.

While there are difficulties in scaling deep for digital platforms, there are also different ways for them to leverage digital technologies to address community problems and foster community cohesion. For one thing, a platform can focus on social projects seeking to create opportunities for **local revival**. For example, some civic crowdfunding platforms focus exclusively on local revival projects (e.g. <https://miimosa.com>). In addition platforms can strengthen community cohesion, as in the case of social inclusion platforms that help neighbours exchange resources, skills, or support socially excluded community members (e.g. <https://www.entourage.social>). In the latter case, **physical exchanges** between people are fostered, which is important for community cohesion (Quan-Haase *et al.*, 2002). In some cases, platforms facilitate topic-specific gathering activities, around which individuals organise social relations. These are local foci, the latter being a “*social, psychological, legal or physical entity around which joint activities are organized*” (Feld, 1981), which can generate social capital (Quan-Haase *et al.*, 2002). These events attract people sharing similar interests and facilitate social integration, as by attending similar foci, actors deepen common domains of interest. Moreover, such event organisations can reach communities not using digital platforms.

In these cases, digital platforms can change the way people *perceive* their agency and efficacy and actually exercise it, strengthening what Cantijoch *et al.* (2015) describe as “*community efficacy*” – i.e. people’s beliefs that they can actually make a difference in the community they live in, and thus contribute to the creation of social capital (Quan-Haase *et al.*, 2002). In the case of civic political engagement, searching for information about problems and ways to solve it can raise awareness and improve citizens’ understanding about the political process, and be used to solve other problems (spillover effect). So can simple actions of online activism. For example, “*After the September 11, 2001*

1. For the advocacy activities of OpenCorporates, see for example, <https://www.theguardian.com/news/datablog/2010/dec/20/open-corporates-chris-taggart>, last accessed on 17/04/2023.

terrorist attacks [...] some people felt politically active for the first time—because they were on the Internet.” (McCaughey & Ayers, 2003, p. 6).

In addition, physical exchanges can enable second order learning (changes in world-views, values and identities). Learning consists of the acquisition of new knowledge and knowledge is sticky (Szulanski, 2003), in the sense that it is very much tied to a specific person. Unless that person makes the effort of codifying her tacit knowledge, physical exchanges are key to knowledge transmission, since “*tacit knowledge can be acquired only through shared experience, such as spending time together or living in the same environment*” (Nonaka *et al.*, 2000, p. 9). The same goes for the acquisition of new life experiences, whose acquisition through face-to-face interactions mobilises emotions that are essential to learning processes:

“Emotions [...] involve ‘psychological energy, transmitted by feelings, emotions, attitudes and motivations which both mobilize and, at the same time, are conditions that may be influenced and developed through learning’ [Illeris (2002, p. 18)].” [cited in Merriam *et al.*, 2020, p. 97]

While learning effects can be achieved through building community, some platforms also offer **training** services to beneficiaries about the tackled societal issue. Such training can be carried out directly in physical locations, but also facilitated by digital technologies. For example, the France-based e-petition platform *i-boycott.org* aims to “*raise citizens’ awareness about the benefits of more ethical consumption patterns by offering training to young people through the civic service or in business schools.*”<sup>2</sup>(training).

Summary

To analyse the scaling strategies of digital social enterprises, the 10 indicators we developed based on the literature survey were highlighted in bold above and are summarised in Table 2. We first address **scaling out**, where technology facilitates diffusion in different locations. Second, we consider **scaling up** to examine the ways in which civic engagement platforms support their ecosystem. Third, we examine **scaling deep** to highlight the sustainable change elements related to local cultures and communities.

In the next section, we apply our 10 indicators to a sample of 189 civic engagement platforms. A priori, it is difficult to understand whether civic engagement platforms use these three scaling strategies simultaneously, or whether certain strategies can be identified in relation to specific indicators. It is the objective of the cluster analysis, presented in the next section, to explore the scaling strategies of the cases in our sample to address our second research question.

Data and Methodology

Sample

Our research draws upon 189 civic tech cases in Europe. This sector includes a range of organisations aiming to build and strengthen capacity towards achieving sustainable development goals (grassroots initiatives, non-profit and for-profit organisations, public sector). In selecting these cases, we relied upon two methods used to study online platforms (Stiver *et al.*, 2014; Wu Song, 2009). First is the review of academic and

2. Our translation. Source: <https://www.i-boycott.org/formations>, last accessed on 30/06/2024.

TABLE 2 Scaling strategies & platform characteristics	
Strategies	Scaling indicators for platforms (variable names are underlined>
Scaling out	The extent to which a platform operates under network externalities by... 1. <u>Matching</u> different sides, 2. <u>Crowdsourcing data</u> , 3. <u>Crowdfunding an e-petitions</u> , 4. <u>Global</u> : the degree to which a platform is used outside the country of foundation.
Scaling up	5. The extent to which a platform <u>provides technology</u> that can be adapted and used in different locations, 6. Whether a platform relies upon <u>open-source</u> software, 7. Whether the social enterprise behind the platform is involved in <u>advocacy</u> activities.
Scaling deep	8. The extent to which a platform strengthens social capital in different localities by enabling <u>physical exchanges</u> between people. 9. The extent of a platform’s focus on the <u>local revival</u> of a community rather than on global issues. 10. Whether a platform offers <u>training</u> to actors facing the tackled issue.

non-academic media. We followed a problem-led search, in which we first identified the range of social issues that civic engagement platforms were likely to tackle (cf. Table 1). We scanned magazines focusing on the social economy from both digital and non-digital sources, as well as websites of major sponsors of digital innovations (we focused on social innovations in these sites), as well as social innovations (we focused on digital innovations in these sites). We also screened journals and online sources focusing on the digital sector and social entrepreneurship, prize nominations granted by public and private organisations as well as by public organisations involved in the third and digital sectors. This review enabled us to identify the most significant keywords in the field, which we used in online search functions of major news outlets. Table 3 shows the distribution of cases per country, and Table 4 per domain of activity , and table 5 platforms' age.

Methodology

Data collection

Based on our literature survey we developed a set of indicators deemed important for the scaling out, scaling up, and scaling deep of DSI. These are presented in Table 2. For each case included in our sample, we collected additional data on these indicators through their websites. Table 6 provides tdescriptive statistics for the data collected for each scaling strategy. These 10 variables are all categorical and take the value of 0 or

In developing these indicators, we were guided by the idiosyncratic characteristics of each scaling strategy revealed by our literature survey. For scaling out, these characteristics centred upon organizational growth; for scaling up on institutional and/or organizational support to broader ecosystem actors; and for scaling deep, which has stronger individual and societal orientations, it is the interactions between people in a local community that take a central stage. The corresponding indicators to each of these scaling types are summarized below (cf. Table 6).

**TABLE 3**  
**Cases per country**

	Number of cases
France	88
UK	40
Germany	11
Netherlands	9
Spain	9
Others EU	9
Others non-EU	23

**TABLE 4**  
**Cases per domain of activity**

	Number of cases
Governance	75
Petition	(6)
Urban	(21)
Volunteering	(12)
Political participation	(36)
Inclusion and empowerment	32
Immigration	(9)
Disability	(8)
Youth	(6)
Women	(4)
Homelessness	(3)
Aged population	(2)
Civic crowdfunding	39
Network building	26
Data & transparency	17

**TABLE 5**  
**Foundation year**

	Number of cases
2015-2017	81
2012-2014	65
Before 2012	41

### Scaling out

The indicators below are intended to examine whether organizational growth mechanisms are at work, which can be by diffusion on a global scale and/or through setting in motion a growth cycle through network externalities.

**Global:** Whether the platform is used outside its country of origin.

**Matching:** Refers to an automated process that effectively assigns participants to each other by using information about them, so as to connect them in ways they find mutually rewarding (Parker *et al.*, 2016; Sutherland & Jarrahi, 2018). It is a categorical variable taking the value of 1 if the platform carries out matching. For example, volunteering platforms match nonprofit organizations with potential volunteers. This variable was included because matchmaking is a source of network externality, where the number of users increases the value created for users, as there is a broader pool of users they can be matched with (Parker *et al.*, 2016). This ultimately sets in motion fast growth dynamics for the platform.

**Crowdsourcing:** Refers to a participative online activity using creative solutions, ideas, work, money, knowledge, and/or experience of a large number of users through open call for proposals (Arolas & González-Ladrón-De-Guevara, 2012). Crowdsourcing fosters network externalities as they generate self-reinforcing growth mechanisms, in which “success breeds success” (Arthur, 1989; Schenk & Guittard, 2011).

It is possible to distinguish between the following crowdsourcing platforms in the case of civic engagement:

- **Crowdsourcing data:** users supply data to the platform, which can be accessed by all users. Network externalities work through increasing the value of the service as more users participate, as in the case of Open Street Map where the geographical content becomes richer with more participants (Schenk and Guittard, 2011).
- **Crowdsourcing support and/or funds for a civic cause:** includes online petition platforms and civic crowdfunding platforms. They allow people to network and pool their money and other resources to support a common cause. Civic crowdfunding and online petition platforms are major examples. Online petition platforms can facilitate political participation by citizens and increase public visibility of problems (Puschmann *et al.*, 2017). In these cases, network externalities work through the self-reinforcing cycle between project owners and the supporters: the more supporters use the platform, the more valuable the platform becomes for project owners and vice versa (Thies *et al.*, 2018).

### Scaling up

The below variables are intended to reveal the extent to which the digital platform provides supportive tools to other ecosystem members, and/or is involved in advocacy activities to influence its institutional context in a broad scale.

**Technology provision:** This variable captures whether the platform offers a technical solution to other organizations that they can use to tackle societal problems. The alternative is that the technology is not available to be used by other ecosystem actors in their own activities.

**Open source:** Whether the platform is based on opensource software.

**Advocacy:** Whether the organization behind the platform is involved in advocacy activities as announced in its newsletters and/or social media accounts (relations with public organizations to influence policy).



## Scaling deep

The variables below reveal the extent to which the digital platform's services are centred on individual and local interactions, neighbourhoods and community.

**Physical exchanges:** This variable is intended to capture whether the platform is meant to be used only online, or whether it promotes physical exchanges between people.

**Local revival:** This variable intends to capture whether the platform serves a general purpose regardless users' location, or if it seeks to empower local users. For example, *i-boycott* is a platform for petitions covering a range of different subjects that concern any user regardless of her location. On the contrary, *Spacehive* is a civic crowdfunding platform whose projects are only concerned with local problems.

**Training:** Whether the digital platform offers offline training to actors as announced in their website and/or social media posts.

Table 6 presents the number of platforms in our sample per variable.

Strategy	Indicator variables	Number of platforms in sample	Proportion
Scaling out	Matching	50	26%
	Global	60	32%
	Crowdsourcing data	30	16%
	Crowdfunding and petitions	73	38%
Scaling up	Technology provision	42	22%
	Open source Advocacy	63 47	33%
Scaling deep	Physical exchange	71	38%
	Local revival Training	85 59	45%

## Data Analysis

In the second stage, our objective was to identify whether platforms differed from each other in terms of these indicators. For this purpose, clustering analysis has often been used. Latent class analysis (LCA) is used for clustering when variables are categorical, as in our case (Lazarsfeld & Henry, 1968; Vermunt & Magidson, 2002). LCA is a statistical procedure to identify qualitatively different subgroups within populations, with respect to a set of categorical indicator variables (Weller *et al.*, 2020). The objective of LCA is to categorize observations into classes by using observed characteristics, and to identify items that best distinguish between these classes (Nylund *et al.*, 2007). In our case, we used the indicators of scaling for platforms, and through LCA we identified classes of platforms sharing similar indicators.

## Results

In this section, we present the results of the clustering analysis. One of the issues with LCA is identifying the number of classes. We tried the analysis with 2, 3, and 4 classes. We present the results with 3 classes, because it had the lowest value for the Bayesian Information Criterion (BIC), the most reliable information criterion in LCA (Nylund *et al.*, 2007). Table 7 provides the results of the clustering analysis.

Three clusters were identified. The probability of one variable being in a certain class is given in Table 7. These results permit us to identify three clusters of civic engagement platforms according to their scaling strategy. We term the first cluster "Grassroot orientation" scaling strategy, the second one "Technology solution", and the third "Data-based." We discuss the specific characteristics of each cluster in the next section, giving examples of DSI.

**TABLE 7**  
Clustering results

Variable	Cluster 1: Grassroots orientation	Cluster 2: Technology solution	Cluster 3: Data-based growth
Training	0.51	0.62	0
Advocacy	0.12	0.86	0.04
Local revival	0.50	0.46	0.39
Global	0.21	1	0.06
Technology	0.06	0.91	0
Physical exchanges	0.90	0.26	0
Open source	0.09	0.89	0.23
Crowdsourcing data	0.03	0.43	0.12
Crowdfunding and petitions	0.05	0.23	0.75
Matching	0.68	0.10	0
Distribution of organisations in the sample in proportions	0.34	0.22	0.44
Number of observations: 189 Residual degrees of freedom: 156 Maximum log likelihood: -789 BIC(2): 2049; BIC(3): 1871; BIC(4): 1905 X <sup>2</sup> : 313 (Chi-square goodness of fit)			

## Grassroot orientation

This first cluster has a high probability of including organisations with strong local revival activities (0.50), a high level of promoting physical exchanges between users (0.89), and strong matching processes (0.68), compared to other clusters. Digital platforms in this cluster are also highly likely to carry out offline training activities (0.50). At the same time, their potential for technology provision to other organizations is low (0.09)

and unlikely to be based on open source software (0.09). Also, the probability of global platforms to be in this cluster is relatively low (0.21), therefore platforms tend to be mostly used in the country where the organisation is headquartered.

We term this cluster “Grassroot orientation” because its scaling strategy facilitates the formation of physical links between users, and because their activities are largely directed towards local development. In platforms using this strategy, usually online interactions go hand in hand with offline physical interactions. In some cases, they take the form of pair-based exchanges as in neighbourhood or community time banks.

This strategy involves components from both scaling out and scaling deep. Matching algorithms facilitate platform diffusion among users, as explained above. Examples are, platforms matching volunteers with nonprofit organizations, those matching people in vulnerable situations with volunteers offering their help, or time banks in neighbourhoods and communities (all use digital technologies to diffuse their DSI among users). Such a growth strategy goes hand in hand with community-oriented scaling. Indeed, these organizations seem to have a high capacity to scale deep, given their strong physical engagement potential as well as training activities.

In the case of platforms matching potential volunteers with nonprofit associations, activities can involve remote online volunteering but also take place in physical places, which strengthens the recruitment of volunteers. *Tous Bénévoles* is a French digital platform that aims to match associations with potential volunteers. The organisation is very active in promoting volunteering activities in many sectors across France. The diversity of its involvement, both geographically and across different domains, actively promotes engagement, which is its core mission.

One of the problems with the grassroot strategy can be the loss of proximity with the technical infrastructure of the platform. Indeed, this cluster has very low probability of including platforms that use open source software and provide technology to other sites for adaptation to local contexts (0.09 and 0.06). When the platform algorithm is outsourced to third parties, the managing organisation can lose control over the technical features of the platform.

### Technology solution

In the second cluster, all organisations operate at global scale and offer technology to other organizations (probability 1), and many use open source software (0.89). We term that orientation “Technology solution”, where the organisation scales up by making its platform available to other platforms with similar missions, usually in other countries, as exemplified below. Therefore, in this case the critical skills are largely related to coordinating the diffusion of the platform in various places.

According to Alvord *et al.* (2004), one of the critical capabilities for social entrepreneurs to scale up relies on empowering communities to solve societal problems by using their own resources and skills, and on helping actors build these capacities by mobilising their own assets, thereby facilitating institutional change. As in the case of the grassroots orientation, audiences act as “*networks of activists and organisations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved*” (Seyfang & Smith, 2007, p. 585). In the case of scaling by offering a technology solution, our research highlighted a range of platform actions such as activating community agency, incentivising and developing

tools to help audiences take initiatives, and engaging others’ skills and networks by means of their own resources.

An example for this type of civic tech is *Alaveteli*, a digital platform infrastructure to make public freedom of information requests to public bodies, coordinated by the UK-based charity *MySociety* (Gossart & Ozman, 2020). Local developers in 30 countries have used *Alaveteli*’s source code to create their respective platforms in their regions under different names, by working with local actors such as social entrepreneurs, beneficiaries or public bodies. These developers are not formally associated with *MySociety*, but they form part of the global *Alaveteli* community, a collaborative space where they collectively update and develop the source code. They are intermediaries between their local communities and other loci, help diffuse best practices across regions, and adapt the global software infrastructure to local needs. Another platform is *YourPriorities*, which has been adopted by many local authorities to increase the participation of citizens to local decision-making. Another one is the UK-based *FixMyStreet*, which enables citizens to signal local infrastructural problems to authorities. Among many other activities to increase awareness, it promotes the use of its platform through a very detailed and user-friendly information website outlining how to launch and promote the platform in a local neighbourhood, which illustrates how information flows in the community.

Technical solution providers often work closely with developers in other countries to diffuse the platform. These developers help translate the services of the platform into their own language (e.g. *OpenCorporates*), provide technical support, ensure the reliability of the information provided by users, follow up projects initiated in the platform, use the platform technical infrastructure to link up with their own communities, or contribute to the growth of the platform. For example, the UK-based *OpenCorporates.com* could expand to France and Greece thanks to local volunteers active in local open source communities. Another example is the Spain-based *decide.madrid.es*, a platform enabling citizens to suggest improvements in local life, to vote for them, and to pass them on to the municipality. Paris recently also opened its own *decider.paris.fr* in October 2022.

Around half of the platforms likely to fall into this category work for local revival (0.46) and crowdsource data through their platform (0.43).

### Data-based growth

The third cluster differs from the grassroots one because physical exchanges are nonexistent, although there is some local revival focus but less than in other clusters (0.39). It also differs from the second cluster, since its platforms neither aim to be used by other organisations (technology probability 0) nor are dominantly open source (0.23). Instead, these platforms seem to focus on online user-based growth, usually addressing “general” issues with less emphasis on local issues. The activities of these cases resemble those of scaling out, focused on the diffusion of the platform in different locations within the same country. For example, some platforms create online remote interactions between people around a local issue, as exemplified below. They resemble “aggregative forms” (Coleman & Blumler, 2014) as in crowd and voting models, where the *number* of participants is critical for scaling. Indeed, crowdsourcing probability is 0.75 in this cluster, as exemplified by petition platforms and civic crowdfunding.

Online petitions are one of the means used by platforms to engage audiences by inviting them to support different projects. In this case, a platform bridges two groups of participants: one advocating a specific problem, another providing support through signature or financing. Projects are often open to public, anyone can submit a proposal and any project can be supported. There is often a threshold support level to be reached for the project to achieve its aim. This threshold can be a certain number of “votes”, “signatures” or “euros” collected (Bennett *et al.*, 2015; Puschmann *et al.*, 2017). In some cases, specific interest groups are also given a voice in this process. Very common in civic crowdfunding and petition sites, voting also helps increase the legitimacy of a project by shedding light on how many people supported it and how, which reinforces its effectiveness in gathering support (Davies, 2015). In this way, additional online votes constitute a message that can induce people to get involved when they see others participate (Schultz *et al.*, 2007). For example, the online petition platform *openpetition.eu* works with interest groups to increase their visibility.

Most of the time online voting systems are used extensively to gather opinions about a focal subject or a suggestion. These votes are later presented to municipalities or local councils. Another example is civic crowdfunding sites that can be used in different locations, and where projects are often about a local issue. For example, the UK-based *Spacehive* is specialised in the crowdfunding of local revival projects.

## Discussion and avenues for future research

For digital social enterprises, the central role of technology can both be a strength and a weakness when it comes to scaling their social impact. They can leverage technology to diffuse on a large scale thanks to their efficiency-increasing algorithms, but fall short of utilising their full potential for welfare-enhancing changes at institutional and community levels. In the literature, such qualitative differences between different scaling strategies have been captured through distinguishing between three types of scaling: scaling out, which is the growth of the organization, and scaling up and deep, which connote systemic change initiatives.

In this paper, we first developed a range of indicators for each scaling type, in the case of digital platforms aiming at social and ecological goals. These indicators reflect how technology helps digital social enterprises to scale social impact, and reveal when its full potential for deeper change may not be leveraged. Following a conceptual discussion about these indicators, we carried out an empirical analysis to explore the actual scaling strategies of civic engagement platforms in Europe. In this analysis, we first collected data on the indicators that we developed for each of these platforms. Following data collection, the clustering analysis revealed three groups of civic engagement platforms with specific scaling strategies.

Firstly, approximately 45% of the organizations in the sample scale through “data-based growth”, which may undermine welfare-enhancing systemic change. This is because these organizations seem to use digital technologies primarily to mobilise actors, as in crowdsourcing projects, but may lack deeper initiatives to catalyse social change. Indeed, the latter are missing from many of the indicators we identified for scaling up and scaling deep: providing technological solutions to other ecosystem members to strengthen institutional infrastructure in different places, or strategies to

foster community cohesion. The majority the organizations used the crowdsourcing growth mechanism. While some of them focused on local revival projects, they are often not involved in advocacy and training, and do not have explicit activities to help catalyse physical exchanges between users.

Secondly, we argued that digital technologies could be especially useful to facilitate scaling up, as they can provide an infrastructure for other actors in the ecosystem. Moreover, with open source infrastructures, other participants can adapt it to their own context. Indeed, one of the three major scaling strategies in our sample is “technology orientation”. In this case, organizations provide technology to other actors, and especially when they are open source give others the chance to adapt technologies to their own needs. In our sample, we find that this scaling strategy is accompanied by a high degree of involvement in advocacy activities as well.

Finally, we underlined important caveats when it comes to digital technologies as enablers of scaling deep. Digital technologies, by definition, kill distance. However, scaling deep is primarily concerned with community enhancement, and digital technologies can reduce social capital in physical places. While these seem to operate in opposite ways, our empirical analysis revealed that this is not always the case. The third cluster of civic engagement platforms scores high in the scaling deep dimension. This is the case for organizations mobilising actors for local revival projects and for those facilitating community cohesion through enabling communication and widening the tools available to actors for civic engagement in their respective communities. One of the clusters correspond to “grassroot organizations”, which facilitate physical exchanges in a community, focusing mostly on local revival projects.

In general terms, data oriented platforms can be associated to scaling out strategies, technology oriented ones to scaling up, and grassroot ones to scaling deep, deep. However, results reveal that all 3 platform types use a mix of strategies. All three categories of organizations predominantly use a different type of growth mechanism to scale out. In particular, grassroots mostly use matching algorithms, and technology organizations use data crowdsourcing. Data-based organizations seem to use mostly crowdsourcing mechanisms.

Our study permits us to provide some suggestions for managers of digital social enterprises. Digital resources and skills can enhance society’s capacity to address problems, but unless managers have a good understanding of how their platforms contribute to deeper social transformations, such tools can ultimately become the end, an end in itself. Managers should develop strategies that leverage technology to diffuse on a larger scale, while not jeopardize their potential for deeper societal transformations. The indicators we developed in this paper can help managers assess their strengths and weaknesses for scaling up and deep, which are reminiscent of systemic change. In addition, our research highlights the importance of building alliances with other ecosystem actors, at national and local levels. As digital technologies facilitate rapid diffusion, such alliances can be undermined and digital social entrepreneurs trapped in *technological bubbles*, interacting predominantly with stakeholders in the digital sector. To prevent this from happening, managers of digital social enterprises could build alliances and coalitions with diverse stakeholders. Such alliances could benefit all parties as their experiences and knowledge are largely complementary. For example, digital platform managers have the chance to collect

data and information about the needs and concerns of very large user bases, which is often not the case for offline social enterprises. On the other hand, offline social enterprises have a good understanding of the problems at stake, as they work with actors in the field. Building synergies between parties can be beneficial for both, and help address problems in a more effective manner than working in isolation. Finally, our results reveal that some organizations may follow a mix of different orientations. For example, technical solution providers often have projects for local revival, and data oriented ones use open source projects as well. At the same time, our research shows that the critical factors underlying each scaling orientation are different, so they require specific resources and skills. This could render simultaneous orientations more costly. In particular, effective scaling in the case of grassroots orientation requires a profound understanding of the local environment to catalyse change, as well as *offline* local community building. On the other hand, the technical orientation requires investing in *online* community building, so as to coordinate the activities of distant social entrepreneurs who adapt the same technology in their own contexts. As for data-based orientation, it requires activities to promote growth directly through growing the user base.

Our analysis differs from past research in various ways. Past research on scaling has focused on offline cases. A comprehensive examination by taking the digital dimension as the core of the scaling process has not been carried out for social enterprises. This is important given the rapid increase in social innovations based on digital technologies, so as to gain insights about their effect on scaling social impact. The identified orientations for scaling in this paper enrich our knowledge of DSI by showing that by itself the digital dimension neither compromises nor accelerates the general process of scaling social impact. Rather, its effect depends on several factors such as the kind of scaling that is aimed at, on how it is complemented with the offline activities of the enterprise, and on the conformity between the technical features of the platform and the kind of scaling it aims for.

Some limitations of this research are important to consider when evaluating our results. Firstly, collecting data using surveys would have permitted a more refined analysis, but the risk of low response rates with already a limited population would have reduced the robustness of the results. Secondly, this research does not provide insights about the relation between the performance of digital social enterprises and their scaling strategy. This performance depends on other factors like financial and operational sustainability, among others. Nonetheless, scaling social impact is an essential strategy for organizations addressing a societal issue, and our results should be interpreted mainly from this angle. Third, our research does not consider the user side, which is an important avenue for future research. In particular, when it comes to civic engagement platforms, previous research on the digital divide has underlined the need to go beyond technical connectivity, considers civic engagement as an important issue (Baker *et al.*, 2013). This is because people differ not only in terms of their level of involvement in the digital world, but also in terms of “what they do” out there, which depends on their education, age, race, or political views (Servon, 2002). Future research on the user side could address the extent to which digital literacy influences the potential of digital platforms to scale impact, as well as the capacity of civic engagement platforms to empower users involved in pressing social and ecological problems.

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