



Taking a “Deep Dive”: What Only a Top Leader Can Do

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Taking a “Deep Dive”: What Only a Top Leader Can Do

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Abstract

Unlike most historical accounts of strategic change inside large firms, empirical research on strategic management rarely uses the day-to-day behaviors of top executives as the unit of analysis. By examining the resource allocation process closely, we introduce the concept of a *deep dive*, an intervention when top management seizes hold of the substantive content of a strategic initiative and its operational implementation at the project level, as a way to drive new behaviors that enable an organization to shift its performance trajectory into new dimensions unreachable with any of the previously described forms of intervention. We illustrate the power of this previously underexplored change mechanism with a case study, in which a well-established firm overcame barriers to change that were manifest in a wide range of organizational routines and behavioral norms that had been fostered by the pre-existing structural context of the firm.

Keywords: Strategic Change, Resource Allocation Process, Top-down Intervention

One of my favorite perks was picking out an issue and doing what I called a “deep dive.”

It’s spotting a challenge where you think you can make a difference...

then throwing the weight of your position behind it.

I’ve often done this –

just about everywhere in the company.¹

(Jack Welch, former chairman and CEO, General Electric)

The role of top management in bringing system-wide changes to an organization has long been a central concern among scholars of strategic management (Barnard, 1938; Chandler, 1962, Selznick, 1957). The complexity of real organizational phenomena (Allison, 1971) has led researchers to examine the issue of why, how, and what kind of changes, both planned and emergent, occur in large firms (e.g., Bower, 1970; Quinn, 1980; Mintzberg and McHugh, 1985; Pettigrew, 1985). In more recent years, the quest to understand the inner workings of firms and their change mechanisms has evolved into three distinct research streams that identify different processes or structures for enabling top management to effect major transformations.

Organizational ecologists have argued that changes are the result of a continuous process of variation, selection, and retention that occurs within an organization (Burgelman, 1983a; McKelvey, 1982; Miner, 1990; Galunic and Week, 2002). Top management therefore must align internal selection criteria with external selection pressures, thereby promoting organizational adaptation and long-term survival (Burgelman, 1991). Scholars of organizational ambidexterity, on the other hand, have argued that organizations need to accommodate the tension between exploitation and exploration in order to achieve long-term success (Levinthal and March, 1993;

¹ Welch, J and Byrne, A. J. (2001). *Jack: Straight From the Gut*. Warner Business Books.

Tushman and O'Reilly 1996). It is important for top management to serve as the point of integration between contrasting agendas of structurally differentiated units (Smith and Tushman, 2005), or, alternatively, to develop an organizational context that helps managers throughout the firm to think and act ambidextrously (Birkinshaw and Gibson 2004; Mom, Van, and Volberda, 2007). In contrast to these two groups of scholars who emphasize the role of top management in maintaining the continuity of various change processes, advocates of a punctuated-equilibrium model of change distinguish long periods of convergence – during which an organization makes only incremental changes – and brief periods of revolution – when qualitative, metamorphic changes occur (Miller and Friesen, 1984; Tushman and Romanelli, 1985; Gersick 1991). An overall reorientation of existing activities comes only when major changes sweep through an organization, transforming its strategy, structure, power distribution, and control mechanisms – all at the same time (Virany, Tushman and Romanelli, 1992).

Together, the literatures on organizational ecology and ambidexterity depict top managers as organizational architects who design and actively maintain the formal and informal structure of the firm so that necessary changes can be brought forward by managers from all ranks. Senior managers set a general vision and endorse strategic plans, but they do little to define the substantive content of these changes. Meanwhile, the punctuated-equilibrium model presents an alternative view that portrays incumbent top management as normally passive and inertial during the convergent period, allowing the firm to slip into an eventual crisis in performance before attempting an overall reorientation of the company.

Nonetheless, these three research streams collectively describe a role for top management that is at times inconsistent with some of the most careful accounts by business historians of the strategic changes undertaken by large firms (e.g., Chandler, 1962; Rosenbloom, 2000; Jones,

2005; Tedlow, 2006). Historians documented how top management directly interacted with lower-level managers concerning the substance of specific operational details in order to insure the correct implementation of new strategic initiatives necessary for the organization in the face of a changing environment. Repeatedly, chief executives are shown to be much more involved in the day-to-day operations of their firms than prior research streams imply.

To comprehend the wide gap between the imagery conveyed in current literature and the actual phenomena of complex organizations, consider the role Steve Jobs played during the move by Apple into music-playing devices – a move that transformed the company from a niche computer maker that had been focusing on advanced functionality, reliability, and ease of use for technical enthusiasts into a global electronic powerhouse that brought aesthetics and fashion in product design to mass consumers. When Apple first introduced the iPod in October 2001, the project was set to meet an impossibly short schedule imposed top-down by CEO Jobs. To meet the project deadline, Jon Rubinstein – then head of hardware – had to swiftly assemble an engineering team that focused on integrating third-party, standardized components into a small package.² In the past, Apple typically designed its computers from scratch, using unique chips, disk drives, and monitors, proprietary operating systems, and many specially designed peripherals.³ Relying on outside vendors for undifferentiated technologies was simply not acceptable. Yet the time constraint set by Jobs forced the iPod project team to experiment with a new engineering approach that delivered the required product features, not just on time, but also at a much lower cost and with virtually no upfront investment in product development – a critical condition for profiting from an inexpensive music-playing device with a much shorter product life cycle and considerably lower profit margins.

² Young, J. S., and Simon, W. L. (2005). *Icon: Steve Jobs, the greatest second act in the history of business*. Hoboken, NJ: Wiley.

³ Yoffie, David B., and Michael Slind. "Apple Inc., 2008." Harvard Business School Case 708-480.

Besides controlling the project schedule, Jobs continued to stay close during project implementation. Colleagues reported that the CEO would be “horribly offended [if] he couldn’t get to the song he wanted in less than three pushes of a button.”⁴ He also insisted that the user interface should be modeled on Palm’s HotSync software so that the iPod could transfer songs seamlessly from iTunes.⁵ A year later, while the product team was busy releasing the Windows-compatible iPod, Jobs became the first person to persuade all major record labels to make their music available online. To realize the 99-cents-per-song pricing scheme, he personally conducted early demonstrations of iTunes to top executives and leading artists in the industry.

Even more radically, Jobs later convinced the iPod division to take away much of what had made an iPod great – the display, the large storage space, the wheel, and the menu-driven interface – and launched the iPod Shuffle in 2005. Despite the loyalty of his staff at Apple, Jobs recalled, he was almost “thrown out of the room” when he first proposed this “crazy idea.”⁶ Finally, in anticipation of the changing product mix of the company, when Apple expanded its direct presence in retail distribution, the CEO personally handpicked a former executive from Target and chartered the new team to model high-end boutiques – a brilliant move in hindsight, especially since the first Apple store was actually opened during the time when Dell's online sales approach was still being hailed as the best practice for the computer industry.⁷ By 2007, more than 100 million iPods had been sold, accounting for almost half of Apple’s revenues. The company, at the same time, transformed from a niche computer manufacturer that had historically targeted a narrow audience with a strong emphasis on engineering ingenuity, into a

⁴ Kahney, Leander. "Inside Look at Birth of the iPod." wired.com: July 21 2004.

⁵ Kahney, L. (2008). *Inside Steve's brain*. New York, NY: Portfolio.

Levy, S. (2006). *The perfect thing*. Simon and Schuster

⁶ Levy, S. (2006). *The perfect thing*. Simon and Schuster

⁷ Thomke, Stefan H., and Barbara Feinberg. "Design Thinking and Innovation at Apple." Harvard Business School Case 609-066.

consumer electronics powerhouse that was thoroughly mainstream in its product offerings and attracted mass consumers by crafting seamless user experiences across all the Apple devices.

When is this sort of direct intervention by top management functional? And why? The existing literature lacks a systematic way to conceptualize the type of managerial behavior exemplified in the Apple case, nor does it explain why this kind of (arguably) overbearing, top-down intervention is common. Strategic management theory typically posits an important role for top management in formulating strategy and shaping resource allocation. The sort of involvement exhibited by Steve Jobs is seen only as the idiosyncratic behavior of an entrepreneur that sometimes pays off, or worse, as nearly pathological interference.

We argue that, on the contrary, there is an identifiable class of special circumstances in which top management intervention of this sort is vital – a functional role exists for such direct intervention. Our study reveals that when an implementation of a new strategy requires the operating organization to make major progress along *new dimensions of performance* (Adner and Levinthal, 2008), the personal involvement of a very high-level executive, perhaps the CEO him- or herself, becomes critical. That is, top management must take a *deep dive*.

We label a top-down, proactive intervention a *deep dive* when top managers of a large firm bypass the entire managerial hierarchy, well before any overall crisis, 1) to define concrete objectives of corporate projects directly, 2) to sponsor and select those initiatives personally, and 3) to maintain a strong presence throughout the phase of project implementation. A deep dive differs from top-down strategy formulation and resource allocation. It implies a heavy involvement from top executives with fine-grained and technical specifics, well into the stage of actual implementation of those project initiatives. In taking a deep dive, top management

overrides pre-set change routines and existing decisional priorities across levels and functions inside the firm.

This paper's argument is developed in four sections. In the first section, we describe how a high-performing firm organizes its activities. A high degree of complementarity among firm activities enables a company to pursue its strategy effectively. Core activities of the firm – those most connected with the rest of the system – are critical in realizing the basic aspects of the chosen strategy. But at the same time, core activities confine the firm's performance trajectory to a limited number of dimensions, because they are built to improve, over time, only certain kinds of product attributes. Therefore, when a firm shifts to a new strategy and seeks to make major progress along alternative dimensions of performance, it must develop a new set of core activities. That is, the firm needs not only to carry out new activities, but also to reconfigure the existing interdependence among the old.

We argue in the second section that a high-performing firm will almost always find it extremely hard to alter this nexus of interdependence because such a change conflicts with the structural context, or the formal organization and systems, that top management has previously established to promote certain managerial behaviors throughout the company (Bower, 1970). In addition, because managers at the lower level have been accustomed to interacting within the current structural constraints, a stable pattern of interaction, as part of the informal organization, establishes itself across levels and functions. The peculiarities in collective behaviors thus sometimes remain even after the formal structure has changed. Because the resource allocation resulting in firm activities is essentially a bottom-up process that is deeply embedded in the operating level of the company, the existing core activities are often preserved by these formal and informal structures. Under normal circumstances, managers are motivated to define and

select only initiatives that reinforce the current performance dimensions of the firm. Even when top management directly allocates resources for new activities that explicitly target alternative dimensions of performance, operating managers are still habituated to continue the existing core activities and tend to consider the new activities peripheral and treat them accordingly.

Our analysis of this resistance leads us to conclude in the third section that highly specific intervention is particularly important when top managers attempt to alter the firm's performance trajectory along new dimensions. Because of the unsuitable behaviors that stem from the collective dynamics among individuals, there are times that top management needs to intervene. We argue that a deep dive is an effective means to translate a strategic intent envisioned by top managers into organized actions that will be embraced by multiple levels of the organization. When top management defines and selects the technical objectives of a strategic initiative, structural constraints of the organization can be ignored or bypassed. The positional power of a very high level executive can ensure a complete implementation of the strategic initiative, thereby facilitating the emergence of a new pattern of interaction among operating managers. Unintended distortion by lower-level managers can be minimized. We include a graphic representation of a process model (see Figure 3) of this kind of top management intervention, making explicit those aspects of intervention that are unique to a deep dive.

In the final section, we illustrate the power of a deep dive with a case study.⁸ The story of a corporate project at ASUSTek, a major Taiwanese IT company, demonstrates how top management can drive the company to shift its performance dimensions by directly establishing the substantive content of a project initiative rather than indirectly influencing the substance through the framing of a vision or rearrangement of structural context. Overall, we seek to

⁸ In this paper, the conceptual argument is deduced through a thorough review of the prior literature. The case here serves only an additional justification and allows readers to see how our theoretical constructs operate in real life. See Siggelkow (2007) for a detailed explanation of this presentation approach.

develop a theory that explains this case and others we have observed. The core contribution of this paper is to identify a managerial mechanism by which a top management can overcome powerful organizational forces that ordinarily block the implementation of critical shifts in strategic direction.

CORE ACTIVITIES, STRATEGY, AND STRUCTURAL CONTEXT

The Firm as a System of Activities

Scholars have long recognized that firms exist to perform coordinated activities (Coase, 1937). But before we examine the nature of these activities – their interdependencies and limitations – we need first to clarify our terminology.

Some basic definitions. We use the term *firm activities* to refer to coordinated actions undertaken by the firm along its value chain (Porter, 1985). Examples include processing orders, calling on customers, assembling products, and training employees. For these activities to be sustainable, their cost – including the cost of capital invested in the means of production – must be repaid by the revenue generated at sales. A firm thus requires a strategy that translates its mission and purpose into choices of products and markets, and also policies and programs to carry out the activities needed to satisfy the firm's economic requirements (Andrews, 1971).

These fine-grained levels of firm activities are grouped in *corporate functions* as research and development, marketing, finance, manufacturing, and distribution. Expressed in this way, the nature of a firm's activities is grounded at the level of organizational routines – a recurring performance of recognizable patterns of sequential or reciprocal actions across multiple parties (Nelson and Winter, 1982). The need for managers to coordinate and communicate regularly indicates the interdependence among firm activities (Thompson, 1967).

The activities of a firm, either fine grained or grouped as functions, are formally governed by the *structural context*, which encompasses the formal designs of the organization and the various formal administrative mechanisms that define “rules of the game” among managers across levels and functions (Bower, 1970). Structural context includes organizational architecture, role definitions, written rules and procedures, information and measurement systems, and reward and punishment systems. These formal arrangements are intended to ensure managers will behave in ways calculated to achieve desired objectives, in control arrangements that evaluate performance and detect deviance, in reward systems that motivate managers to carry out prescribed tasks, and in the set of criteria by which managers are selected, replaced, and promoted. Although structural context by itself does not account for all organized actions, it exercises a strong influence on how a firm conducts its activities.

Interdependence among firm activities. When two elements are interdependent, the value of one element depends on the presence of the other (Simon, 1962; Levinthal, 1997). At the level of firm activities, when two activities are complementary or reinforce each other, the marginal value of engaging in each rises with the presence of the other (Milgrom and Roberts, 1990 and 1995). To attain high performance, a firm must perform activities in ways that will complement each other. Porter (1996) reports the way complementarities among firm activities at Southwest Airlines, IKEA, (and the Vanguard Group – see below) help these companies to achieve extraordinary returns.

Limitations of firm activities. As a successful firm grows, the scope of firm activities expands (Chandler, 1977; Penrose, 1959). With the system of activities moving towards a higher level of complexity, it is possible to identify some activities as core because they possess higher interdependence or connectedness (Hannan, Burton, and Baron, 1996). These core activities

become critical for fulfilling the basic aspects of the realized strategy of the firm, but at the same time, limit the areas in which the firm is capable of improving in the future. An example of how core activities emerge and become more complex is provided in Siggelkow's (2002) longitudinal study of the Vanguard Group. Its strategy was the provision of mutual funds at a low cost. As Vanguard continued to develop conservatively managed funds, the product development activity was gradually reinforced by new complementary activities, such as in-house distribution, which helped reduce management fees, and extensive customer communication, which fostered the preference for long-term investment among buyers. Together, these activities permitted the firm to pursue the low-cost strategy more effectively. However, activities that were less important to this realized strategy stayed peripheral or faced elimination. For instance, Vanguard decreased its advertising as a percentage of managed assets over time. The company also terminated its client brokerage service, as brokers only made profits from frequent transactions by customers. In other words, as Vanguard successfully implemented the original vision of its founder by elaborating its strategy consistently, the core activities of the firm also evolved in a coherent direction, resulting in a trajectory of performance improvement in product attributes that is very different from that of a traditional mutual fund provider. Because of the limited resources for consistent investments in new areas, the management team at Vanguard had to accept, implicitly, that at any point in time, the company could make meaningful progress only along certain *dimensions of performance* – the provision of low cost, convenient, and long-term oriented services (Adner and Levinthal, 2008). They were constrained as a direct result of the interdependence that had been developed among its firm activities.

The Need for Reconfiguration of Firm Activities

Because all firms operate in a changing environment, a firm needs, over time, to adjust its system of activities. Yet, as we have just seen, an established company often experiences great difficulty if it needs to reorient its core activities in order to achieve major progress along new dimensions of performance (Adner and Levinthal, 2008).

An environmental change. A shift in the environment, such as a change in technology or consumer taste, may not only cause a firm's strategy to become inappropriate, but also render core activities of the firm inadequate against new competitors (e.g., Leonard-Barton, 1992; Rosenbloom, 2000; Tripsas and Gavetti, 2000; Gilbert, 2005; Taylor and Helfat, 2009). Previous dimensions of performance along which the firm has been making progress later become less relevant in the new environment. The phenomenon of *disruptive technology* is a classic example of this kind of environmental change. A disruptive technology under-performs initially on dimensions that are valued by key customers and represent key strengths of incumbent firms (Christensen and Bower, 1996; Christensen, 1997; Adner, 2002; Gilbert, 2005). While dominant customers may find early versions of disruptive products inadequate to their needs, the new product technologies may be cheaper, simpler, smaller, or easier to use and hence very attractive to new customer segments. In order to develop strategies for serving the low-end or new-market segments, new entrants develop activity systems that depart significantly from those of industry incumbents (Christensen and Raynor, 2003; Christensen, 2006). Because the core activities of the entrants deliver performance improvement in product attributes along alternative dimensions, incumbent firms find that their core activities are ineffective to halt the continuing assaults from these new competitors. Disruption of the incumbents occurs when subsequent development of

the disruptive technology raises the performance enough along traditional dimensions important to mainstream customers to satisfy their needs. At that point, incumbents typically exit.

Difficulty in reconfiguring activities. The case of disruptive technology illustrates a particular situation where firms experience great difficulties in pursuing a new strategy that entails a change in dimensions of performance. But more generally, whenever a firm attempts to modify its core activities in order to progress along new performance dimensions, it needs not only to perform new activities but also to alter the pattern of interdependence among the old.

The general idea of a firm shifting its performance trajectory into and along new dimensions is illustrated in Figure 1, which features performance improvements along two distinct dimensions (**P** and **P'**) across time. In this simplified example, the firm progresses only along dimension **P** between time t_0 and t_1 , resulting in performance improvement $\Delta P(t_1 - t_0)$. During the next period between t_1 and t_2 , the firm achieves performance improvement $\Delta P'(t_2 - t_1)$ along the new dimension **P'** and thus shifts its performance trajectory entirely.

Insert Figure 1 about here

Interestingly, well-established organizations often fail to shift their performance trajectories into new dimensions because they are unable to reconfigure the existing relationships among their core activities. This can happen even when these firms are already performing the new activities as a peripheral extension⁹ (e.g., Henderson and Clark, 1990; Sull, 1999; Tripsas and Gavetti, 2000; Burgelman, 2002). The dilemma, which top management faces when it

⁹ At times, new activities of an established firm may be developed to a highly sophisticated level but the organization still treats them as peripheral. Despite the resources made available by top management for new activities, the firm, in this case, still fail to realize a strategic change. An example of such failure can be found in Xerox's foray into personal computing. While the company was the first to perfect the entire system of a modern PC, it could not capture its commercial potential and was sidelined eventually by late entrants such as IBM and Apple. See Douglas K. Smith and Robert C. Alexander, *Fumbling the Future* (New York: William Morrow, 1988).

attempts to alter the parameters of multiple activities, balloons into an exceedingly complex situation that is similar to an “intractable” algorithmic problem because of the underlying interdependence among firm activities (Levinthal, 1997; Rivkin, 2000). The cognitive complexity involved when a firm alters its core activities may far exceed the information-processing power of any top managers.

STRATEGY PROCESS

The Emergent Nature of Strategic Change

The goal of this paper is to present a new theory of organizational change that retains the valuable insights of prior work while enabling us to account for the empirical observations (described in the introduction) that are poorly explained by that work. In particular, we show that for an established firm that seeks to make major progress along new dimensions of performance (as illustrated in Figure 1), relying on structural solutions alone is indirect, uncertain, and potentially ineffective. Instead, as an alternative approach, top management ought to intervene proactively by defining and selecting detailed objectives of specific project initiatives, and then directly manage their executions. To understand the logic of this basic proposition, it is helpful first to examine the way strategic changes typically occur in a large organization so that the difference is clear. This general strategy process, as it occurs under normal circumstances, is presented in Figure 2.

Insert Figure 2 about here

The standard process of strategic change. Previous strategy process researchers such as Bower (1970), Quinn (1978), Pettigrew (1985), Mintzberg and McHugh (1985), Burgelman

(1991), and Lovas and Ghoshal (2000) have convincingly demonstrated the emergent nature of a realized strategy. This implies that any successful shift in dimensions of performance by a large organization is rarely decided by just a few executives at the top. Rather, intensive field studies reveal that the realized strategy of a firm is actually determined by the cumulative result of a series of decisions on resource allocation that ultimately lead to concrete activities of the firm (relationship ‘D1’ in the process model depicted in Figure 2; for a recent review on the body of work on the resource allocation process, see Bower and Gilbert, 2005). Under most circumstances, detailed specifics of a strategic commitment are defined by operating managers in response to discrepancies between what they are currently achieving and what they have been asked to achieve or believe they can achieve.¹⁰ In other words, the specifics of a project proposal deal with dimensions of a problem that a manager faces in his/her assigned roles. Proposals are championed in order to resolve those problems. After initiation, promising proposals require further impetus from general managers in the middle. Their decisions as to which initiatives to select and which to ignore are usually determining as to what get funded. Sponsorship and then the pattern of execution determine what actually happens, not words on paper. Before an initiative is committed at the corporate level in the form of a formal approval, the multi-level process of selection has already occurred. The realized strategy is thus fundamentally determined by the definition and selection processes deep in the operating levels of the firm (‘C1’ and ‘C2’ in Figure 2). As top management does not possess adequate knowledge and information to evaluate the technical aspects of every project proposal, its role in strategic change is primarily to be “willing enough to recognize strategically bottom-up initiatives and capitalize on them rather than pass them by” (Noda and Bower, 1996, p.188). The major source of top management’s

¹⁰ This observation on problemistic search by lower-level managers is consistent with the Carnegie school problem-solving perspective (Simon, 1945; Cyert and March, 1963; March and Simon, 1965).

power is in its control over the structural context of the company in promoting the appropriate decisions and actions of lower-level managers. It is the structural context that determines the technical content developed by operating managers and the decision to provide support for projects made by general managers in the middle ('B1' in Figure 2). Coordination among different parties inside a company is also made possible as individuals are presented with limited alternatives and circumscribed choices.

No top management, however, is far-seeing enough to be able to anticipate all the possible contingencies that might confront each position in the organization. Rules and policies are never sufficient to fully specify the details of individual behavior, because the interpretation of any rule always requires additional judgment and general rules are designed to be applicable across multiple situations that a manager may encounter (Zimmerman, 1970; Giddens, 1984). Even if it were possible, to attempt to program every individual behavior under every single situation would curtail individuals' problem-solving and undermine individuals' initiatives, a dangerous practice that would lead to inflexibility in times of change (Ashby, 1952). In addition, all managers have vested interests in the success of the working units to which they belong. As their units can be sources of power, prestige and pleasure, individuals want to see their units be protected and, if possible, strengthened (Pfeffer, 1981). Therefore, structural context alone cannot completely account for the pattern of interaction that emerges over time and space among managers across functions and levels.

How patterns of interaction emerge from the structural context itself. As situated managers repeatedly interact within the environment provided by the structural context of the firm, a stable pattern of interaction develops and becomes part of the informal organization that will eventually emerge among the managers ('B2' in Figure 2). The characteristics of the

informal organization are shaped by the frequency and duration of contacts between individuals, the tendency to initiate these contacts, the direction of influence between persons, and the degree of cooperation (Homans, 1950; Merton, 1957; Blau and Scott, 1962). Over time, behavioral norms and communication patterns come to reflect and govern the power distribution and differential status among subunits (Barley, 1986).

This process where the structural context of the firm shapes and is inextricably shaped by the intertwined characteristics of the interactive pattern among managers was observed by evolutionary economists in the context of organizational routines, confirming the prevalence of such social phenomena. Nelson and Winter (1982) argued that organizational routines impose a *truce* on intra-organizational conflicts. That is, despite their privately held and potentially hostile attitudes towards one another, managers across functions simply agree to go on and interact over coordinated activities. Routines, as an agreement about how to do the work, suppress conflicts. Yet the exercise of organizational routines itself reinforces the existing power relationships among those subunits (Dosi, Levinthal and Marengo, 2003). In this way, individuals learn the working norms and agreed priorities of the organization through the recurrent execution of organizational routines.

This emergent, reflexive and yet unwritten pattern of interaction is crucial to future organized actions. It increases the ease of communication, facilitates coordination, and supplants any inadequacies of the structural context whenever it cannot fully specify the appropriate responses *a priori* (Gross, 1953; Hinings and Greenwood, 1988). Without a stable pattern of interaction among managers, an organization can easily sink into chaos every time an entrepreneurial manager engages in innovative activities because coordination among multiple parties becomes impossible in the newfound situation (Brown and Eisenhardt, 1998). For an

individual to violate the behavioral norms – the mutual expectation concerning how different parties ought to behave – espoused by the current pattern of interaction is to risk organizational sanctions (Pfeffer, 1981). Because of their intentional actions, situated actors, knowingly or unknowingly, reproduce and extend the existing properties of the structural context whenever they interact (Giddens, 1984). Unless there is an exogenous intervention, the existing interdependence among firm activities in a high performing company perpetuates across time and strategic domain ('D2' in Figure 2).

THE NEED FOR TOP-DOWN INTERVENTION

An Analysis of Four Scenarios

An extensive body of research has established the way in which emergent strategy is the consequence of resource allocation.¹¹ Having examined the emergent nature of strategic changes in the previous section, we now investigate the resource allocation process under four different situations: 1) a conventional bottom-up process; 2) a bottom-up process coupled with autonomous activities at the lower level; 3) a top-down allocation of resources; and 4) a top-down intervention in the form of a deep dive. By analyzing how a strategic initiative unfolds at the stage of project definition and project selection ('C1' and 'C2' in Figure 2) as well as its subsequent implementation that leads to firm activities ('D1' and 'D2' in Figure 2), we highlight how a deep dive help shift a firm's performance dimensions with a greater degree of certainty ('E' in Figure 2).

Why bottom-up innovation fails to result in a shift in performance dimensions. The organizational literature has long proved the importance of achieving an internal fit between

¹¹ From Resource Allocation to Strategy, (Joseph L. Bower and Clark Gilbert, Oxford University Press, 2007) provides a summary of this literature.

structure and strategy (Chandler, 1962; Learned, Christensen, Andrews, and Guth, 1965; Khandwalla, 1973; Miles and Snow, 1978; Drazin and Van de Ven, 1985). Assuming the presence of a strategic fit with its external environment (Lawrence and Lorsch, 1967; Pennings, 1987), an organization is driven to develop a structural context that reinforces its official strategy (Milgrom and Roberts, 1990; Nadler and Tushman, 1992; Siggelkow 2001). The structural context of a high performing firm therefore has a tendency to become more complex and aligned with its official strategy over time (Siggelkow, 2002). Even when top management subsequently initiates a strategic reorientation in which the organization experiences an episodic revolution (Miller and Friesen, 1984; Tushman and Romanelli, 1985), major changes in organizational structure, systems and rewards need to be implemented and legitimated before changes in business strategy can begin to emerge (Pettigrew, 1987). Thus, during the long periods of stability between reorientations of strategy, the current structural context strongly influences how a manager perceives business problems, by directing, delimiting, and coloring his/her focus and attention (Bower, 1970; Ocasio, 1997). The conventional bottom-up process of definition and selection will result in elaboration of firm activities that support the current strategy of the firm. Consequently, the existing interdependence among firm activities stays intact. Core activities of the firm remain unchanged and the current dimensions of performance persist.

Why entrepreneurial managers at the lower level may fail to push for a shift in performance dimensions. Research has shown that in response to shifts in technology and the market, mid-level general managers may engage in what Burgelman (1983 a) called an autonomous strategic behavior. This involves entrepreneurial activities that fall outside the current scope of the explicit strategy (Kanter, 1982; Mintzberg and McHugh, 1985). Big, resource-rich organizations usually possess enough slack to tolerate such experimentation at the

operational levels (Burgelman, 1983b). However, once a promising strategic initiative grows large and its resource requirement exceeds what individual supporters can provide at the local level, the initiative will then enter a highly political process of *strategic context determination* (Burgelman, 1983c and 1991). This is where entrepreneurial managers need to convince top management that the current strategy needs to be changed so as to accommodate the ongoing business development stemming from the new strategic initiative. In delineating concrete terms of the new business development that lies outside the current scope of the official strategy, managers who compete for corporate resources inevitably engage in a *framing contest* – an attempt to recast their proposals in ways that will resonate with a larger audience in the organization and mobilize actions in the projects' favor (Goffman, 1974; Kaplan, 2008). Entrepreneurial managers thus race to recast their project benefits along already-legitimated dimensions of performance (Adner and Levinthal, 2008).

Burgelman's (1991) discussion of Intel's venture into Reduced Instruction Set Computing (RISC), an initiative that competed for development resources with the official strategy of Complex Instruction Set Computing (CISC), provides an example of managers recasting project benefits along existing performance dimensions so that other parts of the organization could recognize them. After different project proposals filter up the managerial hierarchy, top management is left *ex-post* to ratify strategic initiatives that have already been made to conform with the legitimate dimensions of firm performance, even if these strategic initiatives would lead to business development in new fields. Since any project benefits residing on new dimensions were considered secondary when the initiative was still gathering momentum at the lower-level, new activities are treated as peripheral by the rest of the organization. The existing relationships among a firm's core activities dominate.

Again at Intel, the adherence of the production rule around its manufacturing engineering, *maximize-margin-per-wafer-start*, over both periods when the company was selling memory chips and later microprocessor, is a powerful example of how core activities of a firm can persist even after a complete shift in product-market strategy (Burgelman, 1994). But even more commonly observed, the internal selection environment within the firm simply grows to become so rigid that only those strategic initiatives that explicitly match with the firm's existing core activities would prevail (Burgelman, 2002; Leonard-Barton, 1992).

Why re-allocation of resources by top management fails to result in a shift in performance dimensions. Within the archetypal resource allocation process of a large firm, top management is too remote to observe capacity shortages in production or quality deficiencies in finished products that would propel them to initiate project proposals to resolve those operating issues. However, when compared to operating managers, top management does have access to a greater range of information, both internally and externally (Burt, 1992 and 1997) and is therefore more likely to observe changes in the external environment outside the firm's existing customers or activity sets. In addition, with advances in information and control systems that make possible flatter organizations nowadays, general managers in the middle are likely to discuss their business strategies with top management with higher frequency than in the past (Eisenhardt, 1989). Guided by market insights, top management sometimes bypasses the bottom-up process of resource allocation entirely and directly provides resources for new activities that target new dimensions of performance. Gilbert's (2005) study of newspaper organizations' response to the emergence of digital media documented aggressive top-down resource commitment made by leaders of industry incumbents to new technologies responding to their fear of potential competition from online news.

The problem with even radical top down interventions of this sort is that unless all of the related activities necessary for the new business are completely independent of the rest of the organization, these new activities will of necessity still interact with the old activity system.¹² This situation is most commonly encountered when a company pursues a product market opportunity that lies beyond the current capability of any single division (Burgelman and Doz, 2001; Burgelman and Grove, 2007; Kleinbaum and Tushman, 2007). Before the organizational boundary for the new strategic initiative can be clearly delineated, resources from existing divisions are recombined on a trial-and-error, ad-hoc basis to support the new activity set during the early stage of implementation (Eisenhardt and Martin, 2000; Winter, 2003).

However, when an operating manager who belongs to the old activity system is asked to carry out specific tasks for the sake of the new strategic initiative, he/she is still bounded by the existing structural context at the local level. To this operating manager, deviating from existing policies and standard procedures makes little sense from the local perspective. To begin, his/her structural position renders a very different attention structure (March and Olsen, 1976; Ocasio 1997), the idea may simply appear foolish. But even if the idea appears sensible, the risk and reward trade-off looks unattractive when he/she attempts to align current activities along those new performance dimensions. Further, in cases where the required adjustments fall outside the boundaries of the existing structural context, the operating manager will still seek a solution that appears to be the most appropriate and legitimate given the existing context. Inevitably, he/she will again fall back onto the existing pattern of interaction with which managers across functions are most familiar. Existing working norms and agreed priorities of the organization prevail. As a result, even when the old and the new operating divisions develop new linkages to share and

¹² In Gilbert's (2005) study, for example, sale of advertising for the online news operation was the responsibility of the same sales organization that handled print.

transfer resources, the interdependence within the old activity system at the level of organizational routines remains intact, an interdependence developed to optimize performance on previous dimensions. Therefore, forced resource allocation alone will only result in new activities that stay peripheral relative to the other existing core activities of the firm.

Moreover, resource allocation is not a one-time event but an iterative process (Noda and Bower, 1996). It is critical to generate early results that are assessed as successful in the sense that they meet the targets forecasted in the initial proposals. Subsequent resource allocation depends upon the way initial results are measured and they must generate enough impetus within the organization to secure further cooperation for the strategic initiative across the company in future moves. However, if a company implements its project under the makeshift combination of the old core and new activities, the business result is almost guaranteed to be suboptimal on those new dimensions that the top management has originally envisioned (Levinthal, 1997; Adner and Levinthal, 2008). In the subsequent process of resource allocation, because of the unfavorable result, the initiative will suffer de-escalation in commitment during the next rounds of review. New activities will therefore be denied ongoing resource funding. Alternatively, lower-level managers will have to scramble to retrofit new activities as peripheral support for core activities of the firm. Again, previous dimensions of firm performance persist.

Top-down intervention in the form of a deep dive. The image of top management presented in the previous paragraphs is of a management team that is much removed from the day-to-day operational realities of the organization. A chief executive works primarily as an organizational architect, designing and building a structural context that will induce appropriate organized actions across all ranks within the company. But once that context has been put in place, the operation almost takes on a life of its own. The activities of the organization persist as

long as they remain a successful approach to the chosen strategic domain. Without some yet-to-be described intervention, the workings of the formal and informal organization render the possibilities of a shift in performance trajectory (as summarized in Figure 2) exceedingly complex and indirect, and filled with numerous possibilities for failures.

In contrast, in the opening example of Apple, we saw Steve Jobs demand specific product features and project targets when the company was designing its music-playing devices. As the initiative continued to unfold, he stayed close to the project team, and personally persuaded major record labels to supply Apple with music content online. We call this kind of top-down intervention – when a top manager of an established firm is closely involved in the definition and selection of a strategic initiative and maintains a strong presence throughout its implementation – a *deep dive*. A deep dive represents an alternative approach to managing that enables top leaders to overcome organizational barriers and to shift an established firm’s performance dimensions with a greater degree of certainty. This idea is illustrated in the process model depicted in Figure 3.

Insert Figure 3 about here

In concept, a deep dive overrides whatever obstacles are imposed by particular aspects of the structural context and informal organization that might delay or distort progress or learning along the new performance dimensions. The argument involves several steps. Because information flows inside a firm are widely diffused, an original business idea does not need to be conceived at the corporate level. Yet, only top management is in the position to circumvent entirely the existing structural context and to define and execute a radical strategic initiative, an initiative that explicitly targets new performance dimensions, and, at the same time, implies

significant resource commitments (step '1' in the process model depicted in Figure 3). When a strategic initiative of this nature is initiated by top management, it bypasses the bottom-up process of resource allocation by expressing a corporate performance aspiration in terms of concrete technical specifics. Since the strategic initiative is simultaneously championed, sponsored, and committed at the highest level, this selection process bypasses or ignores operating and mid-level managers, managers who are perennially conditioned to reframe any non-conforming aspects of a major initiative back into previously-legitimated dimensions. As a result, the original definition of the strategic initiative is protected (step '2' in Figure 3). An imposed performance aspiration is officially expressed in the project's substantive specificities.

This kind of project definition forces the responsible project team to forgo previous problem-solving routines that would prove it impossible or unattractive to achieve the aspired level of performance along the new dimensions. The discrepancy between the imposed level of aspiration and the current level of achievement, as a new performance gap, creates large enough dissatisfaction that induces the project team to engage in distant search activities. Along with the additional resources that have already been made available by top management, the new performance gap frees the project team from past performance history of the firm when it looks for technical solutions as well as other non-financial resources outside the organization (c.f., Cyert and March, 1963; Levinthal and March, 1981).

The strong presence of a top manager with high positional power insures that the new activities are no longer driven to the periphery of the operating organization (step '3' in Figure 3). Lower-level managers who belong to other parts of the organization are now willing to circumvent local policies and forgo existing routines in order to align their activities with the

strategic initiative. In other words, the current structural context of the company is bypassed over the stages of project definition, project selection, and project implementation.

But more importantly, the continuous impetus provided by the top manager in fulfilling the original project definition supersedes the existing patterns of interaction among managers within the firm. Even when an operating manager outside the project team encounters a coordination problem that occurs beyond the boundaries of what the current structural context is designed to control (i.e., within a grey area), his/her priority is now switched towards the strategic initiative. Because the strategic initiative provides legitimacy for potential new arrangements, lower-level managers cease to automatically re-enact the previous pattern of interaction and falling back onto the previous working norms immediately. In their attempt to resolve the coordination problem as well as to meet all the technical requirements stipulated by the strategic initiative, managers across functions are forced to first make sense of the newfound situation and to reduce their reliance on any automatic processing – a suppression behavioral norms that stem from the existing informal organization – so as to develop a novel response to that situation. In effect, the organization engages in ad-hoc problem-solving across multiple levels all the way into the phase of implementation and stops exercising existing repertoires of performance programs that restrict or simplify information-processing. A forward-looking logic of consequence replaces the experience-based logic of appropriateness (March and Olsen, 1989; Gavetti and Levinthal, 2000). As individual actors are able to experience new ways of interacting, it creates the opportunity to dislodge the existing communication pattern, power distribution, and social status among subunits (step ‘4’ in Figure 3). A new pattern of interaction among managers thus begins to emerge.

Compared to the previous scenario where top management is only responsible for reallocating resources, a deep dive provides a way to insure that organized actions across functions and levels are aligned with the strategic initiative. Therefore, the company stands a better chance to achieve performance success along new dimensions that top management has originally envisioned (step ‘5’ in Figure 3). During the next rounds of review, the risk of strategic de-escalation due to distorted implementation is greatly mitigated. In short, a deep dive minimizes unintended distortion at implementation by gearing the collective actions of the firm towards the new performance dimensions as much as possible. Following up on early successes, top management can then seize the opportunity to remap the current structural context to reflect new behaviors that are required to sustain the momentum. By institutionalizing these behavioral changes through formal administrative mechanisms, top managers are again released from the burden of continuous involvement in operational details.¹³ A deep dive can therefore be viewed as a unique change mechanism by which top management intervenes at the project level but produces system-wide changes at the firm level.

AN EMPIRICAL EXAMPLE

We illustrate the power of a deep dive by considering what happened when the management team at ASUSTek sought to develop a new set of core activities that would enable the company to compete along new dimensions of performance. ASUSTek Computer Inc. was the world’s largest manufacturer of PC motherboards. A Fortune Global 500 company, with USD 17.2 billion in revenue by 2007, its second largest business, after motherboards, was

¹³ Note that a deep dive allows the possibility of inducing changes in the informal organization of the firm before reinforcing the desired behaviors through the elements of formal organization – a reverse order of changes that underpins the majority literature on organizational design.

notebook computers. In terms of notebook shipment volume, ASUSTek ranked fifth globally, surpassing Lenovo, Apple and Sony.

Taiwan's Computing Industry

Historically, the notebook industry had been dominated by two distinct business strategies: 1) contract manufacturers that fulfill OEM orders made by international IT companies from the West, and 2) own-brand manufacturers that build and market their products around the world. Although these two types of companies were essentially competing within the same product space, they were easily distinguished by how firm activities were organized. For example, a contract manufacturer competed through the provision of top-of-the-line client services. It raced to bring finished products to consumer markets quickly by fulfilling product concepts developed by their client companies. Tight quality controls, rigorous manufacturing disciplines, fast and standardized assembly processes, and short production cycle times were the typical attributes of firm activities at a contract manufacturer. These specific emphases were driven and controlled by extensive elements embedded in the structural context of the organization. The design, development, and production processes were often highly codified, divided by standardized deliverables and review gates to pass before proceeding to the next phase in the product development cycles. These rigorous review processes served as a formal mechanism for both collaboration and information sharing among subunits inside the firm. In addition, working norms that centered around manufacturing and engineering functions gave organizational priorities to manufacturing disciplines, which in turn enabled a contract manufacturer to maximize the utilization of production capacities as a whole and to minimize surprises in product delivery – both abilities critical to the long-term success of the firm.

In contrast to a contract manufacturer that relied on product roadmaps provided by its customers, a major focus of an own-brand manufacturer was the crafting of a product strategy balances market demands and technology trends. Marketing a line of branded products internationally required the appreciation of the nuances of local markets around the world which in turn required the development of marketing, distribution, and support capabilities in each market. In addition, to effectively perform upstream activities required for product strategy and conceptual design, downstream functions such as sales and distribution played a critical role in gathering market information on potential product concepts, prevailing quality standards, and optimal price points.

In short, because contract manufacturers and own-brand manufacturers were targeting two very different sets of customers, firm activities were geared towards delivering different two types of value propositions, associated with two competitive arenas. Figure 4 summarizes these differences and highlights how the performance dimensions differ across these two types of firms. The lists show dramatically that, an organizational form is essentially the “physical” embodiment of the actual strategy that a firm is currently pursuing, focusing the firm so that it can optimize its activities along chosen dimensions of performance. An obviously visible consequence suggested by these two lists is that it will be very difficult for a firm to shift its performance trajectory along new dimensions.

Insert Figure 4 about here

A changing environment. With the increasingly tight link between Intel and Microsoft Windows, the standardization of hardware and software drove the personal computing industry to become strongly price sensitive at comparable levels of quality. Further, several mega-mergers

(e.g., HP-Compaq, Acer-Gateway-eMachines, Lenovo-IBM) substantially increased the industry concentration among a few international IT companies. They were then able to exercise greater buyer power when outsourcing physical product development and manufacturing to Taiwan for cost advantages. As a result, valued-added activities continued to shift away from product assembly to sales and distribution, as well as brand management. The constant decline in average unit price of a PC forced many Taiwanese contract manufacturers to struggle to maintain profit margins even above five percent. Figure 5 illustrates the erosion of margins over time. The chronic decline in profitability of the industry became so severe that the Taiwanese government launched a USD 50 million program in 2005, designed to cultivate an environment that was conducive to branding.¹⁴ Brand building was seen as part of the social responsibility for the country.¹⁵ Industry veterans also likened the PC industry to the automobile industry where “style trumped durability.”¹⁶

Insert Figure 5 about here

A Deep Dive at ASUSTek

By the early 2000s, before the deep dive occurred, ASUSTek had successfully built a large contract manufacturing operation in serving international IT companies. Its major clients included HP, Dell, Toshiba and Sony. Electronic and mechanical engineers at ASUSTek took pride in solving technical problems, and they were deeply familiar with leading-edge manufacturing disciplines. Elaborate control policies ensured that every computer made by the company was of the highest quality. Just like any other successful contract manufacturers, ASUSTek excelled in the realms of manufacturing compliance, production efficiency, and

¹⁴ News Release by the Taiwan External Trade Development Council on November 20, 2007.

¹⁵ Taipei Times, October 06, 2008, *Acer head stresses branding at Taipei business seminar*.

¹⁶ Commonwealth Magazine, August 15, 2003, pp. 180-183.

technological development, but were slow to grasp changes in consumer tastes, social values, and market trends. At times, products that were exclusively designed and marketed by ASUSTek appeared to lack a sense for the colors, lines, and curves that would appeal to consumers.

The first notebook marketed under the ASUS brand was black, bulky, weighed a hefty 8.6 pounds, and was costly. Only 2,000 units were sold. Disappointed by the result, the top management set up an internal industrial design team in 1998. Along with consistent investments over the years, the department garnered numerous international awards. Co-founder and vice chairman T H Tung often told CEO Jonney Shih that “no limit, no trade off” should be made in the hiring decision for the best designers. Although ASUSTek management was clear about its desire to translate design award winners into consumer “hot” products, it was frustrated by its lack of progress. Rather than being integrated into the product development process, the industrial design team was often treated as a peripheral function in the company. The vision of marketing and distributing notebooks that would resemble fashion accessories under the ASUS brand had not been realized.

In 2005, Tung initiated a corporate project using genuine leather as the cover material for the new notebook model (step ‘1’ in Figure 3).¹⁷ A thermal insulator, leather created an engineering challenge for heat dispersion and processor stability. As every piece of leather was handpicked and embossed onto the metal body, the production process was protracted and very costly. Championed by Tung himself, the project was handed over to the notebook business unit only after the completion of prototyping (step ‘2’ in Figure 3). According to a specialist at the industrial design department:

Everyone at the company felt the urgency to differentiate ourselves through better designs. The notebook business unit at the time was looking at color-anodized aluminum casing as the next big thing. But T H was

¹⁷ In this particular case, instead of CEO Shih, it was vice chairman Tung who undertook the deep dive.

so convinced we needed something even bigger and he picked leather. We were shocked! For sure, the production approach was uncertain but the market potential was also uncertain. Well, we knew nothing about leather and so we just had to go out to find handbag makers and learned!

Another manager at the corporate planning department also observed:

Honestly speaking, this leather casing concept is not something everyone can do. Because most junior PMs [product managers] only listen to Sales, and they influenced so much in the process, we would end up putting in features that are already available in the market.

It took ASUSTek over one year to perfect the leather bonding procedure before mass production was feasible. Rigorous requirements related to humidity, sweat, cosmetics, and oil resistance pushed the industrial design team to interact with the other units of the company at an unprecedented level (step ‘3’ in Figure 3). In this project, Tung not only secured the necessary resources allocated to the department, but he also shaped the norms of product development across the whole company by putting the industrial design team in charge early on. Since the new design radically departed from those based on aluminum, steel, and plastic, the project resulted in numerous adjustments of existing policies among various departments. Again, according to the specialist at the industrial design department:

After people [outside the industrial design department] saw the prototype, they realized T H was actually serious and this leather project had to get done. Of course, we designers needed to keep pushing and I got involved into so many things that weren’t really my job... I used to work mostly with mechanical engineers but this project really got those quality people to change a lot. They built a completely new matrix for product evaluation because leather was so different from all the other materials that we had worked before... The hardest part was the actual manufacturing. So many parties were involved and so many unforeseen problems popped up.

Achieving the required new relationship among design innovation, engineering perfection, and manufacturing discipline placed tremendous pressure on the top management team. Even CEO Shih confessed that the balancing acts “tired him out.” Still, spearheaded by

Tung, new communication patterns and procedural norms across divisions eventually emerge (step '4' in Figure 3). In 2006, the company successfully released a notebook computer with a light aluminum casing and leather inlay aimed at high-end customers.

Case study debrief. ASUSTek is an example of a company seeking to build a set of new core activities in response to the changing environment. Sensing that its core technologies were gradually maturing, ASUSTek systematically invested in its industrial design team in order to develop new capabilities. Concept models were built and the company accumulated industry awards. However, the transformation from an engineering-driven company to a consumer-oriented firm had not yet been realized. The management team experienced difficulties in breaking away from the performance trajectory that the company had always followed.

While industrial designers at ASUSTek were involved in product development for all notebooks, they did not have authority over the “look and feel” of the final products. The company continued to compete on engineering prowess and manufacturing reliability. New activities centered on industrial design had not yet *thickened* and become part of core activities of the firm (Siggelkow, 2002). The choice of leather as an embossing material represented an extreme aspiration level along new performance dimensions. Without direct backing from one of the corporate founders, the project could not have been defined in the first place. Once initiated, the imposed aspiration level forced industrial designers to interact with colleagues that would normally ignore them. The continuous impetus to overcome technical barriers enabled new routines to emerge inside the company. New behaviors throughout the entire organization were induced when Tung played the “project manager.” The positional power of Tung forced lower level managers across functions (e.g., quality managers, manufacturing and mechanical engineers) to forego their local perspectives for this specific initiative. A new working norm

around the industrial design team coalesced. When ASUSTek released bamboo-ensconced notebooks a year later, Tung had already assumed a new role. The industrial design team this time was able to initiate this radical design based on an overall corporate theme of eco-computing. During the same year, ASUSTek also signed a deal with Italian sports car maker Lamborghini SpA to design another special line of notebooks. Through repetition, activities residing within the industrial design team were augmented; the team's award-winning designs were finally assimilated into the process of product development. Through top-down interventions in the form of a deep dive, a new set of core activities was developed, enabling the company to compete along new performance dimensions (step '5' in Figure 3).

Arguably, no one can predict with certainty the market acceptance or the eventual business result of any particular strategic initiative. Even in the case of ASUSTek, the leather casing project was a bold experimentation with a particular industrial design by the company. However, since it takes years to develop various administrative mechanisms that reinforce the current strategy of the firm, top management does not easily uproot the current structural context in order to accommodate a single strategic initiative that may deliver business performance on alternative dimensions. And precisely for this reason, if not for the extensive top-down interventions that were made during the leather casing project, any initiative that required putting the activities of industrial designers at the center of ASUSTek stood a small chance of success. Moreover, even if some heroic lower level executive managed to produce and market the product, the core activities of the company would not have been rearranged. Without a deep dive, the strategic intent of transforming ASUSTek from an engineering-driven manufacturer to a consumer-focused organization might not have been realized. In maintaining its strong presence during project implementation, top management at ASUSTek provided more than targeted

structural linkages among highly differentiated units (c.f., Tushman, Smith, Wood, Westerman, and O'Reilly, 2007). Not only were new linkages to share and transfer resources developed, but the interdependence within the system of old activities was fundamentally readjusted at the operating level.

DISCUSSION AND IMPLICATIONS

Previous research has repeatedly demonstrated the inability of established firms to make necessary and obvious changes (Henderson and Clark, 1990; Tripsas and Gavetti, 2000; Gilbert, 2005). Perhaps a more intriguing aspect is that failures often occur even when top management is aware of the need for those changes (Johnson, 1988). Structural interdependencies (Thompson, 1967), divergent politics (Mintzberg, 1983), the threat of destroying existing competencies (Tushman and Anderson, 1986), and satisfaction with the status quo, all make it hard for a top manager to reconcile major changes in core activities of the firm. The literature that confronts these challenges without resorting to an abrupt revolution as a managerial solution generally recommends top management to develop different types of organizational architecture. By structurally separating the organization from its pre-existing structures in a varying degree – ranging from autonomous to integrated to hybrid or switching designs – the firm can then accommodate the specific nature of different strategic initiatives (e.g., Christensen and Bower, 1996; Cooper and Smith 1992; Wheelwright and Clark, 1992; Tushman and O'Reilly, 1996; Siggelkow and Levinthal 2003; Westerman, McFarlan, and Iansiti, 2006). We do not underestimate the important role of top management in developing the appropriate structural arrangements that foster the process of ongoing changes. In fact, in the opening example of Apple, a year after the introduction of the first iPod, Steve Jobs created a separate iPod division

and asked Jon Rubinstein to give up his key position as head of hardware to take over masterminding the iPod and music operations.¹⁸ Obviously, top management needs to timely remap the structural context after early project implementation so that an explicit recognition of organizational successes by managers across all levels promotes the continuous trajectory of the new core activities.

However, the attention to organizational structures, as the key antecedent to changes in firm activities, downplays the types of influence that the top management of a company can exercise at different moments in time. Rosenbloom (2000), who documents the metamorphosis of National Cash Register Company (NCR) from a mechanical to an electronic cash register, illustrates the critical role of the company's new chief executive and top management team in driving the new configuration of resources and transformation of routines. Without active interventions from the top, the company arguably might have ceased to exist. When the structural context of the firm and the pattern of interaction among managers interfere with the required change, top management must actively intervene in the strategy process in order to prevent an eventual crisis.

The stable pattern of interaction identified in both Figure 2 and 3 does not only exist inside companies that compete in slow-moving industries, but has also been observed in large firms that operate in turbulent environments (Eisenhardt and Martin 2000). Researchers argue that successful companies in the latter category must possess simple rules or robust strategic processes to seize effectively the fleeting opportunities in the marketplace (Eisenhardt and Sull, 2001; Bingham, Eisenhardt and Furr, 2007). Instead of striving for an attractive position by developing a tightly integrated, highly elaborate system of activities, an established company

¹⁸ Young, J. S., and Simon, W. L. (2005). *Icon: Steve Jobs, the greatest second act in the history of business*. Hoboken, NJ: Wiley. (pp. 285)

operating in a dynamic environment needs to co-evolve with the changing markets by routinely reconfiguring its organizational resources (Eisenhardt and Brown, 1999; Galunic and Eisenhardt, 2001; Rindova and Kotha, 2001). The key challenge for top management is to maintain the optimal amount of structure that lies at the edge of chaos: flexible enough for spontaneous and improvisational actions such that managers can effectively seize attractive and yet unexpected opportunities; structured enough that managers still have the capacity to adapt to opportunities without sinking into chaos (Davis, Eisenhardt and Bingham, 2009). But to attain this dissipative equilibrium of structure under the unpredictable environment, it is critical to maintain clear working norms and organizational priorities (Brown and Eisenhardt, 1998). This suggests that even in a less structured organization that operates within a dynamic environment, informal rules that govern how individuals should coordinate with each other are still commonplace, resulting in a stable pattern of interaction among managers across time. Therefore, when a firm seeks to shift its performance trajectory into new dimensions and requires new ways of behaving that contradict the existing pattern of interaction, the functional role of a deep dive remains.

Other research suggests that CEO activism is especially important in a highly turbulent environment where a firm must commit “bet-the-company”-sized resources in a timely fashion in order to secure first-mover advantages (Eisenmann and Bower, 2000). In this circumstance, a CEO circumvents the bottom-up process that yields incremental investment proposals, in order to absorb risk that individual mid-level general managers will shun. Because the CEO takes responsibility for both initiating and approving major investment proposals, a rapid decision-making process enables the company to move much more quickly.

The case we are examining, however, need not involve big stakes. It is a move to a new strategic domain that requires fundamentally new arrangements of core activities that poses the

problem described here.¹⁹ The idea that top management directly defines technical specifics during the resource allocation process can be viewed as a deliberate “stretch” imposed by the management team, pushing the company to engage in certain experiential learning that it otherwise would not (Hamel and Prahalad 1993; Itami and Roehl, 1991). By expressing its long-term vision in terms of the substantive content of a strategic initiative, top management has the opportunity to create an intentional misfit between the performance aspiration and the established organizational structure. The continuous involvement of a top manager during project implementation ensures the highest organizational priority in making timely adjustments, leading to rapid learning by the organization. Because the existing structural context of the firm is only bypassed, but not destroyed, a deep dive allows top management to experiment with a new strategy before it decides to commit further to any irrevocable choices.

Conclusions

The main contribution of this paper is to conceptualize a pattern of high-impact managerial behavior that, curiously, has been under-explored in the previous literature. By delineating a special class of changes that an established firm will inevitably resist, we hypothesize that specific interventions with the personal involvement of a very high-level executive is an effective way for top management to drive a shift of performance trajectory of the firm to new dimensions. We discover that when the bottom-up process fails, forced allocation of resource by the top management for new activities alone will also not be sufficient. Without active interventions in phases of project definition and selection, new activities will inevitably be driven to the periphery of the organization upon project implementation. Since resource

¹⁹ In fact, the strategic risk in this case lies in organizational inaction – a typical result of relying only on the bottom-up process.

allocation is an iterative process, a strategic initiative that fails to demonstrate early successes will suffer de-escalation in commitment. A deep dive thus significantly differs from the concept of top-down strategy formulation and resource allocation. It is an alternative change mechanism that top management can deploy, with a higher degree of certainty, in realizing its long-term strategic vision for the firm – a central task of every top manager.

Future Research Directions

More interesting, perhaps, is the question of how much technical knowledge a top manager must possess before he/she can carry out a deep dive successfully. Can a new CEO from outside the firm ever engage in this level of intervention? What happens if top management provides the wrong content? Will this lead the firm to prematurely abandon the strategic initiative, to irrationally escalate its organizational commitment, or to pragmatically redefine its content during the next rounds of review? Further research is required to examine more systematically the contingent conditions around deep dives. One potential research design could involve qualitative, longitudinal, case-based analysis of the impacts of deep dives on the strategy process across multiple firms within a single industry. Is there a dark side to a deep dive? Can they be overdone? Is the need to shift performance dimensions the only situation where a deep dive is required? What can cause a top executive to mistaken unproductive meddling as a functional deep dive? These are some of the questions that go beyond a theory paper can answer.

Another related area for future research is the development of a typology of structural contexts and patterns of interaction among large organizations within the same industry. More quantitative methodologies, such as employee survey and organizational network analysis, allow researchers to compare the variations in behavioral norms across corresponding subunits that can

be commonly found in different companies. Such empirical findings could enrich our understanding about the role of a deep dive in relation to organizational change in more concrete terms.

This paper has shown that a focus on actions of top management, such as the deep dive, warrants further systematic research. It is our hope that the paper will open new paths of inquiry into strategic change in complex organizations.

Figure 1 A Shift in Performance Trajectory

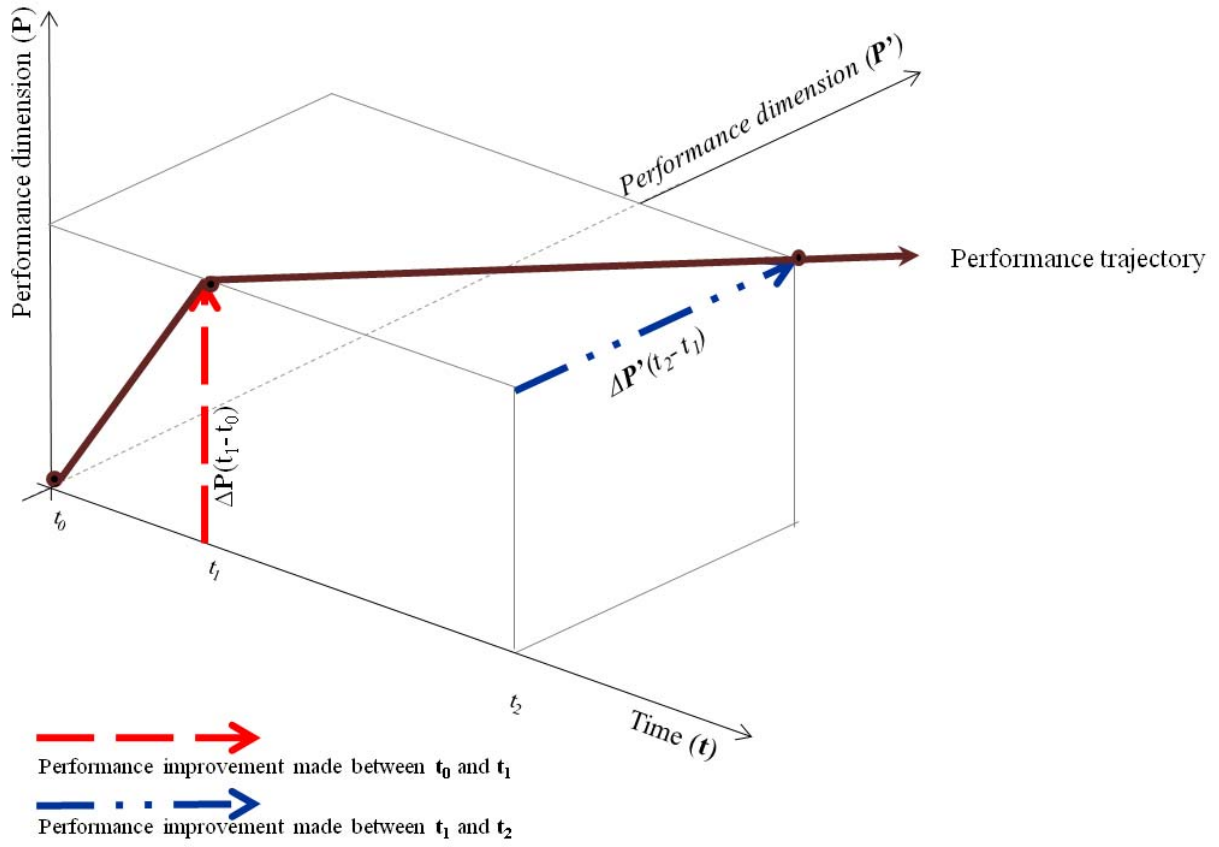


Figure 2 An Emergent Nature of Strategic Evolution

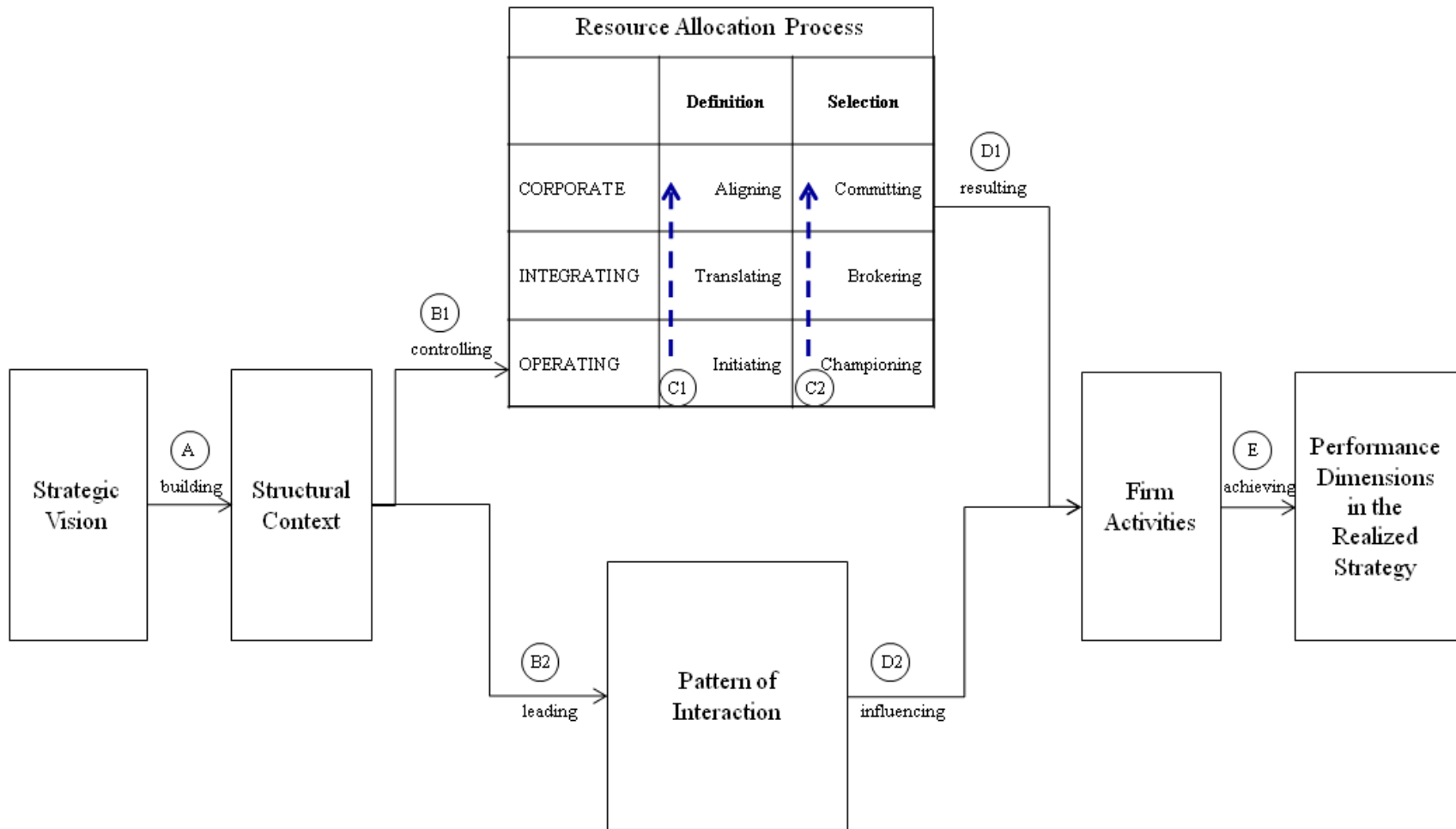


Figure 3 A Deep Dive as an Alternative Change Mechanism

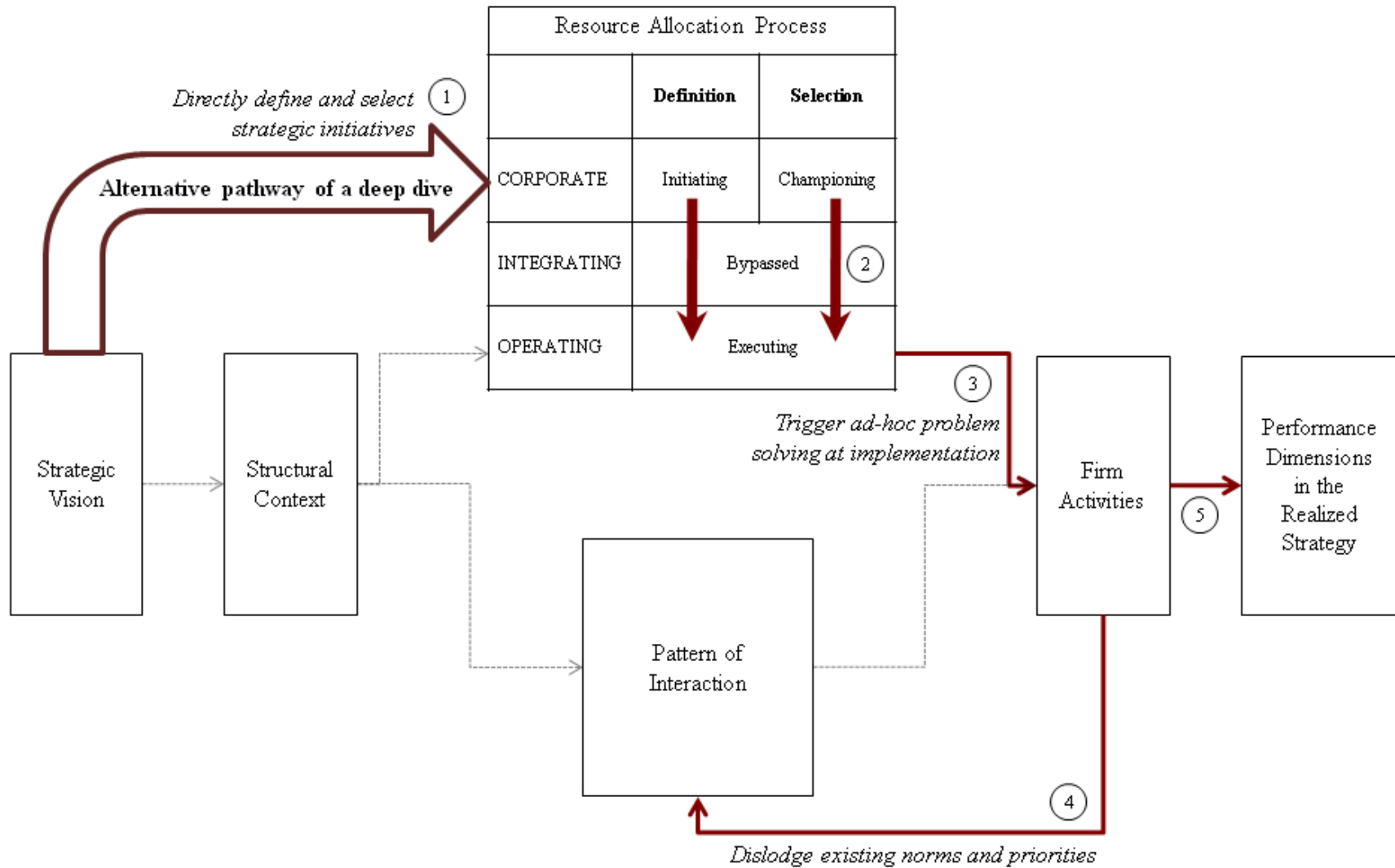
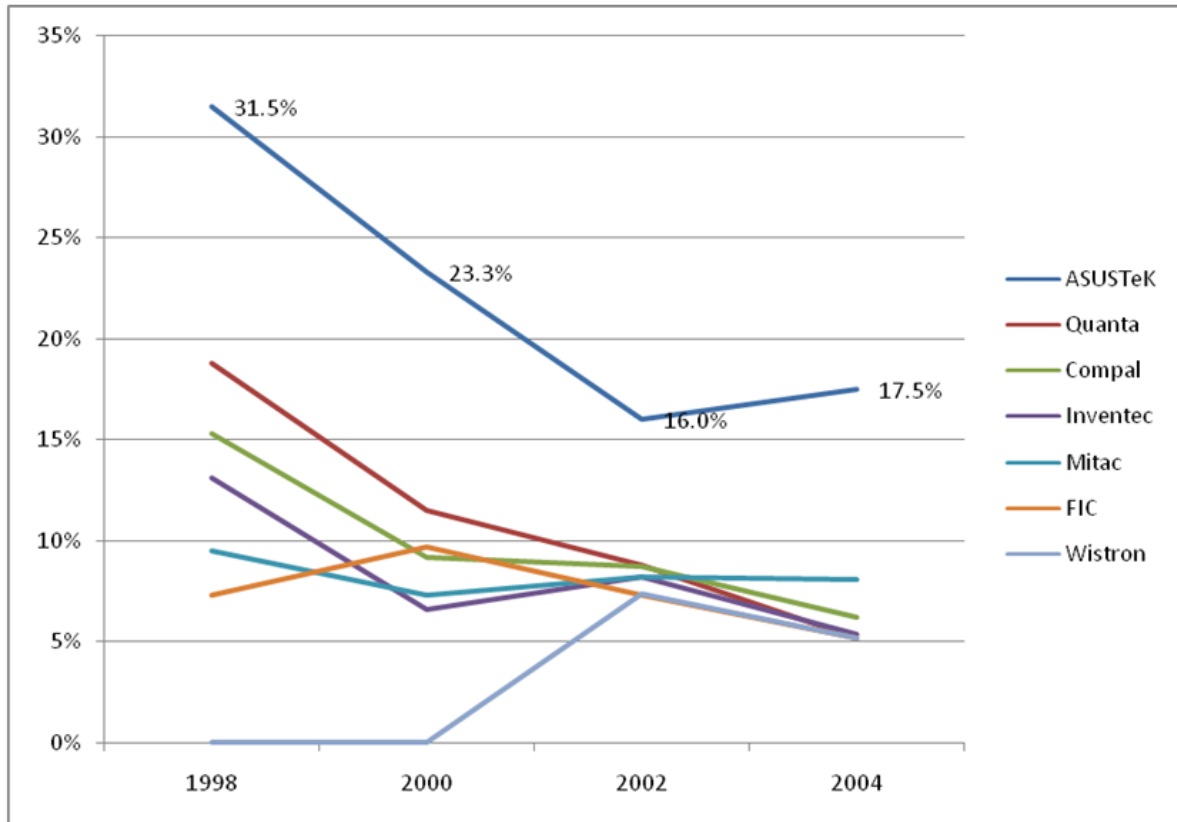


Figure 4 Organizational Forms in the Taiwan’s Personal Computing Industry

			Distinct Organizational Forms	
			Own Brand Manufacturer	Contract Manufacturer
1) Firm Activities	Research and Development	<i>Product Conceptualization</i>	Yes	No
		<i>Product Development</i>	Yes	Maybe
	Manufacturing	<i>Engineering Design</i>	Maybe	Yes
		<i>Assembly and Production</i>	Maybe	Yes
	Marketing	<i>Global Logistics</i>	Maybe	Maybe
		<i>Branding and Retail Distribution</i>	Yes	No
2) Structural Context			Extensive lateral relationships that cut cross functional and geographic boundaries	Extensive procedural controls to achieve predictability and consistency in firm outputs
3) Pattern of Interaction among Managers			To acquire brand share through superior market understanding: product development and sales dominates organizational priorities.	To attract volume orders from international IT companies through high-quality design capabilities, engineering and production excellence, meticulous executions, economies of scale, and low wages: manufacture engineering dominates organizational priorities.
4) Performance Dimensions	Target Customers		Mass-market consumers	International IT companies
	Bases of Competition		Brand Loyalty	Production cost, quality and speed-to-market
	Value Propositions		To provide complete product solutions to the general market	To help clients realize cost reduction in the areas of manufacturing, design, and customer service by taking on operational responsibilities

Figure 5 Gross Margins (Percentage) for Taiwanese PC Manufacturers



Source: Taiwan Stock Exchange (TSE)

Note: Wistron's data is only available after 2001, when the company was spun off from Acer.

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