

Three Dimensions of Innovation

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[Abstract] Every business has some forms of competitive advantage, such as size, location, product mix, technology, customer relationships, or many others. However, no matter what advantages a business has today, sooner or later changes in the marketplace cause every competitive advantage to degrade. When this happens, yesterday's advantage may mean nothing. In the face of this problem, there is one critical response: innovation. Innovation enables existing advantages to be maintained and new advantages to be created. In fact, innovation is the only source of sustainable competitive advantage because only through innovation do companies adapt. So, you must ask yourself, How can you make your company an innovator?

When you think about innovation, you must first distinguish between two types: continuous and discontinuous. Both are important, but they are managed differently and have fundamentally different objectives. Continuous innovations enable you to keep up with your competitors; successful discontinuous innovations put you into the lead.

Managing R&D for continuous *and* discontinuous innovation is a difficult process, and few companies do it well. Marketable innovations are tremendously elusive. As it turns out, however, there is a right place to look for innovation, but it's a place in which most people don't look. That unique place, that hidden place, that special place, is in front of you each and every day. It is your customers. Your customers know how they want your products and services to be better, and you need to ask them. Whether it is through surveys, face-to-face discussions or just walking through your store and talking to customers, they will probably be able to tell you a lot that you don't already know.

To understand the scope for innovation, we put together a table of 32 possible innovation targets that the R&D process can focus on. However, even beyond these 32 targets of continuous and discontinuous innovation, there is also a third innovation dimension, one that we are now beginning to understand. While the 32 innovation targets stand separately, they also, fundamentally, distort your view because by looking at the parts, you cannot necessarily get an understanding of the whole. What if you could look at the problem of innovation as whole, as one thing? What would you see? If you are like most people, what you would see are systems, systems that we call "the economy" and "the market" and "the company," systems in which companies and customers and competitors are all actors, working to optimize their own unique positions. Innovating at the level of this system is called "business model innovation," and it is the leading edge of innovation today.

Business model innovation is the most powerful of the three types of innovation. While continuous and discontinuous innovations in products and services are important and necessary, the companies that innovate in the structure of their businesses, particularly in how they define their relationships with customers, become the leaders. Business model innovators look at the market and see something different than others see -- they see possibilities that others have overlooked, and they transform those possibilities into competitive advantages, and profits. Properly managed and properly targeted, innovation can lead directly to the bottom line.

[keywords] Innovation; three dimension; innovation targets; change; R&D

Introduction

If your company competes in the market and you wish to remain in business, you have no choice but to change as your competitors make improvements in their own products and services. This is innovation, and innovation is now essential to survival. However, far better than adapting to changes introduced by others is to be the source of these changes. This is the real promise of innovation: the promise of market leadership, increased profitability, and sustainable competitive advantage. Consider, for example, the auto

industry. Fifty years ago, the Japanese manufacturers lagged far behind all other manufacturers in quality, but they knew that quality was essential, and so they focused on improving it. Within twenty years, they succeeded in making high-quality small cars. When the Oil Shock hit in 1973, the American market discovered innovative Japanese cars, and their market share in the US has grown steadily ever since. Japanese manufacturers now account for 37% of sales in the US market, and they have built manufacturing plants throughout the world. Japanese innovation in the car industry has paid off.

Innovate for Competitive Advantage

Today, local markets everywhere are becoming more and more connected to the larger outside world, and, as a result, they are also more and more subjected to outside competitive influences. Farmers throughout Latin America send their produce around the world; computer and software manufacturers from all continents compete side by side on every continent; banking knows no borders; and giant retail companies from the US (Wal-Mart) and Paris (Auchan and Carrefour) now open stores in Mexico City, Buenos Aires, Bangkok, and anywhere else they think the market is receptive.

In the face of growing global competition, every company, no matter what size, scale, or scope, seeks to differentiate itself in some way to create a competitive advantage that keeps customers coming back. There are many different kinds of competitive advantage. One of the best is size because with size comes almost unlimited access to capital. A big company like Exxon, Pemex (the state oil company of Mexico) or Saudi Aramco can do things that a small company simply cannot do.

If your company is in the retail business, you know that your location may be your most important competitive advantage, or perhaps your only one. A distribution network can provide an advantage, as it has for Wal-Mart. Technology may be critically important. Of course, close relationships with your customers can make the key difference. No matter what your competitive advantage is today, sooner or later changes in the marketplace cause every form of competitive advantage to degrade. When change comes, yesterday's advantage may mean nothing. Even oil, driver of the 20th century global economy, will go out of favor sooner or later, which is why all of the big oil companies are investing big R&D dollars in alternative fuels.

In the face of this problem, there is one critical response: innovation. Innovation enables existing advantages to be maintained and new advantages to be created. In fact, innovation is the only source of sustainable competitive advantage because only through innovation can companies from London to Los Angeles continually adapt to changes that may have originated in New York, Tokyo, or Rio. So, you must ask yourself how you can make your company an innovator. The word "innovation" means different things to different people, and so it's important to agree on a definition before you go off and ask your staff to innovate for the future of your company.

Defining Innovation

For some, innovation means making today's products and services a little bit better. This is often referred to as continuous or incremental innovation. Most innovation activities in most companies are of this type, and for good reason -- incremental innovations enable you to match the progress made by your competitors and sustain your position in the market. They may even enable you to improve your share by a small amount. Examples of incremental innovation: Reducing the cost of a product by 1%; reducing the time it takes to process necessary paperwork; getting rid of unnecessary paperwork entirely; or figuring out how to fill a customer's order a few minutes faster.

Every day presents you with numerous opportunities to make these kinds of improvements. All that is required is that people pay attention to what they are doing and to what customers are telling them and think about how they can work more effectively. In many organizations, however, the prevailing mindset is not oriented towards innovation. Unfortunately, innovation remains the exception simply because most organizations are structured to reward people for occupying their post rather than thinking creatively about how to improve it. Change, innovation, and improvements are often threatening to middle management, which strives only to maintain the status quo. If this is the mindset of your company, you

must change it. If this is the mindset of your competitor, make the most of it! There is another kind of innovation -- innovation that seeks to make products and services dramatically different and better, to establish new standards. This is often referred to as rupture, breakthrough, or discontinuous innovation.

Breakthrough innovations rarely emerge in the course of day-to-day work. Finding them takes a special effort, but the rewards of doing so can be significant, for the companies that redefine the market gain a significant advantage. Historically, breakthrough innovations have come from two sources: entrepreneurs, and large-scale research and development. Entrepreneurs are those who see the world differently. They tend to see opportunities that others do not see. It's not that they're necessarily trying to see differently, they just seem to do so naturally. Sometimes, their ideas can lead to significant changes in the market, while others are merely incremental changes. [See the sidebar for more about entrepreneurs.]

Large-scale research and development labs maintain a dual role in most companies. They, too, must focus on incremental R&D simply to keep a company's products and services at par with the competition. Most labs also maintain some effort at creating breakthroughs of some kind. For the most part, however, R&D researchers are no better at breakthrough R&D than entrepreneurs. In fact, the entrepreneurs may be better. One recent study showed that venture capital investments earned a better return than industrial R&D labs in the 1990s.

In many companies, the inability to create breakthroughs has resulted in the problem getting turned around the other way. Instead of looking at R&D as a creative opportunity to make innovation, it becomes a defensive struggle to keep the competition from getting too far ahead. Discouraging. Still, for any entrepreneur or company that comes up with a real breakthrough and makes it through the many obstacles to market, the rewards can be significant. So, one naturally asks oneself, why is it so difficult? In part, it's difficult because success from breakthrough innovation requires a different way of thinking, and old thinking habits are astonishingly difficult to change. In part, it's difficult because most people happen to be looking in the wrong place.

Where to Look for Innovation

As it turns out, there is a right place to look, but it's a place that most people don't. In fact, you can look for incremental and breakthrough innovation in the same place. That unique place, that hidden place, that special place, is in front of you each and every day. It is your customers. Your customers know how they want your products and services to be better, and you need to ask them. Whether it is through surveys, face-to-face discussions, or just walking through your store and talking to customers, they may be able to tell you a lot that you don't already know. Your employees also know a lot. However, as long as no one asks, or worse, as long as managers reject employees' suggestions when offered, then their knowledge will remain locked away. Listening to customers and employees, by the way, is the key to innovation. Being effective at innovation is all about gathering and creating new knowledge, the knowledge of what is and what could be.

What you are likely to hear from your customers and your employees will overwhelm you with possibilities for incremental innovation. We did a simple survey not long ago and found that in a typical company there are no fewer than 32 different types of targets at which innovation may be directed (see table). With so many possibilities, the immediate problem is choosing where to innovate first. Customers and employees can probably help you decide. What you are not likely to hear from your customers and employees, however, is how to target breakthrough innovations. Oh they do know, but they probably don't realize that they know. This vital knowledge is hidden, and so you must use special techniques to discover it. You must observe peoples' behavior and see in that behavior what obstacles they face that they don't even recognize as obstacles. Once you have done so, you can then remove those obstacles and improve their lives. They will reward you.

A simple example. A team of Honda automobile engineers was observing the behavior of people in the parking lot at a grocery store. They noticed that people had to lift their bags of groceries into the trunks of their cars, and it was difficult for many people to do. The back of the trunk, the part toward the very back of the car, had a wall. All cars were made this way. Then they realized that in fact there is no

need for people to have to do this. They made that annoying wall part of the trunk lid, so when you opened the trunk the back wall of the trunk went out of your way, and you didn't have to lift the bags so high. Today, all trunks are made this way. Thirty years ago, it was a Honda innovation, one that resulted from engineers just watching what people were doing. They saw something that no one had seen before. This kind of innovation fulfills an unknown and unmet need. It was a real need, and fulfilling it made a difference thirty years ago, and it still makes a difference today.

You can make a difference, too, when you learn how to watch. If you are in retail, there is a great book that you should read. It is called *Why We Buy: The Science of Shopping*, by Paco Underhill. It describes how to observe people in stores and what you can learn from doing it. You learn a lot. It may surprise you how much. So let us now return to our title. Bottom-line oriented innovation. What is the bottom line? It is your profit. How can you improve your profit? There are many ways, all of them innovations of one kind or another. Ask your customers and your employees what they think. Observe them, as well, and see how their behaviors expose new possibilities.

The Third Dimension of Innovation

Beyond incremental and breakthrough innovation, there is also a third innovation dimension, one that we are now beginning to understand. If you look at the list of 32 possible innovation targets, you see a fragmented world. Each possible target stands separately, which is interesting, perhaps, but alone. This may be useful for analytical purposes, but it is also fundamentally distorted because by looking at the parts you cannot necessarily get an understanding of the whole.

What if you could look at the problem of innovation as whole, as one thing? What would you see? If you are like me, what you would see are systems, systems that we call "the economy" and "the market" and "the company," systems in which companies and customers and competitors are all actors, working to optimize their own unique positions. How would you innovate if your innovation focus was not the parts of the system but the system as a whole?

One thing you might do is to describe your business not as a separate thing from the market but as an integral part of it. Leaders throughout Silicon Valley are now discussing this possibility, and more and more investors are looking for innovation not just in the 32 discreet elements of the business or just in the Business Plan, but in the "Business Model." Because a Business Model is a holistic description of a business and its relationship with the broader market, thinking about the business model may offer greater insights and better innovation targeting. We have, therefore, begun to describe competitive market dynamics as a matter of competition between business models, and we refer to this as "business model warfare." The focus of business model warfare is not just on products and services, but on fundamentally redefining the relationship between the company and its customers.

At the University of Pennsylvania's Ackoff Center, we are studying business model warfare, and as we survey the most successful businesses of the last twenty years, we consistently see that the most innovative companies are among them. We also see that those that have innovated in terms of their business model are consistent leaders. At the beginning of this article, we mentioned the Japanese auto manufacturers, which have given us many business model innovations. For example, they used their increasing expertise in manufacturing quality to create new product lines, and now their Lexus, Acura, and Infiniti lines are among the most admired cars worldwide and the most profitable parts of their businesses. Their innovations in alternative fuels are far ahead of the American manufacturers and are, also, starting to win them new market share.

Business model innovation is evident in other industries as well. Nike redefined the terms of competition in the sports shoe and sports apparel business and became the global leader. Visa has far surpassed American Express by creating a global network far more fluid and flexible for the credit card industry. Dell has created a computer-industry powerhouse by completely re-inventing the manufacturing process, thereby introducing an entirely new business model to the personal computer industry. Today, the market capitalization of Southwest Airlines is more than twice that of United, American, and Delta Airlines combined. Yet, the revenues of Southwest are a small fraction. Why is this? Because Southwest

has a better business model, it has profits, and the market believes that it has the best future in the industry.

Conclusion

Business model innovation is often the most powerful among these three types of innovation. While continuous and breakthrough innovations in products and services are important and necessary, it is the companies that innovate in the structure of their businesses, and particularly in how they define their relationships with customers, that become the leaders. Business model innovators look at the market and see something different than others see -- they see possibilities that others have overlooked, and they transform those possibilities into competitive advantages and profits. Properly managed and properly targeted, innovation can lead directly to the bottom line.

Table 1. *Thirty Two Innovation Targets*

Target Areas	32 (Thirty-Two Targets)
Business	1. structure 2. alliances 3. capital formation
Administration	4. information flow 5. automation 6. insource/outsource effectiveness
Organization	7. structure type 8. infrastructure 9. employee/ contractors 10. decision making process 11. facilities effectiveness 12. process to improve processes
Service	13. service mode 14. communication 15. customer experience 16. customer relationship management 17. brand / image
Supply chain	18. distribution system 19. manufacturing
Product	20. technology (hidden) 21. technology (evident) 22. manufacturing 23. research & development 24. user interface 25. packaging 26. functionality 27. life cycle model 28. product offering 29. product availability 30. sales model 31. after-sale service 32. distribution

Sidebar: On Entrepreneurs

Entrepreneurs face two broad kinds of problems. The first problem is judgment. Most natural entrepreneurs love their own ideas, and they can't tell their good ideas from their bad ones. If they happen to have a good idea and good luck, they can create success. If they happen to have bad ideas, you'll never

hear about them, unless one happens to be your brother-in-law. The second problem that entrepreneurs face is access to capital. This is when your brother-in-law pitches you on investing in his latest idea. Maybe you're in, maybe you're out, but in any case, he'll spend a lot of time looking for money.

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Deep Structures in CEO Duality-Firm Performance Linkage

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[Abstract] Prior empirical research on CEO duality board structure has paid little attention to deep structures (tacit forces that govern the process, such as managerial task environment and social process) that modify the CEO duality-performance linkage. An empirical examination of 290 Fortune 1000 companies shows that CEO duality is related to superior firm performance when the firm's task environment is characterized by extensive business diversification, which highlights the structural benefit of organizational flexibility derived from CEO duality. However, counter-balancing tacit forces relative to CEO duality, such as institutional ownership concentration, board tenure, and board tenure heterogeneity, have negative moderating impacts on the relationship between CEO duality and firm performance. Implications of the results are discussed for future research.

[Keywords] CEO duality; deep structure; corporate diversification; institutional ownership concentration; board tenure; board tenure heterogeneity

Corporate governance research aims to achieve an effective governance system that ensures proper checks and balances at the corporate top, while facilitating efficient firm adaptation to a fast-changing business environment. Corporations operating in a complex and rapidly changing business environment adopt a CEO duality board structure (i.e., the CEO chairs the board of directors in the firm) primarily to promote organizational flexibility and adaptability while securing accountability in corporate leadership. In academic circles, more than two decades of research on the CEO duality-performance linkage has led to divergent and somewhat contradictory suggestions regarding the choice between CEO duality versus non-duality (Iyengar & Zampelli, 2009; Dalton & Dalton, 2011). For example, scholars focusing on the agency theoretic paradigm have emphasized that the CEO duality structure could potentially undermine the monitoring and control functions of the board of directors in a firm, having negative implications for firm performance (e.g., Rechner & Dalton, 1991; Jensen, 1993; Daily & Dalton, 1994; Davidson et al., 2004). On the other hand, management scholars focusing on organizational structure and managerial stewardship behavior have suggested the benefits of the CEO duality board structure, such as a unity of command, accountability in corporate leadership, and a trust-based CEO relationship (Donaldson & Davis, 1991; Brickley et al., 1997; Bhagat & Black, 2001; Faleye, 2007). Empirical resolution of these contrasting perspectives has proved to be problematic because of the conflicting research evidence of the performance implications of CEO duality (Dalton & Dalton, 2011).

The research endeavors centering on the CEO duality-performance linkage have been rhetorically so powerful and pervasive that researchers paid little attention to the deep structures (i.e., tacit forces governing the process) that co-exist with the formal, superficial structure of CEO duality. CEO duality as a social actor is embedded in the social process formed by governance constituents in the firm. CEO duality defines the structural form, but the "structure itself cannot structure some other aspects of social existence," such as politics and social formations (Sewell, 1992, p. 2). Social processes are not programmed by a structure itself (Blau, 1977; Carter & Lorsch, 2004). It could be argued that the existing ambiguity and controversy on the performance implications of CEO duality is derived from rigid, causal determinism based on the illusion on structure. The process would actually be formed by intangible, tacit forces in the relational dynamics among governance constituents. Tacit forces, such as managerial task environment and social process in the firm, should exert substantial influence on the boundaries and efficacy of CEO duality leadership. That is, a visible formal structure and latent processes produce an enactment of CEO duality and subsequent firm performance.

Therefore, the purpose of the current research is to reveal the role of deep structures in CEO duality leadership, such as task context and social process, which modify the CEO duality-performance linkage.

This study empirically examines the performance implications of CEO duality in the context of corporate diversification. In the past, a number of researchers have addressed the moderating factors in the CEO duality-performance link, such as external environmental characteristics (Boyd, 1995) and the CEO's backgrounds (Faleye, 2007). However, there has been a paucity of empirical research focusing on a specific executive task where the structural imperatives of CEO duality (e.g., organizational efficiency and accountability in decision-making) are particularly relevant. Moreover, the extant literature on CEO duality is characterized by the lack of empirical evidence that sheds light on the so-called organizational flexibility derived from combined leadership (Finkelstein & D'Aveni, 1994). Corporations pursuing a diversified portfolio of businesses experience a heightened demand for organizational efficiency and flexibility in both stages of diversification initiation and implementation (Palich et al., 2000). The informational environment for corporate diversification is highly complex for a board of directors to verify executives' diversification initiatives; the need for leadership accountability is heightened in the firm. In this regard, a task environment of corporate diversification provides a perfect research setting that reveals the moderating role of the managerial task environment in the CEO duality-performance linkage.

Second, this study focuses on tacit forces that influence the social process between the dual CEO and other governance constituents. One could assert that the separation and fusion of powers in corporate governance is a contrived division that takes place in the continuum between the CEO and the board of directors. Increases in a board's power of control would impact the relative power of the dual CEO. For example, directors who have served on the board for many years and are entrenched in the firm may have greater influence over the dual CEO. Institutional investors who possess large blocks of the firm's stock could exert significant voting power, challenging the dual CEO's leadership. Additionally, heterogeneity in board tenure, although beneficial in terms of variety of perspectives in boardroom discussion (Hillman & Dalziel, 2003) could hamper the interactive process (e.g., communication and cohesion) between the dual CEO and the board, reducing the coordination efficiency at the top of the corporation. Thus, stronger the power of control emanating from the board would impact the relative dynamics between the dual CEO and the board, constraining a dual CEO's latitude and executive efficiency in the firm. These conditions in the social process underlying the enactment of CEO duality could distort the implications of the CEO duality structure originally designed for unity of command, decision accountability, and CEO empowerment. Therefore, this study empirically examines the moderating roles of these tacit forces, such as institutional ownership concentration, board tenure, and board tenure heterogeneity in the CEO duality-performance relationship.

The findings of this study use a sample of 290 Fortune 1000 companies that provided empirical evidence that firms with CEO duality board structure have superior firm performance when the firm's task environment is characterized by extensive corporate diversification in which the imperatives for organizational flexibility and decision accountability become more salient for firm performance. Firms adopting a CEO duality board structure experience, however, decreased firm performance when the counter-balancing tacit forces relative to a dual CEO, such as institutional ownership concentration, board tenure, and board tenure heterogeneity, increase. The findings deviate from the conventional wisdom of checks and balances when applied to CEO duality, providing insights for resolving organizational design problems of CEO duality. The results suggest that deep structures (task context and social process) in which the dual CEOs are embedded should be simultaneously considered when firms make a choice between CEO duality versus non-duality for their board leadership structure.

Theory and Hypotheses

Deep Structures in CEO Duality: Task Context

CEO duality, a board leadership structure that combines the CEO and the board chairperson positions, has received considerable attention in both academic and practitioner circles (Ellstrand et al., 2002). The central issue in the debates has been on whether the two positions should be separated for independent leadership in the board of directors or combined for organizational efficiency and flexibility. In a constitutional design, the system of separation of powers and areas of responsibility is to prevent one branch's dominance over the other authorities and to secure checks and balances in governing a nation.

Similarly, splitting the CEO and board chair positions is to secure the balance of power and areas of responsibility in management initiation and decision control. As such, the agency theoretic framework applied to CEO duality suggests that giving the board chair position to the already-powerful CEO could break the checks and balances at the apex of the corporation, creating the danger of CEO entrenchment (Tuggle et al., 2010; Kim et al., 2009).

In comparison, the fusion of powers in government politics refers to a mingling of powers. The main imperative of fusion of powers is to facilitate the executives' ability to implement plans and objectives effectively and to clarify the leadership accountability, thereby enhancing the performance of the executive branch. CEO duality, analogous to the fusion of powers in political science, is a corporate governance model in which a leader of the executive branch serves as the leader of the board of directors. CEO duality ostensibly makes it easier for executives to take initiatives and actions in response to environmental changes. Moreover, as the firm's managerial and decision environment becomes more complex and dynamic, the board of directors and the shareholders become more attracted to CEO duality leadership for organizational flexibility and leadership accountability. A review of the extant literature suggests that, albeit the abundance of empirical research using an agency theoretic paradigm applied to CEO duality, little empirical research has shed light on structural benefits of CEO duality by relating CEO duality to specific task contexts, such as business diversification.

Corporate diversification is a firm's proactive domain expansion into related and unrelated industries when adapting to changing business environments. Corporate diversification is a critical strategic initiative that involves large-scale resource commitments with significant implications for firm performance (Hoskisson & Hitt, 1990). While some corporations enhance firm scale, scope, and profitability through business diversification, others fail to do so. Formulation of a diversification strategy involves a comprehensive analysis about the competitive structures in different market domains, as well as the conditions in internal firm resources and capabilities. Additionally, efficiency in organizational decision-making and implementation is an essential ingredient for proactive exploitation of market opportunities and subsequent firm performance through corporate diversification.

A CEO duality board structure fits the task context of corporate diversification. A combined leadership structure enhances the coordination efficiency between the decision initiation (executive) and decision control (board of directors), which is particularly relevant in making complex, strategic decisions, such as corporate diversification. To take timely actions necessary to capture the market opportunities in a fast-moving industry environment, efficient communication and coordination between the executive and the board of directors on diversification initiatives are critical. When the two counter-balancing parties of the executive team and the board of directors are separated, information asymmetries between the two branches become costly. In a situation in which coordination and integration of two parties are not well managed, boards may try to increase their power of control over management, often constraining executive efficiency, whereas executives may devise ways to reduce a board's control by skewing the information flows to the board to secure their discretion. Meanwhile, the combined leadership of CEO duality helps clarify a unity of command and leadership accountability, which reduces the chance of political deadlock between the executive and the board, facilitating firm adaptation to changing market situations.

Increased information cost by separating the roles of the CEO and the board chair is not minimal, in particular, for firms pursuing business diversification. Information asymmetry between the executives and the board often hampers the efficient firm adaptation (Brickley et al., 1997). Split leadership may hinder the efficient, complete information flow from the executive to the board or vice versa. By having the CEO, who has comprehensive access to business and industry situations to lead the board, the CEO can keep the directors, especially non-management directors, informed about current situations inside and outside of the organization, reducing informational imbalance between the two pivotal parties in corporate leadership (Brickley et al., 1997). In addition, CEOs serving as the board chair could better leverage the board resources, such as directors' professional experience, personal knowledge, and external ties, which enhance the decision comprehensiveness necessary for the performance of a firm with a diversification strategy. Therefore, efficient information processing and coordination at the apex of the corporation

attained through a CEO duality board structure would be a source for superior firm performance in firms with extensive business diversification.

Additionally, by entitling the CEO to serve as the board chair, firms with CEO duality promote a trust-based relationship that stimulates the dual CEOs' psychological motivation to maximize his or her pro-organizational stewardship behavior in serving the company (Donaldson & Davis, 1991). Empowerment to the CEO would be a necessary condition for the executive's risk-taking in initiating diversification strategies and driving organizational changes in the process of diversification implementation. Previous management scholars have also emphasized that powerful leadership, such as CEO duality, is particularly useful in a situation where significant changes are necessary (Brockmann et al., 2006). The need for empowerment and decision accountability would become more salient in firms with extensive corporate diversification given the informational complexity associated with a diversification strategy and heightened needs for organizational efficiency in diversification implementation. Based on the aforementioned rationale on the fit between a CEO duality board structure and a task environment of corporate diversification, the following hypothesis is presented:

Hypothesis 1. CEO duality board structure will be positively related to firm performance when the firm has higher levels of corporate diversification.

Deep Structures in CEO Duality: Tacit Forces in Social Process

Previous board researchers have emphasized that firm performance is influenced by an effective working relationship between the management and the board (Lawler & Finegold, 2005). As such, the interactive process among governance constituents, such as executives, boards of directors, and investors in the firm, provides a governance context in which dual CEOs initiate strategies and organizational changes. Splitting or combining the positions of CEO and board chair would not be a panacea. The conditions in the social process among governance constituents would, rather, have more substantial impact on the enactments of a dual CEO, such as CEOs' power, discretion, efficacy, and subsequent performance. Moreover, the dividing line in the continuum between the dual CEO and the board of directors is dynamic and subtle. Although the formal structure of CEO duality entitles the CEO to lead the board, boardroom conditions in a weak-versus-strong board would have different implications for dual CEOs' enactments. Dual CEOs may experience decreased discretion and occasionally face power struggles, especially when the board has stronger expert and control powers. Board members with significant equity ownership, titles of formal CEO, and long periods of board membership with the firm could substantially change the leadership context for dual CEOs.

Ownership structure in the firm, in particular the growth of institutional ownership, has substantial impacts on corporate strategies and governance behaviors, such as risk-taking propensity (Stearns & Mizruchi, 1993), firm strategies (e.g., Hoskisson et al., 2002), and executive power (Useem, 1996). Large institutional shareholders possess economies of scale in monitoring and controlling executives (Hadani et al., 2011), thereby exerting greater pressure on the CEO (Daily and Johnson, 1997). Hence, ownership concentration in a small number of large institutional investors in the firm could lead to a shift of powers in CEO-board dynamics, often reducing the CEO's managerial discretion and decision-making power (Kalyta, 2009). For example, in firms with CEO duality leadership, ownership concentration to a small number of large institutional investors could constrain a dual CEOs' managerial discretion and decision-making power, thus diluting the unity of command in the corporate leadership. In addition, power shifting often induces a competition for power (Mintzberg, 1983), which could lead to a political struggle that undermines the coordination and integration at the top of the corporation. The confusion and ambiguity about the corporate leadership could be intensified in firms with CEO duality because the structure was originally designed for unity of command and empowerment of the CEO's corporate leadership. Consequently, organizational flexibility and efficiency in a firm's adaptation decreases, which, in turn, will negatively affect firm performance when led by CEO duality.

Hypothesis 2. A CEO duality board structure will be negatively related to firm performance when the firm's equity ownership is concentrated in a small number of institutional investors.

Previous board researchers have suggested that the composition of a board has an impact on a CEO's power relative to the board (Boeker, 1992; Daily & Johnson, 1997). For instance, greater tenure experience with the firm provides directors with richer and more comprehensive information about the organization and business models in the industry, thus increasing the board's expert power in monitoring and controlling the management (Golden & Zajac, 2001). To the contrary, boards with a very low average tenure may remain as a statutory board, exerting limited influence over managerial decisions due to the lack of expertise about the firm's operations and organizational resources (Kalyta, 2009). A shift of power to the board suggests a diminished executive leadership power in CEO-board dynamics, thereby providing a constraining effect on the discretion and latitude of dual CEOs. Increased power of the board in light of the dynamics between the dual CEO and the board could lead to rival factions and political competition for power, which prevents directors and the CEO from focusing on substantive strategic issues. The potential for political struggle would be greater in firms with CEO duality leadership, which is chosen for a unity of command and leadership accountability. Coordination inefficiencies between the executive and a board are detrimental, often resulting in delayed decision-making at the apex of corporation and inefficiency in the process of strategic firm adaptation to environmental changes. Thus, longer average tenure of the board increases the potential for power competition with the dual CEO while impairing coordination and organizational efficiency at the top of the corporation, which, in turn, will negatively affect firm's performance as led by CEO duality.

Hypothesis 3. CEO duality board structure will be negatively related to firm performance when the board has higher average tenure with the firm.

Previous researchers focusing on group demography have suggested that team members in a demographically dissimilar group membership experience process inefficiency in group dynamics (e.g., Pelled et al., 1999). Furthermore, demographic dissimilarity among group members often engenders behavioral disintegration, further reducing the process efficiency among group members (Li & Hambrick, 2005). Empirical evidence suggests that tenure heterogeneity among group members is positively related to decreases in interaction, communication, and collective effort (Smith et al., 1994). Likewise, the board as a decision-making group would have similar group dynamics and behaviors (He & Huang, 2011). For instance, board members of a common tenure group are likely to share similar knowledge structures and frames of reference, which facilitates communication and interpersonal interactions among the board members. Heterogeneity in board tenure not only decreases the board's internal process efficiency, but also could compromise the coordination between the dual CEO and the board. That is, dual CEOs leading a cognitively diverse board have to deal with divergent and often conflicting perspectives. If a board is composed of members possessing diverse professional paradigms and priorities, the board itself may have difficulties in achieving consensus, delaying the ratification of management proposals that further the process of firm adaptation. Dual CEOs who chair a demographically heterogeneous board may rely more on formal communication resulting in rigid coordination with the board, which will decrease the efficiency of information processing and decision making at the top of the corporation. This line of argument posits that

Hypothesis 4. CEO duality board structure will be negatively related to firm performance when the board membership has higher levels of tenure heterogeneity.

Methods

The sample for this study was drawn from the Fortune 1000 list for the year of 2002. A data set of Fortune 1000 firms was chosen for the generalizability of the study's results, since Fortune 1000 firms encompass a variety of industries, diversification postures, and corporate governance structures. Given the imbalance in the distribution of firms adopting CEO duality and non-duality (i.e., much larger portion of U.S. large corporations adopts CEO duality), a stratified random sampling was used in choosing the sample firms based on the criterion of CEO duality versus non-CEO duality. Thus, data for 145 duality

and 145 non-duality firms were collected and used for the statistical analyses.

Measures

Independent and dependent variables. CEO duality was coded as a binary variable. An individual who serves both the CEO and board chair positions was coded as 1 and 0 otherwise. Information on board leadership structure was obtained from companies' proxy statements. The dependent variable of *Firm performance* is captured by the return on assets (ROA) for the year of 2002 using data from Standard & Poor's Compustat.

Corporate diversification. The entropy measure of diversification (Jacquemin & Berry, 1979) is used in measuring the degree of business diversity in the corporation. The entropy measure is a continuous measure capturing both the extent of business diversity and the related versus unrelated classification (SIC) code, the entropy measure potentially eliminates researchers' subjectivity in classifying industry domains (Martin & Sayrak 2003). The degree of corporate diversification (E_T) was calculated as

$$E_T = \sum_{i=1}^n P_i \ln(1/P_i)$$

where P_i is the percentage of a firm's total sales in the i^{th} industry segment (four-digit SIC code), n is the number of the firm's businesses, and $\ln(1/P_i)$ is the logarithm of the inverse of its sales. Larger values represent greater levels of diversification and unrelatedness among business lines. Data for the line-of-business sales were obtained from Compustat.

Ownership concentration, board tenure, and board tenure heterogeneity. Institutional ownership concentration was calculated using the Herfindahl Index for the top five institutional investors in a firm (e.g., Baysinger et al., 1991). A larger value in the Herfindahl index indicates a more concentrated ownership structure in a firm, and the data on institutional equity holdings were collected from the Mergent database. Board tenure was measured as the average of board members' tenure (in terms of number of months) with the firm. Board tenure heterogeneity capturing board's compositional effects was measured using the coefficient of variation, defined as the standard deviation divided by the mean (Pelled et al., 1999). Larger coefficients imply greater heterogeneity among board members' tenure. Information about individual directors' tenure was obtained from companies' proxy statements.

Controls. Several control variables were included in the empirical model to isolate the effects of the hypothesized variables on firm performance. Firm size, measured as the logarithm of total annual revenue, was included to control for the potential impact of scale economies on firm performance. The annual revenue data was obtained from Compustat. Industry growth was included as a control for the effects of industry characteristics on firm performance. Categorization of industry was based on the two-digit SIC code. CEO equity ownership was included to reflect the impact of managerial ownership on firm performance and measured as the percentage of total common equity owned by CEOs. Board size was included to control the potential impact of board size on firm performance and was measured as the logarithm of the number of directors on the board to capture the curvilinear effect of board size on a firm's performance. Board independence was controlled using the independence-interdependence measure (Boeker, 1992). This measure defines independent directors as outside board members who were appointed prior to the current CEO. Directors who were appointed to the board prior to the current CEO are regarded as relatively more independent from the CEO. Board composition data was available from corporate annual proxy statements.

Analytic Methods

Hierarchical regression analysis was used to test the moderating effects of the variables on the relationship between CEO duality and firm performance. Control variables included in this study were entered in the first hierarchical step. After entering the control variables, the independent variable of CEO duality was entered. Then, the moderating variables of corporate diversification, institutional ownership concentration, board tenure, and board tenure heterogeneity were entered. The two-way interaction terms

Innovation in its modern meaning is "a new idea, creative thoughts, new imaginations in form of device or method". Innovation is often also viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs. Such innovation takes place through the provision of more-effective products, processes, services, technologies, or business models that are made available to markets, governments and society. An innovation is something original and more

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