



A MODEL OF THE PLATFORM-ECOSYSTEM ORGANIZATIONAL FORM

MOSHE YONATANY

Abstract: Technological advancements are driving the evolution of a form of organizing economic activity – the platform-ecosystem – particularly in a variety of ICT-enabled industries. This article builds on calls to more adequately describe and explain this form of organizing (Alberts, 2012; Baldwin, 2012; Tushman, Lakhani, & Lifshitz-Assaf, 2012). I propose a preliminary model that highlights the fundamental economic variables in the platform-ecosystem organizational form: knowledge substitution and powerful incentives. The model emphasizes knowledge-based considerations, suggesting the view that the main purpose of ICT-enabled platforms, such as smartphones, game consoles, and Internet services, is the development of complementary products, services, and technologies.

Keywords: Platform; ecosystem; ICT; model

The increasing processing power of computer chips and capacity of data storage devices, coupled with decreasing prices, enable the development of increasingly sophisticated products and services. These technological advancements are driving the emergence of platforms and ecosystems in a variety of ICT-enabled industries, including smartphones, game consoles, and Internet-based products and services. For example, the smartphone market is dominated by two *platforms*: Apple's iPhone and Google's Android. Each of these platforms has a business *ecosystem*: hundreds of thousands of *affiliates* or third-party developers that provide complementary components and applications. Similarly, producers of game consoles typically focus on developing and marketing their console (the platform) while relying on an ecosystem of affiliated game developers to provide complementary games. This type of organizational form is prevalent on the Internet as well: numerous firms focus on providing an online service (e.g., Facebook's social network or eBay's marketplace) while relying on affiliated third parties to provide complementary products, services, and technologies. Typically, a large firm provides the platform and then establishes an ecosystem of affiliated providers to develop products and services.

The platform-ecosystem form raises the questions of why this type of organization emerges and why it exists in particular environments. To answer these questions, I propose a preliminary model that highlights the fundamental conditions of such an arrangement. The model relies on theoretical arguments adopted from theories of the firm that focus on knowledge-based considerations since knowledge-intensive environments are where the platform-ecosystem form is being used most extensively. Developing such a model is important for researchers because it will provide a clearer direction for future empirical research. Moreover, a model that highlights the key variables shaping this form will allow managers to better design organizations that are effective in knowledge-intensive environments.

THEORETICAL BACKGROUND

Miles et al. (2009) described the "I-form", an organizational form designed to pursue rapid and continuous innovation. The I-form is a collaborative community of firms, and it usually includes a facilitator organization that provides administrative services and strategic

initiatives to the community. While the model presented below takes a similar view, its focus is not on providing administrative services and strategic initiatives. Rather, I propose that in ICT-enabled industries such an organizational form allows for economizing on knowledge transfer through direction giving and specialization. Moreover, in an I-form organization knowledge flows across the community rather evenly. In contrast, I propose that knowledge of the highest significance flows in the form of directions given by the platform provider to its respective affiliates. Fjeldstad et al. (2012) showed that newer organization designs of large-scale, multiparty collaboration are based on an actor-oriented architectural scheme composed of actors capable of self-organizing, shared resources, and protocols, processes, and infrastructures that enable collaboration. However, while their main purpose is to explain *how* newer organizational forms are controlled and coordinated, my main goal is to present reasoning for *why* they exist.

In the first issue of *Journal of Organization Design*, which focused on the future of organization design, Alberts (2012), Baldwin (2012), and Tushman, Lakhani, and Lifshitz-Assaf (2012) discussed business ecosystems, permeable organizational boundaries, and open innovation as pressing design challenges. Alberts (2012) argued for an expanded definition of an organization as a complex enterprise. However, while he holds that in such enterprises there is no one “in charge,” I present a somewhat alternative view, in which the platform provider plays a role that is similar to a “team leader” of its respective ecosystem. According to Baldwin (2012: 21), a key issue in business ecosystems is “...how to induce such diverse individuals to apply their skills to a given set of problems in ways that allow their efforts to be linked and aggregated into a coherent whole.” Similarly, the model proposed below emphasizes incentives and the allocation of property rights. Tushman et al. (2012: 26) discuss flexible organizational boundaries and suggest that “...these choices are contingent on the extent to which critical tasks can be decomposed and the extent to which the tasks’ knowledge requirements are concentrated.” My proposed model complements Tushman et al. (2012) by incorporating the economics of knowledge substitution as the key factor in such choices.

Conner and Prahalad (1996) argue that competition between two firms also entails competition with market coordination, because each firm competes against the possible disaggregation of its employees into a market contracting arrangement. In a similar vein, competition between platform-ecosystems, and indeed their very existence, implicitly entails the notion that industry firms deem the platform-ecosystem to be superior to the alternative of a decentralized market. Hence, there should be certain economies that are gained through use of a platform-ecosystem.

Based largely on these organizational and economic studies, I chose to build my theoretical model on two key variables: knowledge substitution and powerful incentives offered to ecosystem affiliates.

Knowledge Substitution

The effect of knowledge substitution can be explained using a brief example. When a manager gives directions to an employee, the manager’s knowledge partially substitutes for the employee’s knowledge. Giving directions expands the employee’s productive capacity without requiring the employee to fully absorb the manager’s knowledge. Thus, direction giving can save the costs of knowledge transfer (training or education costs). Demsetz (1988) identifies industries and firms as repositories of specialized knowledge and of the specialized inputs required to put this knowledge to work. To explain the existence and boundaries of the firm, he develops the following line of argument: (a) Knowledge is costly to produce, maintain, and use; (b) economies can be achieved through specialization in these three aspects of knowledge; and (c) the difference between the cost of acquiring and using knowledge has strong implications for how to organize. Since knowledge is learned more efficiently in a specialized fashion, its use to achieve higher productivity requires the specialist to use the knowledge of other specialists. However, this cannot be accomplished by learning what other people know because doing so will undermine the gains from specialized learning. There are two methods to put knowledge to work while saving the costs of knowledge transfer and without sacrificing specialization: (1) letting more knowledgeable individuals direct less

knowledgeable individuals and (2) producing and selling goods that require less knowledge to use than is required to produce.

Demsetz (1988) holds that the firm is best viewed as a “nexus of contracts.” The model developed here relies on the same notion. That is, the platform provider is analogous to the “direction giver” (manager) while ecosystem affiliates are analogous to employees. According to Demsetz (1988), in order for the nexus of contracts to be a firm, it should have the following characteristics: specialization, continuity of association, and reliance on direction. The platform-ecosystem form exhibits similar characteristics and can be distinguished from a decentralized market. (See Table 1.)

Table 1. Conceptual analogy between a firm and a platform-ecosystem

| | Firm (Nexus of Contracts) | Platform-Ecosystem |
|----------------------------------|--|---|
| Specialization | Produces mainly for people who are not employees of the firm | Produces mainly for people outside the platform-ecosystem |
| Continuity of association | Employees are associated with the firm for a long period of time | Affiliates are associated with the platform for a long period due to access to end users, switching costs, etc. |
| Reliance on direction | Resources are used according to directions | Directions given by the platform provider guide the efforts of affiliates |

The platform-ecosystem potentially can enable higher returns to specialization while saving knowledge transfer costs, as affiliates do not need to acquire all the knowledge the platform provider possesses. However, the platform provider does not possess all the knowledge that the affiliates have. The platform provider combines technologies into new and simpler platforms until the diversity of uses further downstream is so great that it requires the firm to bear greater costs of knowledge acquisition and maintenance (if it is to continue developing innovative products and services). This is the point where vertical specialization gives way to horizontal specialization. Additional development is turned over to a variety of affiliates, each specializing in a narrow field.

Incentives to Affiliates

Much of the affiliates’ knowledge does not exist *ex ante*; it is developed after they establish their affiliation to the platform provider. The platform-ecosystem is dynamic, as affiliates further develop their specialized knowledge through this organizational form. Alchian and Demsetz (1972: 778) argued that “The economic organization through which input owners cooperate will make better use of their comparative advantages to the extent that it facilitates the payment of rewards in accord with productivity.” Consequently, there are two key demands for economic organization: measuring input productivity and measuring rewards. A decentralized market is successful in promoting productive specialization since those responsible for output changes are rewarded. Similarly, Williamson (1985) distinguished between powerful incentives provided by the market and less powerful incentives that exist within firms. Grossman and Oliver (1986) and Hart and Moore (1990) argued that the incentives of an individual to acquire asset-specific knowledge (or invest in an asset) are higher when the individual has property rights over the asset. The owner of the asset possesses the residual rights of control, that is, the rights to control the uses of the asset under future contingencies. A person who does not own an asset is not likely to make an asset-specific investment because of the risk of “hold-up” by the owner. Therefore, if asset-specific investment is necessary (e.g., acquiring a skill that is required only by that asset), the individual who makes such an investment should own the asset.

The platform-ecosystem can create powerful incentives for affiliates since it allows affiliates to keep most of the income derived from their offerings. Affiliates are likely to acquire and develop knowledge that is specific to their product, service, or technology because they own it. Interestingly, a hold-up problem can also exist here; the platform provider can demand a higher share of the income using its strong position as a provider of access to the user base. However, such a strategy is not likely to be beneficial in the long run since affiliates may migrate to a competing platform or try to establish a stand-alone offering (when the

costs of platform affiliation outweigh its benefits). Establishing trust between the platform owner and affiliated third parties seems to be crucial for the long-term viability and stability of the platform-ecosystem.

A MODEL OF THE PLATFORM-ECOSYSTEM

The essence of the platform-ecosystem is the use of complementary knowledge to create an offering (a line of products or services) in markets requiring numerous repositories of specialized knowledge. This is accomplished through a hybrid organizational mode, being neither a “firm” nor a “market,” and at the same time entailing affiliation and collaboration. As shown in Figure 1, the model depicts the platform-ecosystem as an organizational vehicle for the creation of an overall offering that is complemented by three specialized offerings, each of which can be produced separately. This arrangement provides efficiencies with regards to knowledge and motivation: (a) direction giving by the platform provider allows economizing via knowledge substitution and (b) property rights over complements provide powerful incentives for third parties to affiliate with the platform provider. The overall arrangement allows all parties to specialize. Income from complements can be shared between the platform owner and affiliated third parties.

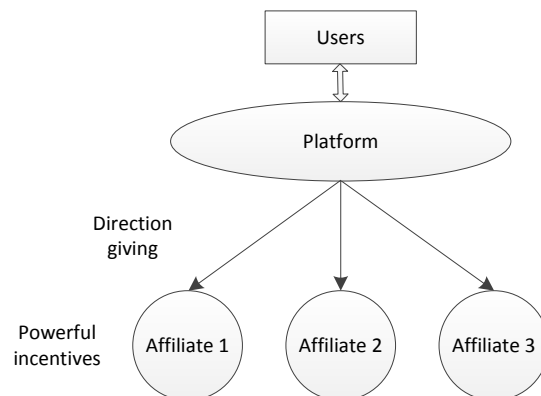


Fig. 1. The platform-ecosystem organizational form

How does this model work in action? Facebook, a company employing about 5,000 people, has hundreds of thousands of affiliates. This arrangement allows the company to specialize in developing and managing its platform while allowing each of the affiliates to specialize in a niche (e.g., an online Poker game or a dating service). Moreover, Facebook equips affiliated developers with development tools and information, organizes for them conferences (called “f8”) in which they receive guidance and directions, and offers direct assistance from Facebook’s employees through a dedicated site. Facebook affiliates receive the lion’s share of the revenue that their applications generate (70 percent), thereby benefiting from powerful incentives to continue to develop innovative applications.

CONCLUSION

The model proposed here seems sufficient to explain the existence of the platform-ecosystem organizational form. The main contribution of this article is in making an early step in developing a theoretical model for a recent, growing organizational phenomenon. Organization design researchers may find the model useful when analyzing platform-ecosystems in ICT-enabled industries and perhaps as a building block in the further development of organization theory.

REFERENCES

- Alberts DS. 2012. Rethinking organizational design for complex endeavors. *Journal of Organization Design* 1(1): 14-17.
- Alchian AA, Demsetz H. 1972. Production, information costs, and economic organization. *American Economic Review* 62 (5): 777-795.

- Baldwin CY. 2012. Organization design for business ecosystems. *Journal of Organization Design* 1(1): 20-23.
- Conner KR, Prahalad CK. 1996. A resource-based theory of the firm: Knowledge versus opportunism. *Organization Science* 7(5): 477-501.
- Demsetz H. 1988. The theory of the firm revisited. *Journal of Law, Economics, and Organization* 4(1): 141-161.
- Fjeldstad ØD, Snow CC, Miles RE, Lettl C. 2012. The architecture of collaboration. *Strategic Management Journal* 33: 734-750.
- Grossman SJ, Oliver DH. 1986. The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy* 94(4): 691-719.
- Hart O, Moore J. 1990. Property rights and the nature of the firm. *Journal of Political Economy* 98(6): 1119-1158.
- Miles RE, Miles G, Snow CC, Blomqvist K, Rocha H. 2009. The I-form organization. *California Management Review* 51(4): 61-76.
- Williamson, OE. 1985. *The Economic Institutions of Capitalism*. Free Press, New York, NY.
- Tushman M, Lakhani K, Lifshitz-Assaf H. 2012. Open innovation and organization design. *Journal of Organization Design* 1(1): 24-27.

MOSHE YONATANY

Ruppin Academic Center
Emek Hefer, Israel
E-mail: mosheyonatany@gmail.com