

An alternative organizational model for a more democratic and equitable digital economy: A systematic literature review on platform cooperativism through the lens of stakeholder theory. Competitive advantages and challenges

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Abstract

Platform cooperatives, namely, businesses that sell goods or services primarily through a website, mobile app, or protocol and commit to the principles of democratic governance and shared ownership, have lately been proposed as a more sustainable, equitable and, under certain conditions, even efficient alternative to the organizational model of commercial platforms. Accordingly, they have been presented as economic institutions capable of involving all their relevant stakeholders in an extended and inclusive governance structure. Nevertheless, this emerging literature is still characterized by the lack of a holistic and analytic framework connecting the dispersed studies on the topic through the lens of stakeholder theory and detailing strategic complementarities between these different stakeholders. Related to this

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point, while dealing with the competitive advantages and challenges of platform cooperatives, little reference has been made to the existing debate in governance theory about the advantages and challenges of cooperative firms as compared to capitalist ones. These research gaps motivated our literature review, which is the first comprehensive systematic review specifically focused on this topic. Given the still-emerging character of the research object, our work also makes way for future updates as new contributions are gradually published.

KEYWORDS

cooperative advantage, governance theory, multi-stakeholder cooperatives, platform cooperativism, stakeholder theory

JEL CLASSIFICATION

D23, D26, D63, J54, L14, L17, L31, L38, O35, P13

1 | INTRODUCTION

One of the key technological transformations to have impacted business models in the last decade is the emergence of the platform economy and, more specifically, a development sometimes called “Uberization” (Warhurst et al., 2019). Uberization, a term coming from the ride-hailing platform Uber, is a technological process that helps migrate work to platforms via digital interfaces that connect users across networks and facilitate the commodification and exchange of goods and services—a process already studied in the past (Putterman, 1989), but which is now for the first time being mediated by algorithms. However, despite the initial expectations of transaction costs’ reduction and greater opportunities for all the stakeholders, this organizational model soon started to be linked to the risks of precarious working conditions, data extraction, bogus self-employment, and algorithmic surveillance (De Stefano, 2016; Mazzucato et al., 2020; Ravenelle, 2017; Zuboff, 2019). As a consequence, in the last few years, a growing literature has been proposing alternative organizational models for platforms aiming to guarantee a fairer redistribution of value among stakeholders and better sustainability while preserving economic efficiency.

This literature review focuses on the emergent phenomenon of the “platform cooperativism”, i.e., “businesses that sell goods or services primarily through a website, mobile app, or protocol” while relying “on democratic decision-making and shared platform ownership by workers and users” (Platform Cooperativism Consortium, 2022). It was the New School’s professor Trebor Scholz (2016) who first coined the term and opposed it to platform capitalism, suggesting that it offers the opportunity to adapt the 180-year history of the cooperative movement and its guiding principles of democratic governance and shared ownership to solve the present challenges posed by the digital economy and make platforms more democratic and equitable (Papadimitropoulos, 2021). Thanks to this explicitly claimed affiliation, apart from reviewing the literature on the topic,

this article also aims to connect platform cooperatives back to the traditional discussion about the competitive advantages (and disadvantages) of cooperative firms as compared to capitalist ones (Alchian & Demsetz, 1972; Borzaga et al., 2022; Hansmann, 1996; Rose-Ackerman, 1996; Spear, 2000).

Indeed, up to now, this idea has never been analytically linked yet to the existing debate about (multi-stakeholder) cooperatives and (cooperative) networks within the theory of the firm (Aoki, 2001, 2011; Borzaga & Sacchetti, 2015; Menzani & Zamagni, 2010; Novkovic & Holm, 2012; Powell, 1990; Sacchetti & Tortia, 2015; Spear, 2000). For the same reason, it is also missing a framework capable of connecting all the dispersed existing contributions dealing with the different stakeholders of a platform co-op, showing strategic complementarities among them and detailing a coherent extended governance model as well as assessing the competitive (dis-)advantages that platform cooperatives have as compared to traditional ones. That's the reason why we conducted for the first time (to the best of our knowledge) an up-to-date and comprehensive systematic review of the literature linking through the holistic framework of stakeholder theory a plurality of contributions coming from different disciplines.¹ In addressing these gaps and coherently with the same platform cooperativism idea, the article aims to focus in particular on presenting multi-stakeholder platform co-ops as the governance structure best suited to give substance to the project of a more democratic and equitable digital economy.²

To reach these goals, the review was organized as follows. It first summarizes the background that influenced the formation of the platform cooperativism movement and the basic concepts necessary for understanding the interpretation proposed in this article. Second, it explains the systematic methodology and steps undertaken for reviewing the literature. Third, it presents the main findings and the analytic framework used to assess and connect these findings. Fourth, it critically discusses the findings in light of the identified research gaps. Fifth, it dedicates a separate section for assessing the competitive advantages and challenges of platform co-ops. Finally, it concludes by recapping the argument and opening up future paths of analysis.

2 | BACKGROUND AND BASIC CONCEPTS

As a matter of fact, economic transactions conducted via online platforms are currently a key public policy issue and research topic. In this context, scholars have first described digital platforms as new hybrid business organizations capable of eroding the traditional boundaries between markets and firms thanks to technological features that reduce transaction costs in horizontal peer-to-peer exchanges (Cansoy et al., 2021; Sundararajan, 2016). According to this narration, the

¹The only comparable work is another literature review by Zhu and Marjanovic (2021) which maps articles published between 2014 and 2020 dealing with the social impact and values of platform cooperatives. However, because of their use of only Google Scholar as a database, the narrow focus of their research question and their analysis of also papers not strictly connected with platform cooperativism, we consider our systematic review an original contribution to the academic debate on this topic. Moreover, recently, Wegner et al. (2023) dedicated a section of their management-focused systematic review of collaborative digital platforms to platform co-ops and Mannan and Pek (2023) analyzed the challenges that worker-owned platform cooperatives have to face because of the inherent tension between the “platform” organizational model and the “worker cooperative” organizational model.

²A similar objective motivated the research project TAPAS (There Are Platforms as Alternatives), financed by the French Ministry of Labor and the Ministry of Solidarity and Health and co-conducted by the CEPN (Centre d'Economie de L'Université Sorbonne Paris Nord) with the association La Coop des Communs (Vercher-Chaptal, 2021).

platform economy was initially intended as merely a new way of allocating tasks and matching demand and supply: instead of being delegated to employees hierarchically integrated into the firm via work contracts as in traditional companies (Coase, 1937; Grossman & Hart, 1986; Hart & Moore, 1990; Hart, 1995; Williamson, 1985), tasks would be outsourced “on-demand” to a larger group of autonomous “cloud” or “gig” workers formally acting as “independent contractors” (Schmidt, 2017), who, in future transactions, could also potentially act as consumers. However, the emergence and development of online platforms have quickly proven to be far from limited to the simple role of market-matching digital systems.³ According to the OECD, “the term ‘online platform’ has been used to describe a range of services available on the Internet including marketplaces, search engines, social media, creative content outlets, app stores, communication services, payment systems, services comprising the so-called ‘collaborative’ or ‘gig’ economy, and much more” (OECD, 2019, p. 20). It is for this transformative power that the platform economy has become a prominent subject of analysis.

Nevertheless, this interest has also been accompanied by an increasing amount of criticism. Among the targets are the risks already presented in the Introduction, i.e., precarious working conditions, data extraction over users, bogus self-employment of gig workers, and thorough algorithmic surveillance. Hence, rather than representing new democratic forms of business organizations able to reduce stakeholders’ underinvestment and give them back control over the value they generate, digital platforms have been accused of ultimately reaffirming and exacerbating the same hierarchical features typical of traditional capitalist enterprises (Muldoon, 2022; Sacconi, 1999; Srnicek, 2017). For example, the residual control right (Grossman & Hart, 1986; Hart & Moore, 1990; Hart, 1995), i.e., the ability to exclude other users from the use of the platform and renegotiate standards in ex-ante unpredictable circumstances, is still in the hands of the platform owner, while the biggest part of the entrepreneurial risk is shifted to workers who are formally treated as autonomous independent collaborators and thus even more vulnerable to abuses of power (Bieber & Moggia, 2021).

Critics, even if concerned with various aspects of platform capitalism and adopting different theoretical and sometimes ideological perspectives, have therefore opened a common path towards the search for alternative organizational models of platforms that are not involved in extractive logic, power abuses, or predatory “crowd fleecing” (Scholz, 2017). Accordingly, alongside the role of advocacy played by some activists, there is now a shared recognition of the need to analytically assess how institutionalized forms of stakeholder participation and co-determination in the platform economy can represent a viable and complementary alternative with public policies and regulation on the one hand and civil society/grassroots movements’ forms of collective action on the other (Bunders, 2021). The platform cooperativism idea represents probably the most comprehensive answer that has been developed in this sense. Hence, we decided to conduct the review of this innovative organizational model under the framework of the “stakeholder theory” approach.

Such an approach consists precisely in the view that efficient business decisions have some inherent ethical content and that “people engaged in value creation and trade are responsible

³ Srnicek (2017) recognizes, for example, five different types of platforms: “lean platforms” (where on-demand tasks are externalised to cloud or gig workers, such as Amazon Mechanical Turk and Deliveroo), “advertising platforms” (which monetise on selling advertising spaces and extracting value from customers’ data, such as Google and Facebook), “industrial platforms” (which represent the attempt to bring platforms under traditional manufacturing, such as in the case of Intel or Microsoft), “cloud platforms” (which profit from controlling the digital infrastructure in a way that can be rented out, such as Amazon), and “product platforms” (which sell purely digital products, such as Spotify).

[...] ‘to those groups and individuals who can affect and be affected by their actions’” (Freeman et al., 2010, p. 9). This definition includes both those who are essential for the viability of the business, i.e., the “primary stakeholders”—employees, suppliers, financiers, customers, and communities—and the broader group of those who can have some influence on it, i.e., the “secondary stakeholders”—such as consumer advocate groups, special interest groups, competitors, media, and governments (Freeman et al., 2010, pp. 24, 26). Following stakeholder theory, these actors interact and contribute at different levels to the value creation process and they should be kept into consideration accordingly.

Coherently, from the outset of the platform cooperative movement (Scholz, 2016) to the most recent developments (Scholz, 2023), multiple stakeholders have been considered parts of a “platform cooperative ecosystem” claiming that they are decisive for the success of platform co-ops, i.e., developers, workers, customers, public institutions, investors, suppliers, third parties, activists, and academics (see also Acquier et al., 2017). In the same regard, even the other founding father of the platform cooperative movement, Nathan Schneider speaks of a platform cooperative ecosystem in his proposal of an alternative form of ownership for the digital economy. Namely, “under the banner of ‘platform cooperativism’”, he stresses how “an emerging network of cooperative developers, entrepreneurs, labor organizers and scholars is developing an economic ecosystem that seeks to align the ownership and governance of enterprises with the people whose lives are most affected by them” (Schneider, 2018, p. 320).

As a consequence, in contrast to the traditional mono-stakeholder view through which the viability of cooperatives is usually assessed (Hansmann, 1996), the stakeholder approach seems also to suit better with the organizational design of a multi-stakeholder cooperative. Indeed, the main feature of a multi-stakeholder cooperative is exactly to include multiple stakeholders in its governance and ownership structures with the objective of having a positive social impact and acting in the “public interest” in addition to pursuing mutuality purposes. Multi-stakeholder cooperatives have thus traditionally developed strong connections with governments, particularly at the local level, and have also proved to be more efficient than mono-stakeholder cooperatives in some contexts—such as the provision of public utility services—because of their inherent capacity to reduce the costs of excluding relevant actors from the organization of production and management of these services (Borzaga & Sacchetti, 2015). That’s the reason why we looked at the multi-stakeholder membership type as the most coherent one to adopt for implementing the platform cooperativism idea and guiding the review of the literature through the lens of stakeholder theory (see also Mayo, 2019 on the focus that the International Cooperative Alliance should have on multi-stakeholder platform co-ops).

3 | METHODOLOGY

Adopting a systematic review approach has often been considered the most appropriate strategy to summarize the academic literature on a certain topic while giving other scholars and practitioners evidence-based insights on filling a particular research gap (Petersen, 2019; Tremml, 2019). As we anticipated in the Introduction, this review aims to collect, evaluate, and connect, through a holistic framework, high-quality contributions that analyze the different stakeholders who can be involved in a synergistic platform cooperative as well as the main advantages and challenges of platform co-ops as compared to other commercial kinds of platforms. All the papers that have been considered for review were published after 2016, when Scholz wrote the first structured contribution on the topic (Scholz, 2016) by systematizing his 2014 seminal web article

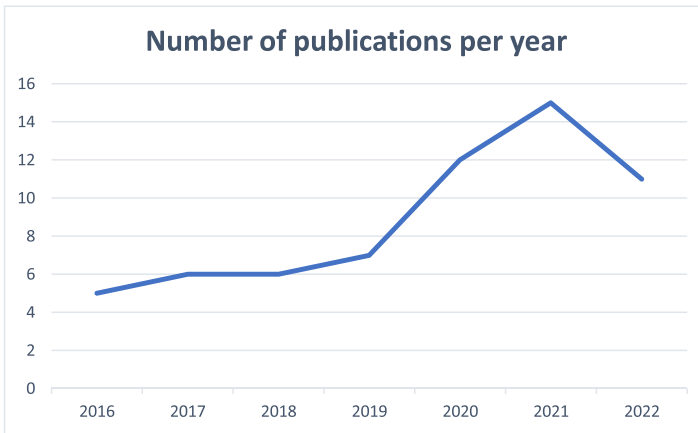


FIGURE 1 Number of publications per year.

Source: Authors' own elaboration. [Colour figure can be viewed at wileyonlinelibrary.com]

The figure shows the relatively few contributions published on the topic and the still-emerging character of the research object on the one hand, but also the considerable rise of interest in the last few years on the other—probably influenced in part by the huge spread of digital platforms after the pandemic crisis (Calzada, 2020). The last search was on 13/09/2023.

“Platform Cooperativism vs. the Sharing Economy” in which he invented the term and sparked the discussion (Scholz, 2014).⁴ We decided to limit our review up to 2022.

Indeed, given the still-emerging character of the research object (Figure 1), not only peer-reviewed journal articles but also books, book chapters, conference papers and reports coming from different disciplines had to be included. Therefore, in order to maintain the possibility of having a criterion of inclusion, only cited works were considered. This choice has determined a limitation, i.e., the impossibility of assessing the most recent contributions—considering also papers published in 2023 would have weakened a criterion of inclusion based on citations. For this reason, we leave for the future the task of updating this review to map new developments in the literature.

The applied methodology was inspired by the systematic approach proposed by Booth et al. (2012) and critically engages with the previous work of Zhu and Marjanovic (2021). Accordingly, first, the keywords “platform cooperativ*” and “platform co-op*” were used to scope papers within the Scopus and Web of Science databases, searching in titles, abstracts and keywords (last search on 13/09/2023). Next, by applying the pearl-growing technique, other relevant papers were identified (Booth et al., 2012). This led to the identification of 223 contributions, while the language of publication was restricted to English—the main language in which the discussion is being conducted.⁵ Finally, duplicated articles were excluded, and we ended up with 156 articles to screen.

In the second phase, by screening abstracts and titles from all these papers, those using the keywords in other contexts not referring to the topic of platform cooperativism were eliminated. 80

⁴ In those years, other relevant web articles were published on the topic, such as “The Sharing Economy Just Got Real” (Orsi, 2013) and “Owning is the New Sharing” (Schneider, 2014). Some echoes can also be found in “Debating the Sharing Economy” (Schor, 2014).

⁵ Recently, there has been a growth of interest in the topic in the Global South, particularly in Brazil in relation to possible expansions and adaptations of the definition of the same term platform cooperativism (Grohmann, 2022). Therefore, there are now many articles on platform cooperatives written in Portuguese and valuable contributions have been published even in Spanish (such as Hernández Carrión, 2022). A future update of the systematic review should consider these new trends in the literature.

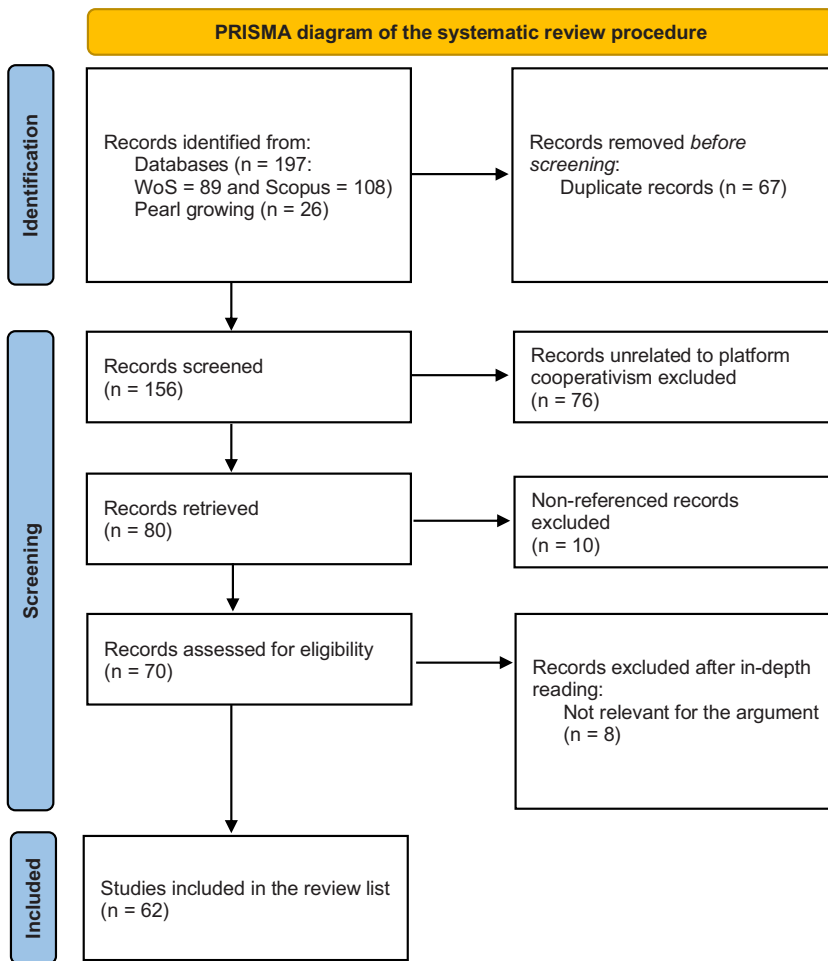


FIGURE 2 PRISMA diagram of the systematic review procedure.

[Colour figure can be viewed at wileyonlinelibrary.com]

Source: Adapted from Page et al. (2021).

papers were thus retrieved. Subsequently, we excluded non-referenced papers (i.e., papers without citations), leaving 70 eligible articles. Finally, after completing an in-depth reading process for all 70 papers, we excluded another eight articles that we considered not relevant to fill the research gaps we had decided to address.⁶ This led to the identification of 62 contributions that have been included in the literature review list (see Appendix A). Figure 2 summarizes the entire review procedure using the ‘Preferred Reporting Items for Systematic Reviews and Meta Analyses’ (PRISMA) model (Page et al., 2021).

⁶ Those articles were mainly devoted to assessing the ideological dimension of platform cooperativism, peculiar technological aspects of the phenomenon and those connected with the human–computer interaction dimension, or they were specific case studies about farmers or food system cooperatives.

4 | FINDINGS

This section presents the findings of our systematic review focusing on the main research gaps we have identified. Accordingly, by screening and evaluating all the papers on the review list, we first recognized that—consistently with the approach we adopted—the increasing stream of literature on alternative platforms is built upon one main driver: the systematization of platform cooperativism as a form of collective action across a continuum from social movements to more structured organizational forms (Bunders, 2021). Namely, for authors such as Chatterton and Pusey (2020), Cohen (2018), Fuchs (2021, 2022), Nicoli and Paltrinieri (2019), Papadimitropoulos (2021) and Silberman (2016), platform co-ops are examples of alternative governance and ownership structures for digital platforms that offer a possibility to supersede the capitalist enterprise model and transforming it into a *commons*, i.e., a particular institutional and managerial form of economic organization based on the freedom of accessing and collectively governing a common-pool resource—in this case, the digital infrastructure (Frischmann, 2012; Fuster Morell, 2014; Hess, 2008; Lewin, 2018; Muldoon, 2022; Ostrom, 2010).

This collective effort can be thus intended as a further step towards affirming a polycentric digital economy—in the spirit of the reflection carried on by authors like Benkler (2006) at the beginning of the millennium about the capacity of “commons-based peer production” (CBPP) experiences, such as the FLOSS (Free Libre and Open-Source Software) projects and the Wikipedia encyclopaedia, of questioning the privatization of the Internet and managing it as a shared infrastructure freely accessible by anyone. Under discussion is indeed also the opportunity to shift from the concept of platform cooperativism to that one of “open cooperativism”, a concept that “argues for a synergy between the common-based peer production movement and elements of the cooperative and solidarity economy movement” (Pazaitis et al., 2017, p. 177), making cooperative not only the front-end but also the back-end of platforms.⁷ Coherently, Zygmuntowski (2018) presents multi-stakeholder platform co-ops as the most democratic and egalitarian counter alternative to the extractive concentrations of power over personal data represented by so-called “netarchist platforms”.

However, grounding the results of our systematic review on this trend related to unorthodox developments in the theory of the firm, our findings confirm the fact that, despite promising premises, scholars usually focus on single stakeholders or consider platform cooperatives only as a “black box” (Coase, 1937; Williamson, 1985) yet miss the analytic assessment of this organizational form’s peculiar characteristics and the different stakeholders’ strategic complementarities. Namely, even if there are contributions dealing with the role of cooperative developers/workers (Bunders, 2021; Cohen, 2018; Kasparian, 2022; Kirsanova et al. 2021; Mannan & Schneider, 2021; Schneider, 2018), gig workers’ unions (Conaty et al., 2018; Meira & Fernandes, 2021; Woodcock & Graham, 2020), customers and civil society actors (Borkin, 2019; Mannan & Schneider, 2021; Mayo, 2019; Mello Rose, 2021; Muldoon, 2022; Schneider, 2018; Talonen et al., 2016, 2020), public institutions (Bernardi & Diamantini, 2020; Calzada, 2020, 2021; Schneider, 2018; Scholz et al., 2021) and academics/activists (Schneider, 2018; Scholz, 2017), the mutual relations among these

⁷ In this sense, there has recently been growing interest in the possible relations between platform cooperatives and Decentralised Autonomous Organizations (DAOs) (Rocas-Royo, 2019). DAOs are blockchain-based participatory data governance and coordination frameworks (Hassan & De Filippi, 2021) that can help platform co-ops to scale efficiently and decentralise power while simultaneously retaining and expanding features like democratic governance, shared ownership and equitable value distribution, probably one of the main challenges platform cooperatives have to face (Mannan & Schneider, 2021).

TABLE 1 The different stakeholders of a platform cooperative and their roles in an extended governance structure.

Stakeholder	Role	Indicative literature
Cooperative developers/workers	Coordinating for collective action and launching platform cooperatives	Bunders (2021), Cohen (2018), Kasparian (2022), Kirsanova et al. (2021), Mannan and Schneider (2021), Schneider (2018), Scholz and Schneider (2017)
Gig workers' unions	Pushing for worker-friendly legislation and playing a complementary role with platform co-ops	Conaty et al. (2018), Meira and Fernandes (2021), Scholz and Schneider (2017), Woodcock and Graham (2020)
Customers/users and civil society/cooperative actors	Participating in the governance of platform co-ops and helping to solve the capital conundrum	Borkin (2019), Mannan and Schneider (2021), Mayo (2019), Mello Rose (2021), Muldoon (2022), Schneider (2018), Scholz and Schneider (2017), Talonen et al. (2016), Talonen et al. (2020)
Public institutions at the local, national and international level	Creating a level playing field, giving citizens back data-sovereignty, adopting sustainable procurement strategies, partnering platforms directly	Bernardi and Diamantini (2020), Calzada (2020, 2021), Schneider (2018), Scholz and Schneider (2017), Scholz et al. (2021)
Academics and activists	Co-designing innovative solutions, disseminating case studies and good practices and advocating in favour of platform co-ops	Schneider (2018), Scholz (2017), Scholz and Schneider (2017)

Source: Adapted from Ryan-Collins et al. (2022).

actors and their distinct but complementary inputs in the value creation process have not been systematically analyzed. We will discuss in-depth these relations in the next section. Table 1, taken from Ryan-Collins et al. (2022) and further elaborated, is a first attempt at developing this framework by summarizing the main actors that can be found in a synergistic platform cooperative, the specific role they can mutually play in an extended governance structure and the relevant literature that has examined them.⁸

5 | DISCUSSION OF ROLES AND COMPLEMENTARITIES OF THE IDENTIFIED STAKEHOLDERS

In this section, the findings of the literature review summarized in Table 1 will be analytically discussed. Accordingly, Borkin (2019, pp. 18–9) identifies four membership types that platform co-ops can adopt for mobilizing their different stakeholders and democratically involve them in

⁸ Scholz and Schneider (2017) are cited in every line of the table because their collective volume *Ours to Hack and to Own* represents the only real attempt to develop a genuine multi-stakeholder perspective on the study of platform cooperatives. However, this is mostly a non-academic book written for practitioners and for a generalist audience and thus the nodes of the cooperative network and their complementarities are neither critically analyzed nor is there a clear reference to the debate about multi-stakeholder cooperatives within the theory of the firm.

the platform governance: (1) multi-stakeholder/community platforms⁹ (the organizational model that, as we have stressed, is most consistent with a stakeholder theory approach and, arguably, with the same platform cooperativism idea), (2) producer-led platforms,¹⁰ (3) consortia/worker platforms,¹¹ and (4) data consortia platforms.¹²

What is common among all these membership types is that cooperative developers/workers undoubtedly play a fundamental role (Ryan-Collins et al., 2022). In this regard, Bunders (2021, p. 192)—who considers only worker-owned platform co-ops but whose insights can be applied even to the other models—examines precisely the case in which gig workers directly act as developers (Kirsanova et al., 2021) and identifies three different tactics they can employ to coordinate themselves and launch a platform cooperative: (1) “creation”, i.e., the construction and organization of a new cooperative “from scratch”, (2) “conversion”, i.e., the mutualization of an existing platform by its users¹³ and (3) “coding”, i.e., the adoption of a platform by an existing cooperative.¹⁴ Furthermore, another possible strategy that can be added is the federative one (Cohen, 2018; Mannan & Schneider, 2021). A good example is CoopCycle.¹⁵ CoopCycle is a French bike-logistic digital infrastructure that gave birth to an international federation of food-delivery cooperatives by letting them use and customize the software in their local contexts (Kasparian, 2022). In this way, the federative strategy allows co-ops to face the cost of building up the platform by promoting the sharing of the same software within a network of independent but affiliated cooperatives and,

⁹ In multi-stakeholder platforms, all the users, producers and platform developers are member-owners. For example, Espelt (2020) argues how the implementation of digital platforms in Community Supported Agriculture (CSA) can promote “agroecology prosumption” and solve the limitations of CSA in terms of economic sustainability. Furthermore, another interesting example is Resonate (<https://resonate.is/>), a multi-stakeholder cooperative alternative to Spotify born in Germany. Through a unique “stream-to-own” listening model, the original project aimed to directly give back to artists the value they produce with their music while involving the same artists, listeners, music labels and workers in the platform governance (Borkin, 2019; Scholz & Schneider, 2017).

¹⁰ Producer-led platforms are characterized by autonomous and dispersed producers that sell their products through the platform. For example, Stocksy United (<https://www.stocksy.com/>) is an online stock photo agency providing royalty-free and high-quality photos while being directly owned and managed by photographers (Borkin, 2019; Scholz & Schneider, 2017).

¹¹ In consortia worker platforms, the local dimension and interaction between workers are much more important rather than in producer-led platforms. Foramitti et al. (2020) have extensively analyzed the case of Fairbnb.coop (<https://fairbnb.coop/>), a worker-owned cooperative legally registered in Italy but rapidly spreading in different cities all around Europe. Its main mission is to provide short-term socially sustainable vacation rentals to tackle the “gentrification” issue posed by the extractive incumbents Airbnb and Booking.com through partnering with local municipalities and giving back part of the revenues to local communities.

¹² Data consortia platforms are a variant of consortia worker platforms centered on the joint ownership and use of data. One of the most paradigmatic examples is undoubtedly MIDATA (<https://www.midata.coop/en/home/>), a Swiss data co-op working in the healthcare sector to balance the power relationship between those who consume personal medical data and the owners of these data. More specifically, thanks to MIDATA, Swiss citizens can voluntarily pool their data in common and organize their conscious release to third parties who can generate social value from them, e.g., through social-impactful medical research (Borkin, 2019; Mòdol, 2019).

¹³ This subject has recently been explored by Gonza and Ellerman (2022a, 2022b) who examine how ESOPs (employee stock ownership plans) might be utilised to democratize labor-based platforms. A similar proposal has also been developed by Mannan and Schneider (2021) regarding users in general.

¹⁴ This strategy and its related advantages and challenges have been extensively analyzed by Como et al. (2016), referring to the European landscape. One often-cited example is Smart (<https://smartbe.be/en/>), a Belgian-born cooperative of freelance workers for risk mutualisation that recently adopted a platform for coordinating its activities and contextually opened its services to gig workers (Charles et al., 2020).

¹⁵ <https://coopcycle.org/en/>

at the same time, gives the umbrella organization the possibility to monitor the members of the federation and prevent free-riding.

Secondly, another aspect whose importance has been stressed in the literature is the complementary effort that platform cooperatives and new inventive unions of gig workers can play in finding a continuum of innovative ways to resist the extractive Silicon Valley business model and ensuring fair working conditions (Meira & Fernandes, 2021; Ryan-Collins et al., 2022; Woodcock & Graham, 2020). Digital platforms represent in fact an occasion for both the cooperative sector to advance new forms of economic democracy and trade unions to attract new members, opening the path for untraditional collaborations between them (Conaty et al., 2018). Therefore, it could even be argued that we are witnessing a sort of convergence of the different strategies played by the cooperative and trade union movements for protecting workers (and other stakeholders) thanks to digital means (Scholz & Schneider, 2017). In its initial aspiration, the Italian food-delivery platform *Consegne Etiche*,¹⁶ a cooperative project incubated by the Municipality of Bologna and aiming to help gig workers, shopkeepers and the local community during the peak of the Covid-19 pandemic, was a great illustration of how self-organized unions of gig workers and platform cooperatives may constructively work together. Indeed, both the spokespersons of *Riders Union Bologna* and two existing local cooperatives aiming to “code” themselves, i.e., *Dynamo* and *Idee in Movimento*, participated together in the initial co-designing process of the service (d’Alena, 2021).

From a multi-stakeholder lens, alongside cooperative developers and workers’ unions, a key role can then be played by customers and, more generally, the larger community of citizens affected by traditional digital platforms’ extractive operations (Ryan-Collins et al, 2022). Indeed, because of their increasingly essential role in society, some scholars have stressed how the people who are impacted by these operations should have a say in how such platforms are concretely organized and work (Muldoon, 2022). That is even more compelling if it is true, as Ritzer (2010) points out, that twenty-first-century consumers are becoming “prosumers”. More specifically, they consume but they are also working for free within digital platforms, producing the primary source of value which those platforms extract and resell: their data (Papadimitropoulos, 2021; Zygmuntowski, 2018). Furthermore, innovative strategies for “Exiting To Community” (Mannan & Schneider, 2021), such as the involvement of customers through civic crowdfunding initiatives or investment models based on withdrawable community shares (Borkin, 2019; Talonen et al., 2016, 2020), could also offer a solution to the financing issue, one of the main challenges faced by platform cooperatives. Borkin (2019) defines it as the “capital conundrum”, i.e., the main obstacle for scaling platform cooperatives that cannot rely on the same venture capital which sustains their traditional competitors and thus have to substitute traditional investors with community or social-impact ones (Becchetti et al., 2021; Mello Rose, 2021; Schneider, 2018).¹⁷

Shifting now from a bottom-up perspective to a top-down one, there is a growing body of literature which also acknowledges the function that international, national and especially local governments can play as active forces to enable, partner and pave the way for creating a favourable ecosystem for social innovation based on the collaborative digital economy as well as for reverting surveillance capitalism by giving citizens back their data-sovereignty (Bernardi & Diamantini, 2020; Calzada, 2021; Schneider, 2018)—where social innovation has been defined as “the development and delivery of new ideas and solutions [...] at different socio-structural levels that

¹⁶ <https://consegnetiche.it/>

¹⁷ In this sense, other institutional actors can play an important role, such as cooperative associations and cooperative banks (Mayo, 2019; Zevi, 1990).

intentionally seek to change power relations and improve human capabilities, as well as the process via which these solutions are carried out” (Nicholls & Ziegler, 2019, p. 5).¹⁸ Drawing on a comparison among seven territories (i.e., California, Kerala, Barcelona, Bologna, Berlin, Paris, and Preston), Scholz et al. present 12 strategies that regional and local governments can adopt to actively favour the scaling up of platform cooperatives: (1) mandating procurement policies that sustain platform co-ops, (2) implementing solidarity-oriented loan programs, (3) realizing public participation in multi-stakeholder cooperatives, (4) funding research to identify legal obstacles, (5) offering social benefits specifically to members of platform co-ops, (6) creating a list of public spaces that could be offered for free or at a low cost to platform co-ops, (7) providing public regulation by certifying their organizational status as cooperatives, (8) improving the conditions of platform co-op operations by levelling the playing field, (9) providing platform co-ops with fiscal advantages, (10) funding platform co-op incubators, (11) creating a municipal or national advisory committee, (12) including platform co-ops in the political platforms of parties (Scholz et al., 2021, pp. 60–3). Irrespective of any judgement about the single measures proposed, this approach is particularly important for our framework because it calls directly for public institutions’ proactive role as relevant stakeholders themselves.

Finally, the double role of Scholz in the development of the platform cooperative global movement as its leading mind and advocate is exemplificative of the possible function that even academics and activists can have (Schneider 2018; Scholz, 2017). As the director of the Institute for the Cooperative Digital Economy (ICDE) at the New School in New York City, he first framed the research field and now he publishes informative books and several articles on new media for popularizing the idea and organizes and funds annual itinerant conferences, connecting scholars and practitioners from all around the world while disseminating the innovative contributions of selected fellow researchers and asking practitioners to share their experiences and challenges. At the same time, he also leads the Platform Cooperativism Consortium (PCC), an international hub which helps platform co-ops to start, grow, connect and scale by promoting best practices and innovative design strategies as well as educating developers on platform cooperative values through online courses and tools.¹⁹

To summarize the discussion of the findings and the possible complementarities between the different stakeholders of an ideal-typical platform co-op, we can now compare the peculiar organizational structures of commercial platforms and platform cooperatives (see Figure 3). Regarding the former, we can appreciate a central hub represented by platform owners and venture capitalists and an array of peripheral actors, such as service providers (both individual independent contractors and other firms acting as suppliers or complementors), customers, public institutions and universities (Aoki, 2001, 2011; Jacobides et al., 2018; Zacharakis et al., 2003). Therefore, even if vertical integration is formally substituted by multilateral dependencies and strategic complementarities, the network in this case remains very asymmetric and open to every kind of abuse by the hands of platform owners (and venture capitalists) who still have residual control rights and can exclude other agents from accessing the platform. On the contrary, regarding the latter, we can appreciate a more horizontal and decentralized organizational structure in which all the primary and secondary stakeholders (Freeman et al., 2010) participate democratically in the

¹⁸ An early outline of the process of social innovation has been traced by Mulgan (2006). On the empowerment of people through social innovation and the circumstances under which this can produce social value see also von Jacobi et al. (2024).

¹⁹ The PCC website, for example, has both an online library, collecting different contributions published on platform cooperatives, and a directory which lists case studies of platform co-ops from all over the world.

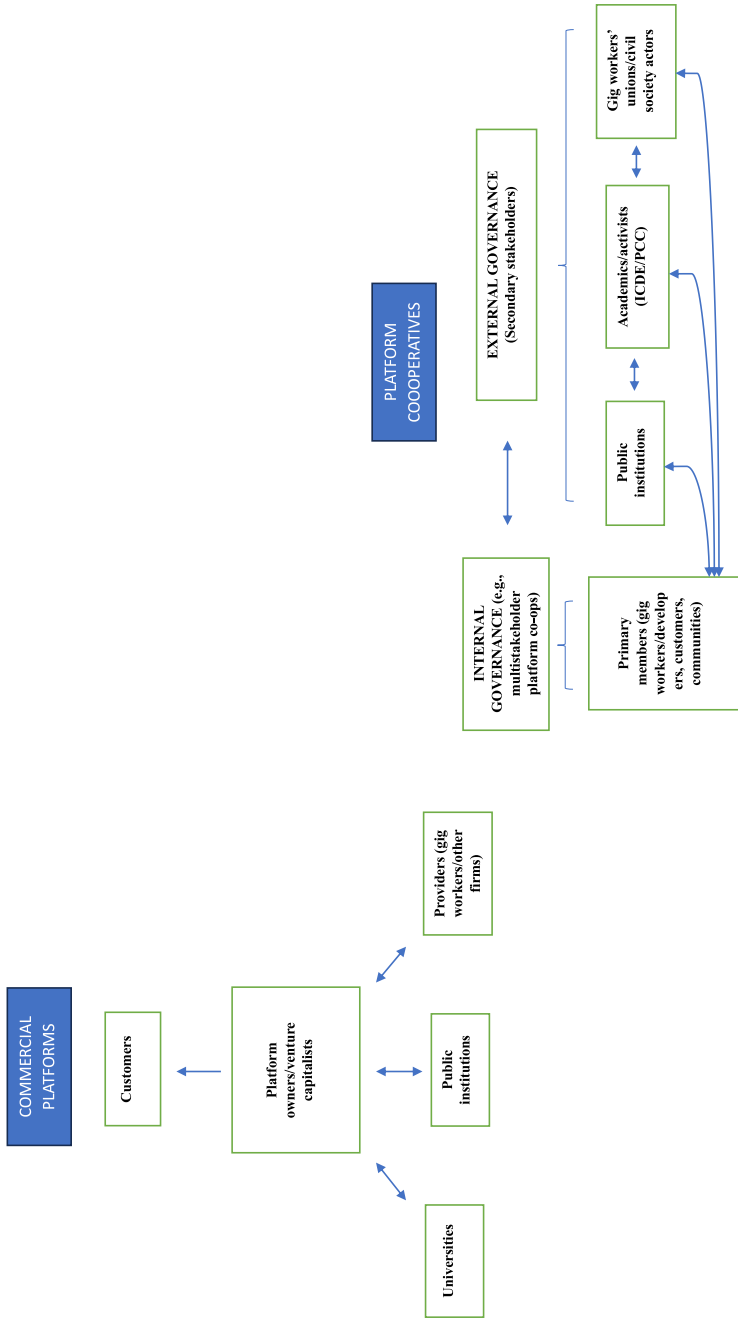


FIGURE 3 Organizational peculiarities of commercial platforms and platform cooperatives.

[Colour figure can be viewed at wileyonlinelibrary.com]

Source: Authors' own elaboration of Aoki (2001, 2011), Jacobides et al. (2018), Zacharakis et al. (2003), Freeman et al. (2010), Sacchetti and Tortia (2015).

value creation process, are rewarded according to their specific investments and, experimenting with a heterarchical form of coordination (Sacchetti & Tortia, 2015), strengthen consequently the dynamic capabilities and the relational capital of the firm. This solution represents an alternative growth path for platforms, less focused on scaling up and more on building interpersonal networks, federations and alliances (see also Menzani & Zamagni, 2010). For all these reasons, the related governance structure most capable of balancing the interests of the different stakeholders seems again to be the multi-stakeholder one, which can also contribute in this way to the participatory, collective and polycentric management of the Internet (Frischmann, 2012; Fuster Morell, 2014; Hess, 2008; Lewin, 2018; Muldoon, 2022; Ostrom, 2010).

6 | COMPETITIVE ADVANTAGES AND CHALLENGES OF PLATFORM COOPERATIVES

In conducting our systematic review of the literature, we have acknowledged how platform cooperatives are frequently seen as having many advantages in comparison to commercial platforms—results that we propose to read through the lens of a whole strand of literature analyzing the competitive advantages and behavioural incentives of cooperative networks as compared to capitalist ones (Borzaga et al., 2011; Menzani & Zamagni, 2010; Novkovic & Holm, 2012; Sacchetti & Tortia, 2015; Spear, 2000). At the same time, we know that, under the framework of “governance theory”, mono-stakeholder cooperatives are usually better considered as capable of reducing transaction costs for those who have a stake in the firm (Hansmann, 1996).²⁰ However, we have already argued how there are contexts in which excluding some of the relevant stakeholders from the governance can create costs as well and make abuses of authority and underinvestment more likely (Borzaga & Sacchetti, 2015; Sacconi, 1999). Therefore, due to the mutual co-essentiality of the different stakeholders’ contributions that we showed in the previous section (Aoki, 2011), we believe that also the theory seems to suggest the potential greater efficiency of the multi-stakeholder governance structure for platform cooperatives, in addition to its ethical preferability from a stakeholder approach point of view (Freeman et al., 2010). Accordingly, this section aims to summarize, discuss, and further analyze what are the possible (dis-)advantages of this model by expanding the insights of Ryan-Collins et al. (2022). Tables 2 and 3 provide a synthesis of the main competitive advantages and challenges we identified.

Starting with the advantages, scholars, relying mostly on qualitative methodologies and case studies, usually focus on the greater satisfaction of platform cooperatives’ workers in comparison to those working for other commercial kinds of platforms because of the greater sense of achievement, recognition and possibility for growth they guarantee them (Saner, Yiu & Nguyen, 2018), their stronger resilience to external shocks, as the role that platform cooperatives can play in a post-Covid-19 world to improve citizens’ well-being testifies (Calzada, 2020), and their lower levels of staff turnover, pay inequality and absenteeism rates (Borkin, 2019). Furthermore, Borkin also mentions their greater capacity for “placing creators in control”, their relational models of governance capable of creating higher commitment among stakeholders (and thus greater productivity) and their capacity to protect members by acting as social movements (Borkin, 2019,

²⁰ Governance theory is the theory that assesses the different corporate governance models according to how they distribute rights and responsibilities between all the parties with a stake in the firm in order to reduce transaction costs and protect their interests and specific investments (Aoki, 2001; Belloc, 2021; Hansmann, 1996; Williamson, 2010).

TABLE 2 Competitive advantages of platform cooperatives.

Indicative literature	Advantages
Saner et al. (2018)	Stakeholders' greater satisfaction, commitment and possibility for growth
Calzada (2020)	Greater resilience to external shocks
Borkin (2019)	Lower levels of staff turnover, pay inequality and absenteeism rates; creators in control, relational models of governance, greater social protection of members
Martin et al. (2017), Zhu and Marjanovic (2020)	Promotion of social and environmental values and contribution to the SDGs
Salvagni et al. (2022), Mannan and Pek (2021)	Advancement of a more inclusive, feminist digital economy and human development promotion in BoP contexts
Belloc (2019)	Greater efficiency under certain conditions
Frenken (2017), Mello Rose (2021), Muldoon (2022), Solel (2019), Vlačić and Štromajer (2020)	Local and network embeddedness
Cohen (2018), Kasparian (2022), Mannan and Schneider (2021)	Possibility to pool the technological investment through federative strategies
Bernardi and Diamantini (2020)	Provision of quasi-public services in response to market failures and state crises by partnering with public institutions

Source: Authors' own elaboration.

TABLE 3 Main challenges of platform cooperatives.

Indicative literature	Challenges
Borkin (2019), Mayo (2019)	Financial, technological, growth and governance challenges
Bunders and Akkerman (2022), Bunders et al. (2022), Konnova et al. (2021), Sobolev et al. (2021)	Lack of transparency, difficulty in finding institutional support, different stakeholders' willingness to be involved in the co-op governance, free-riding problem
Schor (2020)	Niche phenomenon for privileged people
Schor and Vallas (2021), van Doorn (2017)	Technological solutionism and co-op washing
Fuster Morell and Espelt (2018)	Lack of a benchmark for assessing sustainability
Sandoval (2020)	Risk of co-optation by the old logic of digital capitalism

Source: Authors' own elaboration.

pp. 21–3). Thus, it can be rightly said that the existing literature is mainly focused on issues related to the greater social (and environmental) sustainability of platform cooperatives.

Accordingly, Martin et al. (2017) point out how democratically governed platforms contribute to the formation of a more sustainable sharing economy by promoting social and environmental values together with instrumental ones, e.g., by enhancing social equity, limiting the adverse social impacts of platforms and challenging the widely diffused consumerist culture. Moreover, other scholars (Zhu & Marjanovic, 2020) have hypothesized that platform cooperatives can contribute to reaching some of the Sustainable Development Goals set by the United Nations, such as “End Poverty” (Goal 1), “Decent Work and Economic Growth” (Goal 8), “Industries, Innovation and

Infrastructure” (Goal 9) and “Reduced Inequalities” (Goal 10). Finally, platform co-ops have also been presented as the opportunity to advance a more inclusive, feminist digital economy (Salvagni et al., 2022) and foster sustainable human development in Base-of-the-Pyramid contexts (Mannan & Pek, 2021).

However, we must acknowledge the almost total absence in the literature of empirical research focused on the economic sustainability of platform cooperatives, not to mention providing quantitative data on their hypothetical greater efficiency or explicitly reconnecting this stream of literature to the traditional theory-of-the-firm debate about the competitive advantages and disadvantages of cooperative firms as compared to capitalist ones. From this perspective, on the one hand, we would have classical scholars such as Alchian and Demsetz (1972) pointing out that Pareto optimal outcomes can be reached only if the residual claimant, i.e., the platform owner, is put in charge of monitoring the other stakeholders and controlling the firm. On the other hand, authors such as Hansmann (1996), Rose-Ackerman (1996), and Spear (2000) would state that more democratic governance models could solve instead the problems related to the presence of information asymmetries, i.e., the possibility that the platform owner perpetrates an abuse of authority and determines inefficient outcomes because of the incentive to opportunistically appropriate the surplus due to the lack of information of other stakeholders, and would be more likely to be sustained by certain ideological entrepreneurs, workers, and customers who value the production of social goods and services because of their intrinsic preferences (reducing the impact of the free-riding problem).

One exception to this gap in the literature is a working paper by Belloc (2019) in which the author, directly referencing the governance theory (but adopting a mono-stakeholder point of view), builds an economic model for analyzing the viability of worker-managed (ride-hailing) platform cooperatives. The results prove the potential greater efficiency of platform co-ops when the firm size is sufficiently large not to be impeded by the external capital costs that allow capital-managed firms to pay wage premia to workers, but not so much as to create coordination problems among stakeholders and thus compromise group incentive mechanisms which could determine better quality improvements. Further elaborating on Belloc's model, it can be argued that, given the network effect issue which requires a certain size and degree of integration for a taxi company in order to be efficient, the municipal level of service provision would be the most viable one for a ride-hailing platform co-op. Indeed, work can be carried out in the taxi market by a homogeneous and autonomous workforce with fewer incentives for shirking when it has guaranteed control rights, while algorithmic management facilitates the mutual monitoring of workers without requiring a hyper-sophisticated, globally connected platform thanks to the service's inherently local dimension (Frenken, 2017; Muldoon, 2022).

Accordingly, Frenken stresses the importance of political economies and spatial scales in delineating each of the three scenarios he foresees for the future of the sharing economy: (1) “a capitalist future cumulating in monopolistic super-platforms”, (2) “a state-led future that strengthens regulation in the public interest and shifts taxation from labor to capital”, and (3) “a citizen-led future based on cooperatively owned platforms under democratic control” (Frenken, 2017, p. 1). As evidenced by the attention of numerous contributions cited in this review on the concepts of local and network embeddedness (Mello Rose, 2021; Muldoon, 2022), platform cooperatives are thus apparently most likely to succeed in niches characterized by a municipal level of service provision, greater accountability and direct relations between all the stakeholders, such as in the case of ride-hailing or food-delivery platforms (Solel, 2019; Vlačič & Štromajer, 2020)²¹ —

²¹ A concrete example is the New York City-based ride-hailing platform cooperative The Drivers Cooperative (<https://drivers.coop/>).

leaving open the possibility to federate with other local cooperatives from different regions by pooling the technological investment (Cohen, 2018; Kasparian, 2022; Mannan & Schneider, 2021). Surely, in these cases, the regulatory intervention of local governments, their inclusion in the co-op governance and the experimentation of innovative public-private partnerships are made easier by the fact that such platforms are already supposed to abide by the municipal rules, must rely not only on digital but physical public infrastructures to function, such as streets, and can be thus seen as providing a sort of public utility service to the citizens (Bernardi & Diamantini, 2020; Frischmann, 2012; Iossa & Saussier, 2018; Lewin, 2018). These ideas can be related to what has been defined by Spear (2000) as the “cooperative advantage”. In particular, relative to the advantages that can be determined by the greater ability of cooperatives to effectively respond to market failures and state crises by providing quasi-public goods, mobilise community networks by relying on trust and social capital and develop connections with public institutions.

Yet, in parallel to these multiple advantages, our systematic review of the literature allowed us to identify even certain weaknesses of platform cooperatives, starting with the already mentioned financing issue, i.e., raising finance to compete with incumbents without the aid of venture capital (Borkin, 2019). Moreover, Borkin (2019), recalled by Mayo (2019), stresses the related technological challenge, since the technological infrastructures of business rivals are frequently extremely sophisticated, the growth challenge, as platform co-ops have to experiment and find unexplored paths to scale because the traditional “growth-before-profits” business model is not an option for them, and the governance challenge, due to platform co-ops’ typical digital orientation, which risks preventing them from having a locally rooted community. It follows that another possible challenge is the traditional one, already debated many times regarding cooperatives in general and made even more problematic by digital means, i.e., how to democratize the digitalization process, take transparent and collective decisions, and find the needed institutional support to compete while dealing with the risk of free-riding determined by different stakeholders’ interests as well as willingness to be involved in the co-op governance (Bunders & Akkerman, 2022; Bunders et al., 2022; Konnova et al., 2021; Sobolev et al., 2021). In this sense, our elaboration on the results of Belloc (2019) and Frenken (2017) about risk reduction for free-riding at the municipal level of service provision can be a partial solution to the problem if the right incentives are created and reliable accountability mechanisms are introduced. At the same time, pooling the technological investment by federating with other local co-ops in order to remove the entry barrier related to the cost of the platform can be a good complementary strategy.

Finally, Schor (2020) underlines the risk that platform cooperatives might forget the ideals of the cooperative movement that are supposed to inspire them, then becoming only a niche phenomenon for already privileged rich people. This could also reproduce the same inequalities that threaten the most vulnerable stakeholders in mainstream commercial platforms and mask them behind a sort of “technological solutionism” or “co-op-washing” (Schor & Vallas, 2021; van Doorn, 2017). In addition, there is confusion about platforms presenting themselves as cooperatives when they are actually motivated only by commercial purposes due to the lack of a clear benchmark for assessing the democratic and sustainability-related qualities of these initiatives (Fuster Morell & Espelt, 2018). Indeed, as Sandoval (2020) claims, the platform cooperative movement is still shaped by “tensions and contradictions between politics and enterprise, democracy and the market, commons and commercialisation, activism and entrepreneurship”. This is so because “while attempting to challenge precarity and resisting the corporate exploitation of the free labor of workers and Internet users, it simultaneously also strengthens entrepreneurialism and commercialisation” (Sandoval, 2020, pp. 1, 7), creating a risk of co-optation by the old logic of digital capitalism.

Note that for Sandoval the word “co-optation” represents exactly the risk of assimilation of the platform cooperativism idea by the capitalist system. Namely, since platform cooperatives are still business organizations that compete in the market, she foresees the possibility that, rather than creating social change through the elaboration of a more equitable and democratic alternative to purely commercial platforms, profit can become their main motivational driver and consequently determine a reversal of their organizational structure. This situation is close to what is usually expressed with the concept of “institutional isomorphism” (Di Maggio & Powell, 1983). Indeed, the literature confirms how cooperatives may start engaging in profit-seeking opportunistic behaviours that are hard to detect for governmental institutions and consumers who continue financing and trusting them despite their internal degenerative tendencies. But also that, sometimes, an institutional change can simply result from the fact that their structure makes it difficult to compete with capitalist enterprises in the long-run because of the disincentives to productivity associated with the lack of a central residual claimant and, in certain cases, the high dependency on public institutions (on both points, see Rose-Ackerman, 1996).²²

In any case, cooperative researchers have analyzed in-depth the problem of “cooperative degeneration”, i.e., the idea that the growth of a cooperative would necessarily bring to the betrayal of its guiding principles due to market competition with capitalist firms. This can happen for reasons such as external changes in the market that make safety nets less needed and profit-maximizing behaviours more convenient, scaling-up processes that make more difficult the mutual monitoring and cheaper hiring workers instead of including new cooperative members, technological and organizational innovation that reduce the drawbacks of capitalist firms or, simply, because of a change of preferences of stakeholders themselves (see Ben-Ner, 1988). However, the degeneration hypothesis has often been criticized for being too deterministic, pointing out how growth is not always a synonym for degeneration and how it is not predetermined the necessity of sacrificing democracy to reach economic efficiency. On the contrary, cooperatives have also the possibility to regenerate themselves and readapt their governance structure during their life cycles in order to preserve democracy without renouncing efficiency (Bretos et al., 2020; Cornforth, 1995; Langmead, 2017; Rosner, 1984; Storey et al., 2014). In principle, there is no reason to claim that this cannot be true even for platform cooperatives.

7 | CONCLUSION

While, in the last few years, a growing amount of academic literature has deemed platform cooperatives to be a more democratic and equitable organizational model for platforms as compared to the commercial one, we have acknowledged in this review how existing contributions on the topic appear fragmented and thus make it difficult to understand the organizational peculiarities and potential of the model itself. Indeed, while concepts such as platform cooperative ecosystem or multi-stakeholder platform are widely used, they have not been presented within the existing debate about cooperative networks and multi-stakeholder cooperatives conducted through the lens of the stakeholder and governance theories. Nor have their competitive (dis-)advantages

²²The case of Loomio (<https://www.loomio.com/>), an open-source online tool organized cooperatively and aiming to decentralise political power among its users by supporting deliberative processes, clearly shows that trade-offs and boundaries must be constantly renegotiated to keep cooperatives economically sustainable without betraying their inherent social mission (Jackson & Kuehn, 2016).

been properly discussed in comparison to those of capitalist firms. On the contrary, most scholars focus their attention on single stakeholders or just present platform co-ops as a black box, not analyzing mutual and strategic complementarities between the different actors and how they can determine the aforementioned (dis-)advantages.

In light of these gaps, our study systematically reviewed the major works on the topic by applying the framework of the stakeholder theory. In this way, we detailed an extended, decentralized, and heterarchical governance structure for platform cooperatives by evaluating strategic complementarities and interrelationships among different stakeholders in the value creation process. Furthermore, we dedicated a separate section to analyzing the social, environmental and economic advantages of this innovative governance structure under the framework of governance theory, showing how multi-stakeholder platform cooperatives could indeed be, under certain conditions, capable of combining greater efficiency with equitable outcomes. Notwithstanding, we also pointed out several challenges that platform co-ops face by referencing the traditional literature about the weaknesses of the cooperative model.

Being this one the first comprehensive systematic literature review focused specifically on the platform cooperativism field of research, it aims to offer academics a starting point for studying more in-depth the potential and limitations of this idea and mobilizing consolidated knowledge and strategies to face the challenges that the idea is meeting. At the same time, given the magmatic and interdisciplinary character of the topic, there is certainly considerable space for updating and systematizing our review as new articles are gradually published. Finally, the same methodology can be also applied to study other alternative organizational models in the platform economy and other forms of implementation of new technologies in the cooperative sector (Mannan, 2022) that can contribute, together with platform co-ops, to the process of democratization of the digital economy.

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Pietro Ghirlanda: Conceptualization, Data Curation, Investigation, Methodology, Visualization, Writing—Original Draft, Writing—Review & Editing. Vassil Kirov: Conceptualization, Funding Acquisition, Supervision, Writing—Review & Editing.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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