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DESIGNING ORGANIZATIONS FOR EXPLORATION AND EXPLOITATION

TIMOTHY N. CARROLL

Abstract: All organizations face the core challenge of deciding on investments in two very different types of activities: exploration and exploitation. Exploration activities are future-oriented, such as developing new capabilities, experimenting with new technologies, and pursuing new customers and markets. Exploitation activities, in contrast, focus on the refinement of existing competencies, processes, and products. Because an organization's design should reflect its goals, it is difficult to accommodate exploration and exploitation activities within a single organization. This article discusses four major approaches used to tackle this problem, and notes the strengths and limitations of each approach.

Keywords: Exploration-exploitation; organizational ambidexterity; dynamic capabilities; organization design

One of the most influential scholarly works on organizations over the last twenty years has been James March's "Exploration and Exploitation in Organizational Learning" (March, 1991). Part of the article's appeal is that it addresses a core organizational challenge—deciding between investments in two different types of activities. Pursuing exploitation activities implies a focus on the "refinement and extension of existing competencies, technologies and paradigms," while an exploration focus indicates "experimentation with new alternatives" (March, 1991: 85). Exploitation is necessary for improving current operations, and returns on investments in exploitation are likely to be near term and positive. Exploration is more likely to yield the next breakthrough idea, product, or market, but returns on exploration are less certain and more distant in time. The exploration-exploitation construct can be applied to organizational choices related to alliances, new product development, which markets and customers to target, and employee and organizational development.

Although exploration and exploitation are both important to organizational performance, most organizations would like to be able to pursue each type of activity at the same time. Doing both simultaneously, however, can be difficult. For one thing, each approach can become self-reinforcing. Exploration, for example, is by its very nature variable and prone to failure. When inevitable failures provoke a search for other new approaches, the organization may fall prey to the "failure trap"—always looking for the next great thing. Such organizations pay the costs of experimentation without gaining the benefits. Conversely, since an exploitation approach is more likely to yield early successes, these can reinforce the pursuit of similar efforts, creating a "success trap." While this promotes stability, it also keeps the organization from finding new opportunities. A second challenge is that competitive pressures may push the organization to prioritize one area over another. Often this takes the form of a short-term focus on exploitation rather than exploration. A third challenge to doing both simultaneously is that resources are limited. Providing more resources in one area means that the other area is less well resourced. Especially in situations where the need for either exploration or exploitation seems more pressing, the lure of prioritizing one over the other may become too great to resist. For example, many companies may be more inclined to improve on current operations, such as looking for cost-cutting opportunities during an economic downturn.

Similarly, exploration may seem more appealing in a new or growing market segment or early in an industry's life cycle. A final challenge is that the structures and processes that promote exploration do not always facilitate exploitation. Recently, the CEO of 3M initiated Six Sigma management techniques across the organization, aimed at improving quality and controlling costs by reducing defects and variance in processes. While this exploitation-type effort worked well in many areas, it did not mesh well with the research and development function that is critical at 3M (Gunther, 2010).

How can managers design an organization that facilitates the pursuit of both exploration and exploitation? Ideally, how can you have an organization that continually refines what it is already doing while at the same time looking for promising new things to do? There is an ongoing debate in the scholarly community about how organizations can achieve these competing goals. Four main options have been suggested.

OPTION 1: OUTSOURCING

The first approach assumes that the tensions arising from trying to do both will make it too difficult to succeed. Instead, the organization focuses on one approach and outsources the other. For exploitation-focused firms, this means partnering or acquiring new technologies and products as the need arises. The Intel Capital fund, for example, provides the computer chipmaker the means to develop the market for new uses of its chips as well as provide an opportunity to acquire emerging technologies – both exploration-focused activities. Think also of pharmaceutical companies that in-license compounds that biotechnology firms have discovered or developed, while they focus on manufacturing, sales, and marketing activities. For exploration-oriented firms, this approach means focusing on the next big leaps in technology or product design while letting other companies handle other functions. Think here of many high-tech companies who partner with others to do contract manufacturing, leaving them to concentrate on product development. Indeed, you could view contract manufacturers as exploitation-focused firms who outsource exploration.

From an organization design standpoint, this approach is straightforward. You can design your organization with a clear focus. What this approach lacks is integration. It is critical to have a strong capability in managing the integration with the partner firms. For example, who chooses which new technologies to license or acquire? How are alliances managed within the organizational hierarchy? Which parts of the business are most dependent on these partners, and how integrated do they need to be? Is an acquisition kept autonomous or reconfigured within existing divisions? Without an integration capability, the success and failure traps mentioned earlier can lead to eventual obsolescence for exploitation-focused firms, or never profiting from the new options generated by an exploration-focused company.

OPTION 2: SEPARATE EXPLORATION AND EXPLOITATION, BUT ALIGN THEM

The need to integrate across the two types of activities shows up even more in the second option. Management recognizes the difficulty in doing exploration and exploitation simultaneously but takes the view that the best way to accomplish both is to develop an “ambidextrous” organization (O'Reilly & Tushman, 2004; *Organization Science*, 2009). Here the company creates organizational units with a clear focus on either exploration or exploitation, but rarely both. This type of organization is composed of “highly differentiated but weakly integrated subunits. While the exploratory units are small and decentralized, with loose cultures and processes, the exploitation units are larger and more centralized, with tight cultures and processes” (Benner & Tushman, 2003: 52). The required integration takes place largely at the leadership-team level, rather than being left to mid-level managers, since “the pressures on core business managers to meet current customer needs, optimize processes, and meet short-term financial expectations make it almost impossible for them to fully engage in exploring new opportunities at the same time” (Kates & Galbraith, 2007: 186).

The separation of the exploration-focused unit is often physical as well as organizational. Lockheed's own employees, for example, weren't told the location of the company's famed “Skunk Works” aerospace development center in the early days. Similarly, Steve Jobs

famously moved the original Macintosh computer development team at Apple to a separate building and flew a pirate flag from the roof. The innovation-focused unit is kept away from the “corporate antibodies” that often do not see enough potential early in development to free up their own resources to support the new approach.

While this separation can protect innovation, it also makes the eventual required integration tougher to achieve. Since the reporting structures, goals, metrics, and rewards of the separate group may be very different, how do you build incentives and coordination mechanisms to integrate the different units? Xerox’s Palo Alto Research Center provides a cautionary tale. PARC was located in California, far away from the corporate headquarters on the U.S. east coast. And while the technologies invented at PARC – such as laser printing, Ethernet, the graphical user interface, and the mouse – were critical to the technology industry, the fortunes made from them went to firms other than Xerox. Thus, one of the biggest challenges of ambidextrous organizations is how to leverage through exploitation what has been discovered by exploration – while safeguarding against knowledge spillover to rivals.

OPTION 3: CYCLE BACK AND FORTH BETWEEN EXPLORATION AND EXPLOITATION

The third option acknowledges that it can be a challenge to have both exploration and exploitation focused units in the same organization since these units will have different incentives, structures, and time horizons. Similarly, organization theorists recognize the benefits that arise from alignment around a singular focus. But since exploration or exploitation alone risks the success and failure traps, the third option is to cycle between these approaches. “Temporal cycling between long periods of exploitation and short bursts of exploration... [has] been identified as an alternative balancing mechanism that may be both logical and practical” (Gupta, Smith, & Shalley, 2006).

One of the most common areas of organization design where this shows up is in the centralization versus decentralization debate (Nickerson & Zenger, 2002), where each option offers benefits but a balance works best over time. The key idea “is that under certain conditions managers modulate between or among discrete structures to approximate, albeit temporarily, levels of functionality unachievable when organizations remain fixed with a particular structure” (Nickerson & Zenger, 2002: 548). Since this type of change can be disruptive and costly, scholars suggest that firms should pursue such a major change only after “a critical state of incongruence with the environment is reached” (Miller, 1982: 133). The challenge here is twofold. Such a major reorientation requires many changes in the elements of organization design, such as structures, processes, coordination mechanisms, HR policies, metrics, and rewards. So getting the organization realigned around a very different approach is likely to be difficult. Second, for firms that reorient too regularly, employees may see the changes as faddish, and choose to simply wait out any reorientation rather than commit to it. Further, the need to reorient the firm when incongruence with the operating environment has been reached assumes that key decision makers are capable of sensing, evaluating, and responding to environmental signals.

OPTION 4: CONTINUOUS AND INCREMENTAL RECONFIGURATION

Since episodic and irregular change can be difficult to implement, the final option seeks to make change ongoing and incremental. Rather than involving the entire firm, the organization can adjust organizational units through continuous and incremental means. The idea here is that the boundaries between organizational units are redrawn, resources redeployed, and responsibilities reapportioned as needed. Eisenhardt and Brown (1999: 73) refer to this as an adaptive process of “patching,” which is “...the adding, deleting, splitting, transferring or combining chunks of businesses.” Beyond adaptation, the process of reconfiguring the firm may also serve as a mechanism for purposeful experimentation and the search for new opportunities (Karim, 2006).

This approach is the least well developed in the academic literature and thus the least

well understood. It may be that this approach is a more frequent version of the third option (cycling back and forth). It is also possible that the evolution of reconfiguration occurs in one direction – from more exploration to more exploitation – as differentiated organizational units follow a product life cycle (Raisch, Birkinshaw, Probst, & Tushman, 2009). It can also be that different divisions, based on the turbulence of their markets, can each incrementally reconfigure to find the right balance between exploration and exploitation. Firms that patch and reconfigure are constantly updating their business units such that a unit is “small enough for agility and large enough for efficiency” (Eisenhardt & Brown, 1999: 74). A good example is Nokia, as it seeks to improve efficiency in its mobile phone division that serves the majority of developing markets, versus its mapping division that must remain flexible as it explores new ways to offer location-based services to its smartphone users. Thus, this approach is a more granular approach to the second option – exploration and exploitation may occur simultaneously but to differing degrees within different divisions.

Continuous, incremental redesign may sound ideal. However, frequent reconfiguration of organizational boundaries can be costly and not necessarily successful. Unit reconfiguration announcements – where most units are reconfigured either to increase efficiency or to pursue growth opportunities in new product markets – initially increase shareholder wealth but then face a period of decline in earnings performance (Brickley & Van Druenen, 1990). Not only may the processes (of redrawing, redeploying, and reconfiguring) be costly to accomplish, but they also may be disruptive to the organization if not integrated seamlessly into the existing structure. This is a micro version of the challenges associated with option one but occurring within a single firm. Scholars have found that the art of frequent, incremental reconfiguration is also something that must be learned over multiple experiences before leading to subsequent innovations (Karim, 2009). Thus, firms that have limited resources for reconfiguration may be dissuaded from this type of process.

CONCLUSION

Note that there is wide variety in the options discussed above. The first option takes the view that maintaining a balance within the same organization is close to impossible. The last option holds that it is not only possible but advisable to try to do both. The other two options are somewhere in the middle. The lack of consensus reflects the significant challenge that exploration and exploitation present for any organization.

Following contingency logic, the right choice of organization design always “depends” – on features of the organization, its strategy, its operating environment, and so on (Burton, DeSanctis, & Obel, 2006). Thus, factors both internal and external to the firm should guide the choice of option. After all, an organization with little experience in selecting and managing alliance partners would likely have a difficult time taking the first approach. Likewise, the capabilities related to managing ongoing organizational change would be critical to the last approach. While each of the options has its challenges, not recognizing and attempting to deal with the fundamental challenge of doing both exploration and exploitation would be the worst response.

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