Business Model Innovation and the Rise of Technology Giants

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Abstract Technology giants owe much of their success to fundamental improvements in the science and technology of information and communications technology. However, complementary advancements were also necessary, and, much as firms had to learn to incorporate electricity in the last nineteenth and early twentieth centuries, we posit that the giant platforms have learned to harness the contributions of external actors in order to grow more rapidly than would otherwise have been possible. Thus, the drivers of the dramatic rise of the tech giant platform firm can be viewed as a business model innovation as well as a technical innovation. As orchestration business models become better understood, we expect that firms in non-platform sectors are increasingly likely to adapt practices that also allow them to participate in and benefit from external value creation. At the same time, we expect regulatory scrutiny to increase as the power and reach of technology giants increases and their influence is felt across the economy.

1 The Rise of Technology Giants

The rise of giant technology firms such as Amazon, Alibaba, Microsoft, and more has been widely observed and commented upon in the popular press as well as the academic literature. While such firms were once Silicon Valley and Shenzhen phenomena, in recent years they have exploded in their power and reach. The drivers of this rise stem first from dramatic improvements in physics and the material science of computation technology, digital storage technology, and communications technology. These improvements have facilitated the growth of the information economy with implications for nearly every sector of society.

Beyond the raw improvements in information and communications technology (ICT) hardware and associated software improvements, there have been corresponding changes in the ways that organizations use their ICT investments.

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At an individual level, the willingness to connect with one another using tools such as email and social media took years to emerge but has now become part of the fabric of everyday life. At the firm level, it took many years for organizations to incorporate improved ICT into their processes. Arguably, the productivity boom of the 1990s was driven by firm-level learning as described by Brynjolfsson and Hitt (2000): “As computers become cheaper and more powerful, the business value of computers is limited less by computational capability and more by the ability of managers to invent new processes, procedures and organizational structures that leverage this capability.” This process of learning to use ICT effectively was foreshadowed by the length of time that it took society to adapt to electric power. This was described by Harford (2017) as follows. “Factories could be cleaner and safer—and more efficient, because machines needed to run only when they were being used. But you couldn’t get these results simply by ripping out the steam engine and replacing it with an electric motor. You needed to change everything: the architecture and the production process.” A quote from Roy Amara suggested that this delayed adaptation is general: “We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.”¹

2 The Inverted Firm and the Spread of Platform Business Models

Similar to the way that firms had to learn to incorporate electricity in the last nineteenth and early twentieth centuries and then 100 years later learn to integrate ICT into their business processes in the 1990s, we posit that the giant platforms have learned to orchestrate the efforts of actors outside the firm so that they were able to grow much more quickly than they otherwise would have. The dramatic rise of the tech giant platform firm is as much a business model innovation as it is a technical innovation. This can be seen in the way that firms such as Airbnb are able to compete with traditional hotel chains such as Marriott despite owning no hotels and directly employing very few people. Similarly, firms such as Lyft and Uber entered taxi and limousine markets despite employing few people and owning minimal physical assets. In particular, platforms are able to facilitate value creating interactions between external producers, content providers, developers, and consumers (Constantinides et al. 2018).

The ecosystem innovation required new managerial capabilities as well as new economic thinking (Helfat and Raubitschek 2018). The decision of whether to vertically integrate as firms or to instead use markets has been a long running topic of the “markets and hierarchies” literature (Williamson 1975). Parker et al. (2017) introduced the term “inverted firm” to describe the shift from value creation

¹ <https://www.oxfordreference.com/view/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00018679>

inside the firm to outside. Importantly, platform firms are an intermediate organizational form that lies between pure market and pure hierarchy. The platform organizational form echoes the organizational forms that rely heavily on outsourcing. The automotive industry provides some of the best documented examples of the heavy use of outsourcing, especially in the descriptions of Toyota and its tightly integrated supply chain partners (Womack et al. 1990).

Platforms have taken this idea of working with external partners and made it possible for many more to participate at much lower cost. To do this, they employ open architectures with published standards to enable different types of users to interact to exchange physical and digital goods as well as services (Constantinides et al. 2018). Platforms also invest in organizational capabilities to provide governance rules and the capacity to enforce those rules. The goal is to maintain control over the platform while maintaining incentives for ecosystem partners to participate. In addition, investments in governance help to foster market safety so that users feel secure that they will not be taken advantage of when making transactions on the platform (Roth 2007).

Platforms are also able to facilitate and benefit from network effects that are otherwise too small to matter. The widely discussed concept of network effects describes the situation where systems become more valuable to users as the number of users increases (Shapiro and Varian, 1998). For example, the ratings that users provide on Netflix or YouTube create benefits for other users that are too small for any one individual to try to reward or capture; transaction costs would overwhelm the benefits from such interactions. By using common systems, platforms are able to aggregate and analyze ratings information and make them available to all users in the form of direct rankings and better matching and filtering of content to consumers.

3 Demand for Regulation

Almost inevitably, the rapid growth of the largest technology firms has spurred calls for the regulation of those firms. Concerns range over issues such as antitrust and abuse of dominance, privacy, fair compensation for data provided, the dissemination of false information, and the regulation of speech. The European Union has led the world by implementing regulations, such as GDPR (General Data Protection Regulation) and PSD2 (Revised Payment Services Directive), and has recently proposed the DMA (Digital Markets Act). A recent panel report from the European Commission Joint Research Centre analyzes the different issues that the DMA is designed to address (Cabral et al. 2021). The panel's goal was to explain the economics behind the DMA and to comment on the proposals. Under the proposal, all online intermediaries offering services and content in the EU, whether they are established in the EU or not, have to comply with the new standards. Small companies will have obligations proportionate to their ability and size, but also remain accountable.

One critical impact that the Cabral report notes is creation of "black lists" of prohibited platform activities and "white lists" of allowable practices. The panel

proposed a “grey list” of activities that platforms might be able to argue are likely to benefit consumers more than are likely to do harm. The Cabral panel also focused considerable attention on data sharing and the obligation for gatekeeper platforms to allow equal data access to all market entrants at the point of collection—known as “in situ.” Such a mechanism avoids the need for consumers, or firms that are authorized to access consumer data, to download data. Instead, an in situ mechanism brings algorithms to the data where it is collected and stored. This should foster both security and better access for potential entrants.

4 Conclusions

The rise of technology firms and platform business models has created considerable benefits for consumer and business users. However, the rise also poses enormous challenges for regulators, incumbent firms, and individuals. Much of what economists and business scholars have studied derives from the first wave which was largely a story of business-to-consumer (B2C) platforms. There are now signs that the next wave of investment will be directed toward the growth of business-to-business (B2B) platforms. This raises important questions over the ways that B2C and B2B platforms will have similar characteristics and along what dimensions they are mostly likely to differ.

References

- Brynjolfsson, E. and Hitt, L.M., 2000. Beyond computation: Information technology, organizational transformation and business performance. *Journal of Economic perspectives*, 14(4), pp.23–48.
- Cabral, L., Haucap, J., Parker, G., Petropoulos, G., Valletti, T. and Van Alstyne, M., 2021. The EU Digital Markets Act, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-29788-8, doi:<https://doi.org/10.2760/139337>, JRC122910.
- Constantinides, Panos, Ola Henfridsson, and Geoffrey G. Parker. 2018. “Introduction—Platforms and Infrastructures in the Digital Age.” *Information Systems Research* 29, no. 2: 381–400. <https://doi.org/10.1287/isre.2018.0794>.
- Harford, T. “Why didn’t electricity immediately change manufacturing.” *BBC World Service* 50 (2017). Retrieved on 5-April-2021 from <https://www.bbc.com/news/business-40673694>.
- Helfat, Constance E., and Ruth S. Raubitschek. 2018. “Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems.” *Research Policy* 47.8: 1391–1399.
- Parker, Geoffrey, Marshall Van Alstyne, and Xiaoyue Jiang. 2017. “Platform Ecosystems: How Developers Invert the Firm.” *MIS Quarterly* 41, no. 1: 255–66. <https://doi.org/10.25300/misq/2017/41.1.13>.

- Roth, Alvin E. 2007. "The art of designing markets." *Harvard Business Review* 85.10: 118.
- Shapiro, Carl, and Hal R. Varian. 1998 *Information rules: A strategic guide to the network economy*. Harvard Business Press.
- Williamson, O.E., 1975. Markets and hierarchies: analysis and antitrust implications: a study in the economics of internal organization. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.
- Womack, J. P., Jones, D. T., & Roos, D. 1990. *The Machine that Changed the World*. Simon and Schuster.

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