Governance requirements of an exchange platform
Literature Review

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Introduction

The rapid rise in digital technologies in the recent past has led to the mushrooming of the platform economy. The concept of a 'platform' has distinct yet interrelated meanings according to different disciplines. Schreieck et al (2016) have identified two primary perspectives that differentiate platforms in literature: technology v/s market-oriented. Subsequently, in the technology sphere, a platform is thought of as consisting of basic hardware and software on which software applications can be run. This environment constitutes the basic foundation upon which any application or software is supported and/or developed (Tiwana et al, 2010). In the 'market-oriented' domain, platforms are conceptualised as underlying computer systems that can host services which facilitate consumers, entrepreneurs, businesses and the general public to connect, share resources or sell products (Fitzgibbons, 2019).

Building on this latter perspective, Fenwick et al (2019) further decompose business platforms according to the value they add and the market participants they bring together. These platforms facilitate transactions of a varied nature and are categorised into: (1) exchange platforms, which connect producers and consumers of different goods (e.g., Amazon); (2) service platforms which connects service providers and users (e.g., Airbnb); (3) content platforms which bring together content creators and consumers (e.g., Netflix); (4) software platforms which bring together app developers and smartphone users (e.g., Apple iOS); (5) social platforms that connect friends and acquaintances (e.g., Facebook); and (6) smart contract platforms which bring together two or more parties in a contract (e.g., Ethereum).

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Consequently, a platform economy can be defined as an economy that comprises a distinctly new set of economic relations, as described above, that depend on the internet, computation, and data (Kenny and Zysman, 2016). The ecosystem created by each platform in the platform economy provides a space for the exchange of information, trading, logistics and other facilities. A large number of stakeholders including platform owners and platform users (which include end consumers and service providers) constitute the major players of such an ecosystem and thus, the larger economy, performing economic activities such as demand matching, payments, and delivery and receipts of goods and services, to name a few. The platform ecosystem is, thus, a source of value and sets the terms by which owners and users can participate.

Given the proliferation of platform ecosystems, there has been a shift in the sphere of business organisation, from a world dominated by firms to a world dominated by platforms, in what is being termed as the 'digital revolution' (Fenwick et al, 2019). These platforms have disrupted the existing organisation of economic activity by resetting entry barriers, modifying the process of value creation and capture, playing regulatory arbitrage, changing the nature of work and shifting power dynamics in the economic system (Kenny and Zysman, 2016). Since platform ecosystems in the platform economy bring together different stakeholders to create value in a new and distinct manner, the right design and suitable governance mechanisms are extremely crucial to the success of platforms (Smedlund & Faghankhani, 2015; Schreieck et al, 2016).

In this context, the objective of this report is to review the academic literature on the governance requirements of platform ecosystems, with a special focus on platforms that facilitate economic exchange.

Methods

A preliminary review of literature was conducted in November 2021. The initial search started with the use of broad key words using the popular research databases like JSTOR and Google Scholar. Some examples of key search terms include 'platform economy', 'exchange platforms', 'platform ecosystems', 'governance of exchange platforms', 'business platforms', 'platform architecture', 'platform control and regulation', and 'platform design'. The initial search generated a mix of 20 articles. Further screening of titles, abstracts, introductions, conclusions, and type of publications led to the removal of 5 articles. We selected papers focusing on the governance requirements and frameworks of exchange platforms from a variety of disciplines including information systems, economics, business and management. The current analysis is based on a selection of 15 relevant peer-reviewed journal articles, working papers and reports, conference papers and book chapters and is not limited with respect to timelines.

Analysis

Decision Rights, Control, Pricing, Trust and Power Dynamics

We begin by discussing the governance framework discussed by Tiwana et al (2010), who define platform governance as '*who makes what decisions about a platform*'. The key challenge, then, in platform governance is that the platform owner has to strive to ensure the delicate balance between retaining sufficient control to maintain the integrity of the platform, while at the same time giving up enough control to module developers[3]/users/participants to

[3] Tiwana et al (2010) conceptualise a platform as a software-based platform which is '*the extensible codebase of a software-based system that provides core functionality shared by the modules that interoperate with it and the interfaces through which they interoperate (e.g., Apple's iOS and Mozilla's Firefox browser)*'. They define a module as '*an add-on software subsystem that connects to the platform to add functionality to it (e.g., iPhone apps and Firefox extensions)'.* A module developer is, thus, anyone, who creates/develops this add-on software.

encourage innovation. Accordingly, the governance of a platform can be examined from three distinctive perspectives as follows:

(1) Decision-rights partitioning, which refers to the appropriate division of decision-making rights between the platform owners and the participants. The three broad decision rights include (i) what a subsystem (add-on software) built on a platform should do and the focus here is on the issues related to its features and functionality; (ii) how it should do it, with a focus on its design, concept implementation and interface; and (iii) who controls the platform ecosystem's internal interfaces; (2) Control, which refers to the formal and informal mechanisms implemented by a platform owner to encourage desirable behaviours by users and vice versa. Formal control can further be of two types, viz, (i) output control, according to which the platform owner specifies in advance the criteria by which the users' outputs are evaluated, rewarded or penalised; and (ii) process control, according to which the platform owner dictates the ways and methods to the module developers. Informal control is achieved through fostering common values, shared beliefs, and norms to guide the platform participants' behaviour or what is referred to as clan control; (3) Proprietary v/s shared ownership, which refers to whether a platform is owned by a single owner or is shared between multiple owners. This classification is important as it determines whether the stakes in the platform are widely dispersed or concentrated in the hands of a few.

Building on this work further, Tiwana (2014) categorises platform governance according to three dimensions. The first is reiterating how the authority and responsibility for platform and app decisions are shared among app developers and platform owners (akin to the decision rights in Tiwana (2010)). The second includes four mechanisms that a platform owner can use together in different combinations to ensure goal convergence and coordination with app developers, including gatekeeping, metrics, process control, and relational control (akin to control in Tiwana (2010)). The third dimension is platform pricing policies, which covers five

choices, viz, (i) whether pricing should be symmetric or asymmetric for the two sides of the platform; (ii) if pricing is asymmetric, who should be subsidized and for what duration; (iii) whether pricing should be done for access and/or usage; (iv) whether to split the revenue using a fixed or a sliding scale; (v) Decisions regarding app pricing. He further posits that these three dimensions are interrelated and choices about one dimension can affect the choices about the other two. Additionally, optimal governance structure is the one that achieves the goals of a platform at minimal cost to both app developers and the platform owner.

Following from Tiwana et al (2010) and Tiwana (2014), Schreieck et al (2016) discuss certain concepts and issues regarding the design and governance of platform ecosystems. Based on their classification of platforms into technology based and market oriented, as discussed previously, they claim that governance is related to both these perspectives as it '*covers technological aspects such as providing Application Programming Interfaces (APIs) and market-related aspects such as setting prices*'. Further, since governance of a platform is inseparable from its design, they point out eight key concepts focusing on both these aspects of platform ecosystems from their review of recent research on platforms. These include (1) roles, which covers the number of sides a platform connects, ownership issues and the distribution of power which can be either decentralised or centralised, to name a few; (2) price and revenue sharing, which refer to payment flows within the ecosystem and how it is shared between the different stakeholders; (3) boundary resources, which refer to tools, regulations or other resources such as APIs, software development kits or more recently, data, that govern the '*co-creation of value*' in platform ecosystems; (4) openness, which determines the degree of access to or control of the platform; (5) control, which refer to formal and informal control strategies as discussed in Tiwana (2010); (6) technical design, which refers to the modular architecture of the platform; (7) competitive strategy, which discusses whether competition or collaboration or a mix of both would be the most appropriate strategy for a platform ecosystem;

and finally (8) trust, which refers to the relationship between platform owners and participants as well as that between the end users and the platform ecosystem as a whole, and is extremely important for the success of the platform.

Another contribution in this regard is by Leoni and Parker (2018) who use the framework proposed by Tiwana et al (2010) to explain the governance structure and control of Airbnb, which as mentioned above, is a service-based platform, supporting short-term holiday leasing of residential property between owners and tenants. The authors employ a netnographic analysis i.e., an online ethnography of Airbnb, along with an online survey of 60 Airbnb hosts (a non-random sample) to investigate the platform governance approach employed by sharing economy platforms[4] in general and to understand the role of accounting and management in control of such platforms. The authors find that decision rights are distributed between Airbnb (owners) and the hosts (users). While Airbnb provides the platform, hosts provide their properties for rent, thus contributing to value creation in their own ways. The decision rights of Airbnb include providing access to the platform, deciding the platform service fee and controlling the activation status of host accounts. On the other hand, the host rights include listing availability and pricing of their properties, the mode of booking and house rules.

The formal control mechanisms that the platform employs to affect the hosts' behaviour include identity verification, review of hosts' accounts and setting desirable goals that the hosts are encouraged to achieve ('*superhost*'). The informal controls include measurement of performance indicators, calculation of benchmarks and surveillance. The formal control mechanisms that are available to the users are limited and include a resolution centre in case

[4] Sharing economy facilitates economic transactions between actors who would prefer to rent or borrow goods rather than buy or own them. The platform economy builds on this concept by encouraging, for instance, digital platforms, that users can log onto to gain access to goods through a subscription or otherwise (e.g., Spotify, which is a digital platform which connects music listeners to providers, where users can listen to music of their choice, either free of cost or by subscribing, rather than purchasing the music albums).

of disputes and direct contact with the platform owners. There are no informal controls for hosts. Further, the survey analysis supports the above findings. Additionally, they find that for hosts, the main motivation for joining the platform is the economic motivation of gaining additional income by renting an underutilised property and the other reasons like social experience of sharing, the inexpensive access to the platform etc., are secondary. The authors conclude that despite promoting users' autonomy as a dominant governance mechanism, Airbnb uses several control strategies from a position of power to align the platform users with its performance objectives. The platform owners' rights are dominant, with a top-down authority-based governance structure that promotes their own economic interests. Further, while hosts may perceive themselves to function autonomously, the analysis finds that they are submitting to the controls as though they were formal employees of the platform, much like in modern capitalist economies.

It follows that as digital platforms continue to dominate the economy, platform owners have accumulated substantial power and influence and often play central roles in orchestrating key stakeholders to create value for their platform ecosystems, sometimes even to benefit themselves more at the expense of others (Zuboff, 2019). While a centralised governance structure, with most power concentrated in the hands of the platform owner, has the upside of shaping clear and concrete governance processes and outcomes, it may disadvantage and alienate the platform participants at the same time (Boudreau, 2010; Zhu, 2019). Similarly, with a decentralised governance framework, the benefit is that the platform participants can enjoy control to a greater extent and represent their interests, however the downside is that the dispersion of power is greater, which could lead to slow decision-making processes and ultimately affecting the platform altogether (Hardin, 1968).

Here, the contribution by Chen et al (2020) is an important. Using mechanism design theory, they examine the trade-offs between centralised and decentralised governance structures in the

case of digital platforms and postulate that semi-decentralisation is a better performing governance structure. This is because semi-decentralised governance is '*more likely to achieve incentive compatibility, improve informational efficiency and thus help ensure desirable governance outcomes'*. Using data from the blockchain industry and employing empirical methods, they show that decentralisation has an inverted U-shaped relationship with platforms' market capitalisation, implying that as the governance structure moves towards the midrange of decentralisation, it is more likely to be associated with higher levels of market performance. Further, additional features of platform performance, such as developer attention, development activity and social media followers, also have an inverted U-shaped association with the degree of centralisation. Thus, they conclude that platform owners may benefit from giving up some governance control to platform participants, while retaining some of it, thus achieving an optimal balance, which as talked about earlier, is a major challenge. They also suggest that a combination of design constraints and strategic leadership can contribute to determine the structure of platform governance and so, experienced leaders can play a key role in encouraging digital platforms to adopt high performing governance structures.

Social Bonds, Environmental Dynamics and Economic Incentives

The excessive accumulation of power in the hands of the platform owners has also been criticised for the development of a governance framework that focuses solely on the economic outcomes, while ignoring the social and environmental impacts (Gruszka, 2017).

In this context, Martin et al (2017) claim that a democratic model of platform governance can accommodate multiple values at the same time, including (1) social values, which refer to humanistic altruism, social justice, equality, mutual support, community and solidarity; (2) environmental values, which refer to biospheric altruism and harmony with nature; and (3) instrumental values such as self-interest, efficiency, financial wealth, material wealth, self-

sufficiency and economic rationality. Subsequently, they develop a framework of democratic governance of platform ecosystems, by combining the theories of platform governance proposed by Tiwana et al (2010), and democratic organisational governance by Spears (2004) which focuses on the dynamics of control and collaboration between the leaders and the members of an organisation. Further, they use the framework proposed by Shilton et al (2013) to show how the aforementioned social, environmental and instrumental values mediate the control and collaboration of platform owners and participants, thus essentially turning the platform ecosystem into a '*socio-technical system*'.

They demonstrate the validity of their framework using the case of Freegle, a digital platform which hosts online free reuse groups that enable gifting of consumer goods within local communities. In doing so, they employ a mix-methods study, combining a quantitative survey of 187 Freegle users and 13 member and leader interviews, with qualitative analysis of its governance model, obtained from content available on Freegle's wiki. They find that for the users of the platform, social and instrumental values were the prime drivers of engagement with the platform, whereas for the members, social and environmental values were the main reasons for their membership in or leadership of the platform and the instrumental values were secondary. The social and instrumental values for the users were accommodated in the governance model by offering them extensive '*decision rights*' over which items they gave or requested, who they gave to and on what basis, and whether or not to follow through with the decision. The social and environmental values for the members were again accommodated by giving them decision rights over how to promote participation in, deciding rules for and dealing with issues arising in their local free reuse groups.

However, decision rights for the owners/leaders were limited to protecting the interests of the users in case of scams, and to a small extent, in deciding the composition of the organisation's membership. Further, the collaborative dynamics between the members and leaders play an

important role in accommodating multiple values of different stakeholders. The authors thus conclude that the democratic governance model of Freegle can be relevant to other emerging platforms, since it has been successful in accommodating social as well as environmental concerns, along with the instrumental values of the capitalist economy.

That the interplay of social bonds and economic transactions is the key determinant of the nature of the governance model of a digital platform is also shown by Zhang et al (2020). In their work, they conceptualise how organisational governance practises structure interpersonal relationships between the participants of an exchange platform and whether these practises favour social bonds or economic relations or a mix of both. They adopt an institutional perspective in doing so, whereby they consider the governance of interpersonal relationships as having a '*motivational, interactional and institutional dimension that work together to bring order and structure to organisational activities*'. The motivational dimension reflects the incentive compatibility of key actors to interact. The interaction dimension facilitates the appropriate form of interpersonal interaction. The institutional dimension establishes rules, norms and different control mechanisms that bring stability to the interpersonal relationships.

The authors posit that the social bonding and economic transaction mechanisms differ along these three dimensions. In the motivational dimension, while social bonding is motivated by *shared desire* and *experience for pleasure*, *sociality* and *communal support*, the economic exchange is motivated by the goals of *profitability* and *efficiency*. In the interactional dimension, whereas social bonds are formed on the foundations of *reciprocal interactions* and *binding sentiments*, the economic transactions are based on *immediate* and *calculative interactions*. Finally, in the institutional dimension, social bonds are sustained by *social consensus* and *norms*, while the economic bonds are sustained by way of *contracts* and control mechanisms such as *sanctions* and *assurances*. In addition to presenting this dichotomy, the authors also claim that in practice, the governance of exchange platforms demonstrate a more

composite mix of social and economic practises to manage interpersonal relations. They demonstrate this by citing the example of Airbnb where they contend that depending on the motivation to make use of the service, their expected interaction with other platform users and their need for control, the Airbnb users (both hosts and customers) can either choose a shared room, a private room or an entire house. The authors conclude that exchange platforms do not use a governance mix at random, but instead carefully consider its objectives and missions as well as the complementarity of its social and economic agendas.

Be that as it may, Fenwick et al (2019) propose giving up any existing forms of organisational corporate governance structures altogether as there exists a friction between these structures, which tend to be closed, centralised and hierarchical in nature, and the business needs of modern platforms, which are flatter and more innovation-driven. Rather, they encourage to focus on a new form of governance which they call '*platform governance*' and contend that there is no silver bullet solution on how to bring about this transition. At the same time, they propose three interrelated strategies that platforms can adopt to be successful: (1) introducing a more '*community-driven*' form of organisation by taking advantage of current and future digital technologies; (2) developing a culture of platform governance which focuses on accessibility and openness; and (3) paving the way for creation and presentation of worthwhile content. All of these together can help foster an environment that brings about a high degree of cooperation, loyalty and trust between platform leaders and members as well as between the platform ecosystem as a whole and the end users (social values) and also help modern firms remain economically competitive and viable (economic values).

Regulatory mechanisms, consumer rights and fair competition

The next necessary step in understanding the governance of platform ecosystems is to consider the specific government regulatory and policy mechanisms that are suitable for incentivising

modern firms to adopt an appropriate governance framework (Martin et al, 2017; Fenwick et al, 2019).

In this regard, the work by Gorwa (2021) is a significant contribution as it discusses the interplay of political, institutional and normative factors that underpin recent developments in governance of platforms in general and content governance in particular, by demonstrating the case of the German Network Enforcement Act (NetzDG). The NetzDG was enacted in 2018 and is arguably the first regulation in the world which aims to improve law enforcement in social network platforms by establishing rules for the mandatory transparent reporting system for platform content moderation, setting up of complaint handling procedures by firms, and mandatorily maintaining a designated point of contact through which the authorities can forward and process inquiries and complaints. The author presents an analysis of 30 interviews conducted with German and European policymakers who were the architects of NetzDG, combined with information obtained from various formal and informal documents that led to the drawing up of the act. Subsequently, he describes the genesis of the law as a voluntary task force on hate speech, constituted by the German Ministry for Consumer Protection and Justice and its evolution into a binding legal document, and highlights the role of domestic politics and institutional constraints in influencing the law. Additionally, he claims that the delayed action by the European Union's regulatory harmonisation frameworks coupled with the impending German elections in 2017 and the heightened domestic demand for new rules led to the creation of a law that is sub-optimal.

Further, Chou et al (2018) propose three challenges that need to be addressed for the establishment of an efficient system of collaborative governance for the platform economy: (1) protection of consumer rights and interests, which is complicated in two ways: (i) because of the virtual nature of the internet, there is less accountability and thus a higher prevalence of fraud; and (ii) because of the trans regionality of internet that makes supervising market

transactions and jurisdiction of international consumer rights protection difficult; (2) reasonable taxation, which requires the development of a wholistic taxation policy which is *concise* (simple procedures that are cost effective), *efficient* (adaptable to high frequency commercial transactions), *dynamic* (adaptable to a rapidly changing business environment) *and flexible* (appropriately tolerant towards innovation and support existing and new businesses); and (3) fair competition, which involves reforming the existing antitrust legislations to accommodate the dynamic nature of the platform economy. In addition, they posit that encouraging innovation and consequently economic development, and promoting inclusiveness and discretion should be at the heart of new regulatory mechanisms that govern digital platforms.

Conclusion

The objective of this report was to shed light on the governance practices, issues, concepts and requirements of exchange platforms, which have come to dominate the organisation of the modern-day economy. Through a review of recent literature from various disciplines, we show that there are three broad strands of debate that dominate the discourse on platform governance.

The first issue is about how existing and new systems of governance interact or are at odds with each other to structure decision rights, control and power dynamics, and trust and loyalty between the platform owners and participants. The second is regarding the dominance of the economic motive and values in the design of the governance frameworks and the limited attention focused on related social and environmental values. This is largely due to the highly centralised structure of governance in most platforms, that concentrate power in the hands of the owners. Although semi-decentralisation and more democratic modes of governance that incorporate social values have been shown to have positive outcomes, to what extent do they contribute in the sustainability of the platforms remains to be seen. The third and the final issue

concerns the regulatory mechanisms and policy directives that countries need to adopt in order to promote innovation and economic development, while at the same time, guarding the interests and privacy of their citizens, which is equally important in the age of expanding internet and diminishing boundaries of the virtual world. How these issues interact with each other and how different stakeholders incorporate them in governance of platforms would be crucial to the growth and the success of the platform economy.

The review also points to two broad gaps that future research on platform governance should focus on. Firstly, as has been talked elsewhere, most studies focus on understanding governance from the perspective of the owner, which provides the point of view of only one stakeholder in the platform economy (Schreieck et al, 2016). Perspectives of other participants such as service providers and end customers also need to be incorporated to provide a wholistic scenario of governance of platform ecosystems Secondly, more research is required to understand the governance, regulatory mechanisms and economic policies designed specifically for the platform economy at national, international and regional levels.

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