
Commentary

Resource Allocation and Firm Boundaries

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In a modern economy, much of the allocation of financial and nonfinancial resources is mediated by organizations. This essay points to three general features of this mediating role of organizations in the resource allocation process. One line of argument relates to the distinct opportunities and opportunity costs that an organization faces. The set of investment opportunities for organizations differs as a result of their privileged access to different investment opportunities. The second line of argument considers the impact of differential beliefs and perspectives on the resource allocation process. The diversity of independent budgetary entities, both internal to and external to the organization, is argued to importantly influence the heterogeneity of the bases of selection among alternative investment opportunities. Lastly, this mediation of resource allocation by the firm plays a particularly important role with respect to the allocation of resources over time on a given initiative. Organizations do not simply buffer initiatives from selection but potentially provide different bases for interim selection processes.

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Robbins defined economics as “the science which studies human behavior as a relationship between ends and scarce means which have alternative uses” (1932: 15). The trade-offs and tensions associated with the allocation of scarce resources are indeed central to modern economics. However, while this agenda is typically addressed at the level of market processes, as Simon (1991) notes, the term “organizational economy” may be more apt than a “market economy” to describe a modern economy, given the enormous role that organizations play in the direction of economic activity. Thus, understanding the distinctive manner by which organizations mediate the process of resource allocation is a central concern for understanding the functioning of a modern economy. Within the narrower confines of the strategy literature, the challenge of resource allocation is a fundamental feature of corporate

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strategy, as central to corporate strategy is the allocation of financial and nonfinancial resources across multiple lines of activity at a given point in time and across time.

This essay points to three general features of this mediating role of organizations in the resource allocation process. One line of argument relates to the distinct opportunities and opportunity costs that an organization faces. The set of investment opportunities for an organization differs as a result of their privileged access to different investment opportunities. A nuanced aspect of this issue of privileged access that has received attention in the strategy field is the organization's capacity to "recontract" and "recombine" resources and capabilities (Helfat & Eisenhardt, 2004; Kogut & Zander, 1992). Furthermore, existing bases of heterogeneity may also cause firms to perceive the payoffs to a common investment opportunity differently (Helfat, 1997; Wu, Wan, & Levinthal, 2014).

The second line of argument considers the impact of differential beliefs and perspectives on the resource allocation process. Capital is typically allocated in a hierarchical and cascading manner. Funds are provided to a particular business unit, which in turn makes allocations to specific initiatives and activities. This cascade to finer-grained units of aggregation typically creates a better match between the power of decision making with regard to resource allocation and the specialization of knowledge regarding alternative investments. By the same token, such a budgetary cascade also provides a set of constraints and rigidities regarding allocation across diverse activities. More generally, the diversity of independent budgetary entities is argued to importantly influence the heterogeneity of the bases of selection among alternative investment opportunities.

Lastly, this mediation of resource allocation by the firm plays a particularly important role with respect to the allocation of resources over time on a given initiative. In this vein, Moran and Ghoshal (1999) point to the role of organizations in suspending the selection pressure of market forces. However, organizations do not simply buffer initiatives from selection but also potentially provide different bases for interim selection processes (Levinthal & Marino, 2015; Levinthal & Posen, 2007).

Opportunities and Opportunity Costs

Firms face distinct opportunity sets. One can understand this as a consequence of path-dependent capability development (Nelson & Winter, 1982; Penrose, 1959). The role of possibly divergent investment opportunities is also central in discussions of strategic factor markets (Barney, 1986) and real options (Amram & Kulatilaka, 1998; McGrath, 1997). Behavioral and evolutionary perspectives on capability development provide a "backward-looking" perspective on the presence of distinct opportunity sets. The cumulative history of prior investments and learning processes results in a set of distinctive competencies. Whether these investments or learning processes were prescient or myopic and exploitative, they determine the firm's capability set, and in turn its investment opportunities, at a point in time. It is these "chains" of path dependence that behavioral and evolutionary perspectives tend to emphasize. However, as Cattani (2005) argues in the case of "preadaptation," even in the absence of foresight, these prior investments may position a firm to have privileged access to profitable opportunities, as illustrated by his study of Corning's entry into fiber optics from its base in ceramics, and material science more generally. Indeed, *de alio* entrants to new industries, say radio producers who enter the market for televisions or carriage makers who

found themselves making early horseless carriages, or automobiles, are likely to be instances of such preadaptation (Helfat & Lieberman, 2002).

In contrast, work on real options provides a forward-looking sensibility to the linkage between some time series of investments and privileged access to new opportunities. Firms are regarded as making anticipatory investments in order to have some distinct and privileged access to follow-on investment opportunities. However, while forward looking, a central and arguably somewhat underappreciated underpinning of a real options argument is the presence of path dependence. It is the property of path dependence that necessitates anticipatory “Stage 1” investments, rather than merely reacting in real time to information updating. Furthermore, it is important to recognize that information updating in many instances is not a passive activity of observing new factor prices but may be endogenous with respect to the firm’s actions and investments (Adner & Levinthal, 2004; Cohen & Levinthal, 1994).

From the perspective of the investment of financial assets, the investment question is simply the return on the set of possible alternative investments relative to the firm’s cost of capital. However, the allocation of nonfinancial assets, such as technical expertise, time, and the energy of top management, raises the issue of opportunity cost (Levinthal & Wu, 2010). The hurdle is not only some absolute metric of return as in a present value calculation; the criteria becomes what is the best use of these firm-specific resources and capabilities. Thus, firms in more or less vibrant product market domains may make different allocation choices, particularly with respect to decisions to diversify and reapply these capabilities in alternative domains (Levinthal & Wu, 2010; Wu, 2013). Furthermore, firms even in the same product market domain may make different choices in order to best exploit their existing differential assets (Wu et al., 2014).

Arguably the most developed argument within the management literature on the distinctive role of the firm in mediating resource allocation processes, as opposed to factors of production being mediated by market processes, relates to the distinct role of organizations in recombining resources and capabilities (Helfat & Eisenhardt, 2004; Kogut & Zander, 1992). Corporate resource allocation processes are argued to allow a firm to link, in novel ways, nonreadily tradeable resources and capabilities. This ability is, in some accounts, attributed to the firm’s distinctive knowledge of the elements being recombined (Grant, 1996). In economic models of property rights (Grossman & Hart, 1986) and transaction costs (Williamson, 1975, 1985), the ability to recontract prior asset allocation decisions relates to the legal decision rights of specific organizational actors. In other lines of argument, the capacity to reallocate is suggested to stem from trust (Kogut & Zander, 1992) and a kind of social capital (Gibbons & Henderson, 2012).

Selection—In the Eyes of the Beholder

C. S. Lewis observed that “what you see and hear depends a great deal on where you are standing; it also depends on what sort of person you are” (1955: 148). The returns to an investment are not self-evident but require interpretation, beliefs, and imagination about possible futures. As a result, even if faced with the same opportunity set, per Lewis’s observation, different people standing in different places may reach different conclusions. That property is true for markets as well as for organizations. The question then is what are the distinctive ways in which an organization might influence this property?

Organizations, and in particular organizational structures, influence the diversity of beliefs (Lau & Murnighan, 1998) and the locus of decision rights (Rajan & Zingales, 1998). Socialization processes are powerfully affected by structural differentiation. Individuals working with the same team, division, or organization will tend to share more similar beliefs, other things being equal, than individuals on the other side of these various boundaries. Emotional contagion follows a similar pattern (Barsade, 2002). As a result, the same investment opportunity may be viewed differently as a function of these boundaries, even if the underlying economics are the same. Furthermore, while an organization may have the resources to make multiple “bets,” it is difficult for an organization to have multiple “minds” (Levinthal, 2007). In characterizing selection processes, we need to attend not only to the intensity of selection pressure and the possibility of slack or buffering but to the bases of selection as well (Adner & Levinthal, 2002, 2008).

The hierarchical structure of organizations provides a further implication. Imagine, as a limit case, a fully centralized organization with an individual at the top of the hierarchy making all capital investment decisions. If this individual were making decisions based on primary data about the latent alternatives, the investment choice would be driven by the particular “lens” of that actor. Of course, as Bower (1970) describes, in a hierarchical structure, the actual sorting among competing alternatives occurs at lower levels in the organization, and senior management is typically endorsing choices made by these lower-level actors.

However, top management does not merely set the strategic context in which individual proposals navigate. Typically, top management assigns a budget to distinct decision domains, including function (cf. R&D, advertising, plant and equipment), product, and geography. Inertia, that is, rather stable values, at least in relative terms, of these budget allocations across time, is a prominent property of these higher-order categorical budgets. Interestingly, firms that exhibit relatively greater fluidity in their allocation of capital across these broad domains have been shown to experience greater financial returns (Hall, Lovallo, & Musters, 2012). Whether this greater fluidity is a property of individual executives, the structure of the firm’s accounting system, or more broadly its organizational structure, is not clear; however, whatever its bases, the net effect appears to be a critical element of the adaptive dynamics of firms.

Organizational slack, long argued to be critical to processes of search and innovation (March & Simon, 1958), is a diffuse form of budgetary discretion. It effectively empowers lower-level actors by loosening the constraints of top-level resource allocation decisions. In contrast to real options, it is not a commitment to a specific initiative but a more general recognition of the possibility of promising initiatives. While generally thought of in the context of overarching macro budgetary processes, recent attention has been given to the concept at the micro, individual level. In the current discourse, this idea of legitimated individual-level exploration is associated with Google, with its policy of providing up to 20% discretionary time of its engineers to engage in self-directed innovative efforts. However, this sort of policy has quite early origins with 3M, known at the time as Minnesota Mining and Manufacturing, when in 1948 it initiated its similarly structured 15% time rule. Employees were given the latitude to devote 15% of their work time to initiatives that they viewed as potentially valuable for the company but that were not part of their official, current job responsibilities. Perhaps it is not surprising that a firm founded to mine for corundum, a useful mineral for making sandpaper, which instead discovered itself pulling

low-grade anorthosite from the earth, developed an awareness early on of the importance of creatively repurposing firm resources (Harnish, 2012).

An issue that tends to be neglected in enthusiastic retellings of these policies and some successful manifestations of them is the chasm between fledging 15% (or 20%) time initiatives and the decision to scale up to a full commercial effort. A virtue of this individual-level, or team-level, slack is that it allows innovative efforts to be expressed in somewhat more fully developed forms to higher managerial authorities than would otherwise be possible. It may allow some questions of technical feasibility to be resolved, but the issue of commercial merit is likely to be still quite open. Thus, a more informed selection decision may be made by a higher authority, but the need for higher-order authority in the budgetary process is not obviated.

A corollary issue is that such rules providing individual-level discretion remove the discipline of an external evaluation. An organization runs the risk of cultivating a large set of projects that absorb resources that neither reach commercialization nor are terminated—the “living dead.” For the focal individual, the opportunity cost of a prolonged state of neither success nor acknowledged failure may be modest if they lack other ideas for possible initiatives. Alternatively, these ongoing projects, relatively impervious to their continued pre-commercialization state, may be an important source of inertia that inhibits more productive reallocation of financial and nonfinancial resources. A further potential complication is the contrast Adner and Levinthal (2004) note between being the option at an individual level versus having an option among a set of alternative initiatives at a higher level in the organization.

Challenge of “Intermediate” Selection

While our standard conception of selection processes is one of differential fitness, selection in the context of an organization’s ecology of projects and initiatives often has another layer of complexity. In the setting of new ventures and initiatives, “fitness” is often not self-evident. Financing, whether external to an organization or within an organization, is typically staged. Some initial financial and nonfinancial support is rendered and, contingent on meeting some set of milestones or a more diffuse reevaluation criteria, additional resources are provided. The role of organizations as mediating this refinancing is then a question as to how a firm might differentially manage this process from an arms-length market process.

From Williamson’s (1985) early writings on the role of the M-form organization, building in turn on Chandler’s (1977) discussion of the “visible hand” of management, there is the argument that an “administrative relation between an operating division and shareholders” may make better resource allocation “because cash flows no longer return automatically to their origins [the operating divisions], but revert instead to the center, thereafter to be allocated among competing uses in accordance with prospective yields” (Williamson, 1983: 363). Contrary to this sensibility is a line of work within the corporate finance literature under the rubric of “corporate socialism” that suggests that corporations may make capital allocations across business units not purely on the economic logic of highest marginal return; rather, these allocations may be influenced by politics within the firm (Berger & Ofek, 1995; Stein, 1997), more direct agency concerns of empire building (Jensen, 1986), or concerns for equity (Bardolet, Fox, & Lovallo, 2011).

Development paths are subject to more intelligent intermediate selection, that is, selection prior to the full realization of their latent potential, to the extent that the correlation in the performance of development efforts across time is relatively high. Levinthal and Posen (2007) examine the effectiveness of intermediate selection in the context of interdependent technological systems. Disparate activities are housed within a common enterprise if there are linkages among initiatives that are better managed by a single entity than some form of market exchange (Coase, 1937; Williamson, 1975). These same sorts of factors may influence the ease with which the latent merit of individual initiatives can be identified through their development process. Exploring in isolation a subproblem, say its technological development in isolation of a broader commercial development, will tend to lead to rapid performance increase but lower correlation in performance across time and, hence, a reduction in the intelligence of the intermediate selection among projects. Siggelkow and Levinthal (2004, 2005) show the possibility of an attractive “hybrid” dynamic in which the organization engages in a first epoch of search in which it modularizes problem-solving effort and then engages in a second epoch of integrated search that can attend to the overall system interdependencies of the development effort.

More generally, the organization, through its design of “experiments” and its privileged access to the interim results of such experiments, has a distinct role in managing the process of interim selection. In this regard, it is interesting to consider the rapid decline in the cost of experimentation with new Web-based business models with the availability of very low-cost and scalable third-party provision of underlying computation and data storage support. Furthermore, there is increasing sophistication regarding data analytics as to how one might evaluate “A/B” trials and related forms of experimentation. These shifts in the cost of experimentation and the speed and reliability of feedback have been an important impetus for the marketlike mechanism of venture capital to manage the financing and evaluation of these sorts of innovative effort, relative to that of multilevel hierarchical enterprises.

Conclusion

Ideas, business plans, off-sites, or design efforts do not themselves directly receive rewards from the market. Organizations do. While there is a large nuanced literature on the theory of the firm, a basic overarching fact about organizations is that firms receive profits and losses, while individuals only receive awards as mediated by an organization’s accounting system and reward structure. In that sense, a firm can be considered to be a credit assignment mechanism (Holland, 1975). In a similar vein, organizations mediate the allocation of financial and nonfinancial resources. Understanding that nature of these mediation processes is a fundamental challenge for management scholars and one for which this essay has tried to illuminate some possible lines of inquiry.

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