RESOURCE PORTFOLIO MANAGEMENT: BUNDLING PROCESS

A Dissertation

by

WILLIAM JOHN WORTHINGTON IV

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2007

Major Subject: Management

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ABSTRACT

Resource Portfolio Management: Bundling Process. (December 2007)

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Managers within firms seek to align their portfolio of capabilities to best respond to their competitive environment. Processes used by firms to acquire resources, bundle those resources into capabilities, and then leverage those capabilities to obtain competitive advantage are of interest to scholars and practitioners alike. In this study I explore the bundling process and how firms create advantage from its use in different environmental conditions. Using policy capturing survey techniques analyzed with hierarchial linear modeling while manipulating environmental contexts of dynamism, munificence, and punctuated threats, I observe how firms vary their resource bundling processes to create advantage and improve performance. For each combination of environmental condition, hypotheses are presented and tested with respect to firm response.

Due to a lack of differentiation between the three bundling sub-processes, several proposed hypotheses were not testable and thus, unsupported. Current theory details three bundling sub-processes; however, I demonstrate evidence that fewer or greater numbers of sub-processes may be required to capture the bundling process. Other

evidence suggests that firms do alter bundling sub-processes in response to changing conditions of munificence, but fail to do so during punctuated events.

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CHAPTER I

INTRODUCTION

Priem and Butler's (2001) critique of the resource based view (RBV) (Barney, 1991), accelerated researchers' investigation into the infamous 'black box'. Their quest: to answer *how* firms manage heterogeneous resources to create sustainable competitive advantage. The RBV literature examines internal strengths and weaknesses of firms, but the resource management literature goes deeper to explore the black box, seeking how firms manage their portfolio of resources to eliminate weaknesses and embolden strengths. Processes used by firms to obtain resources, bundle those resources into capabilities, and then leverage those capabilities to create advantage (Morrow, Sirmon, Hitt, & Holcomb, 2007; Sirmon, Hitt, & Ireland, 2007) is of interest to scholars and practitioners alike. ***In this study I seek insights into the bundling sub-processes, and how firms create advantage from their use.***

Strategy researchers seek answers to the basic question, why do some firms perform better than others? Although investigators may observe industry level or organization sub-unit level phenomena, the core body of investigation resides at the firm. Likewise, in this work the research questions are concerned with bundling processes observed at the firm level and the dependent variable concerns the creation of competitive advantage for firms through the utilization of those processes.

This dissertation follows the style and format of the ***Academy of Management Journal.***

The environmental context in which a firm competes is a constant source of opportunity and threat. How firms respond to these external stimuli is a target of scholarly inquiry. In this study I focus on processes used by firms to manage their resource portfolio in response to external contextual stimuli to generate advantages over competitors (Amit & Schoemaker, 1993). Threats demand response from firms; often that response requires the firm to use its resource portfolio to reduce, mitigate, respond, and recover from the imposing threat. The appropriate application of resource portfolio management is also important for firms to defend current advantages or to seize opportunity. ***Thus, in this study I seek insights into how the relationship between the firms portfolio management process and advantage creation may be influenced by environmental context.***

To gain insight into these research questions, hypotheses are offered. First the overall discussion of resource portfolio management (hereafter referred to as resource management or RM) is introduced in the literature review to appropriately frame its discussion within the RBV literature. I draw heavily from Sirmon, Hitt, and Ireland's (2007) work on the RM process to illuminate the role of the bundling process within RM. In the theoretical development section, each hypothesis is developed in a similar manner. Each construct is defined, examples are offered, and then theoretical bases are given to introduce the hypothesized relationship. For the development of each set of theoretical arguments, I use research from organizational learning, competitive dynamics, and the resource based view to offer multiple lines of support. Afterwards, the methodology chapter explores the policy capturing tool, the measurements used to

operationalize the constructs, the data source and the statistical methods used to test the hypotheses.

This study contributes to the scholarly literature in numerous ways. First, it further supports the causal relationships between firm resources and competitive advantage. Specifically, it offers insight into the complexities of resource portfolio management and finer grained insights into the sub-processes that firms use to bundle existing resources and routines into capabilities and hopefully new sources of advantage. Second, the resource management literature is enriched by exploring the bundling process in finer grained detail. The bundling process is divided into three sub-processes. Each sub-process is defined, explained, justified within the literature, measured and tested. This research will provide a better understanding of the bundling process and its relationship to competitive advantage. Third, the complexities of multiple environmental contexts are studied simultaneously. In this study, environmental munificence, dynamism, and punctuated threats are integrated and their effects on firms' bundling processes-to-advantage relationship are examined. Insights are gained into how firms utilize bundling processes to attain advantage in different combinations of munificence and dynamism and then how they respond when a major environmental shock is introduced into the external context. Fourth, limitations of the RBV (Priem & Butler, 2001) are overcome by looking more deeply into the black box of how firms take resources and generate value with those resources.

In addition, this study contributes to practicing managers by offering detailed insights into the resource portfolio management utilized by firms to bundle existing resources with new resources to generate new capabilities, which can then be leveraged

into advantage. Many firms utilize these processes but are not conscious of their doing so or perhaps they name them something different. Practitioners may gain insight into bundling processes and how to better align those processes with the environmental influences. Further, they may seek insight into the importance of punctuated threats and how they often occur without warning. These threats can have devastating impact on firms' ability to maintain or create advantage. Firms that fail to plan ahead with an appropriate crisis leadership response may find themselves in peril, by unexpected events.

The next chapter will discuss the current literature on matters of the RBV pertaining to resource management. Afterwards, a discussion of environmental context is offered, paying close attention to dynamism, munificence, and punctuated threats. Following the literature review, a thorough development of the theory is formed along with the associated hypotheses. Afterwards, a chronological discussion of the study design is presented to the reader.

CHAPTER II

LITERATURE REVIEW

The earliest precursor referenced in the RBV literature is usually Ricardo (1817) who explained what would later become known as 'Ricardian rents'. Economic rents are those profits gained over and above that expected from the use of a given resource. Ricardian rent refers to economic rents gained in the application of rare and inelastic resources. The key difference is the heterogeneous nature of the deployed resource. This differed from the classic economic assumption of perfect markets where competitors could acquire any resource enjoyed by others. Ricardo argued against such perfection. Penrose (1959) continued this notion by observing that bundles of productive resources were not homogeneous between firms but instead differed significantly. She introduced the notion that having resources is a necessary but insufficient condition for creating advantage. The *management* of resources is a key determinant of firm success.

Bain discussed the structure-control-performance (SCP) relationship within the anti-trust literature (Bain, 1956) suggesting the industry of the firm dictates its performance. Firms' conduct is determined by what industry they are associated with and that conduct determines their performance. Any performance observed beyond that expected relationship was seen as evidence of anti-competitive behavior on the part of the firm. They must be doing something wrong to perform better than others in their industry group. Demsetz (1973) began to question this conclusion and others soon followed.

Porter's (1980) theory of competitive advantage "turns the SCP on its head " (Barney & Arikan, 2001:133) in proposing that firms can gain advantage by locating industries where perfect competition does not exist. Firms that find imperfections can manipulate those imperfections to their advantage. He suggested that firms should carefully examine the external threats operating within an industry and having done so could generate rents by adapting their product market position to exploit opportunities discovered in the process.

Wernerfelt (1984) introduced internal considerations into the discussion by suggesting that market position held by a firm is a function of the resources controlled within that firm. This implied an internal control pre-requisite as opposed to Porter's external control assumption. Rumelt (1991) agreed, and showed empirical support that firm level resources matter more than industry level measures of firm performance. Rumelt's empirical evidence further backed his explanation of "isolating mechanisms" used by firms to protect differences created within their capability pool from competitors (Rumelt, 1984).

Barney (1986) continued Wernerfelt's notion of internally driven competitive advantage by introducing strategic factor markets (SFM). Barney alleged that if resource heterogeneity between firms can create opportunities for advantage, the strategic factor markets used to acquire and re-distribute those resources must also be a source of advantage. Meaning that if firms attain resources for a given cost based upon an expected return but later discover new ways to re-bundle those assets, the firm can generate excessive rents above those originally expected. Hence, imperfect strategic

factor markets and resource heterogeneity provide multiple avenues for firms to create and to sustain an advantage over competitors.

RBV

Barney (1991) codified the RBV more formally by introducing the VRIN framework. VRIN stands for valuable, rare, inimitable, and non-substitutable and represents the four prerequisites to sustained competitive advantage. Resources must be valuable by default; otherwise there would be no source of advantage. They must also be rare; otherwise other firms could acquire them, voiding the advantage. They must also be inimitable; competitors must not be able to reproduce the resource. Finally, they must be non-substitutable; competitors must not be able to derive alternative resources to substitute or take the place of the resource. Firms that acquire resources meeting three of the four prerequisites might generate temporary competitive advantage. However, competitors might exploit the missing fourth to attain competitive parity. Only firms that attain resources matching all four criteria may create competitive advantage that is sustainable.

As the discussion continued, resources and capabilities were differentiated. Resources are the ingredients controlled by firms to execute their strategy; capabilities are developed based on the use of those resources (Hitt, Ireland, & Hoskisson, 2007; Stalk, Evans, & Shulman, 1992). Yet, capabilities have a temporal nature as both resources and capabilities change over time. Some become obsolete while others become rare and therefore more valuable. Furthermore, firms acquire and divest resources. This

idea of changing resource landscapes produced the notion of dynamic capabilities (Teece, Pisano, & Shuen, 1997).

However, resources are not enough; what firms do with those resources is important (Penrose, 1959). Acquired resources must be bundled to generate capabilities. Capabilities must be leveraged to create value. That value creation must have longevity to create sustained competitive advantage (Hitt et al., 2007; Sirmon et al., 2007).

Many scholars have weighed in on the RBV; for a comprehensive review see Barney and Arikan (2001). Empirical studies have demonstrated support for the elements of the RBV including the valuable / rare prerequisites satisfied by superior management of resources (Amit & Schoemaker, 1993), issues of inimitability (Makadok, 2001; Oliver, 1997), and the non-substitutability of functionally similar resources (Grimm & Smith, 1997). Priem and Butler (2001) offered a critique of the RBV suggesting several limitations. The authors opined that the RBV fails to answer 'how' firms use valuable/rare/imitable/non-substitutable resources to generate competitive advantage, thereby creating a 'black box' that prevents scholars from viewing the inner processes used by firms. The resource management literature seeks to address one aspect of that regress.

Resource Management

The resource management (RM) literature seeks to open the black box and peer into firm processes that are designed to manage the firm's portfolio of resources and capabilities (Sirmon et al., 2007). Owning resources is only the beginning; firms must

learn to utilize those resources to create capabilities in ways that will appropriate rents (Penrose, 1959). Competitive advantage of a firm can only be determined by looking at its complete set of capabilities. A valuable/rare/inimitable/non-substitutable resource is clearly insufficient alone; firms must manipulate and deploy resources in ways that create value (Lippman & Rumelt, 2003), and result in increased firm performance (Henderson & Cockburn, 1994) within the environmental context in which the firm operates. Firms may utilize differences in resource portfolios as a source of competition (Yeoh & Roth, 1999) or may use organizational procedures and routines as a source of strategic flexibility to increase their ability to respond to environmental opportunities or threats (Feldman & Pentland, 2003).

Resource management is defined by Morrow et al. (2007) as "…the comprehensive process of structuring the firm's resource portfolio, bundling the resources to build capabilities, and leveraging those capabilities with the purpose of creating and maintaining value for customers and owners". The grouping of routines used by firms to manage their resource portfolio evolved into a discussion of RM processes. These processes are used by firms to attain resources, to bundle those resources into capabilities, and to leverage those capabilities to create advantage.

The process of bundling resources into capabilities consists of three sub-processes: stabilizing, enriching, and pioneering (Morrow et al., 2007; Sirmon et al., 2007). Stabilizing refers to the continuous improvement of existing capabilities within a firm's portfolio. Enriching speaks to the re-packaging of *existing* capabilities into new but related capabilities. Pioneering is the combining of a *newly acquired* resource or capability with an existing capability to create an entirely new and unrelated capability.

In combination, the three sub-processes comprise the bundling process used by firms to turn resource portfolios into capabilities.

Environmental Context

Researchers have investigated the influence of environmental context on firm strategy for years (Lawrence & Lorsch, 1967). Typologies of environmental influence were developed (Aldrich, 1979) and then simplified (Dess & Beard, 1984) to three main influences: munificence, dynamism, and complexity. Munificence is defined as the quantity of resources available to firms within a given environment such that high munificence means that firms have easy access to resources. Dynamism refers to the stability of the industry in which the firm operates and is normally observed through volatility issues within the industry. Keats and Hitt (1988) found dynamism to be the dominant influence.

Romanelli and Tushman (1986) investigated environmental influence on firm strategy by investigating contingency, strategic choice and inertia based models. Contingency theory suggests that strategy is a firms plan on how to align its internal strengths and weaknesses with the opportunities and threats posed by the environment (Hofer & Schendel, 1978). Thus, firms must be able to respond to changing environmental conditions (Miller & Friesen, 1983). Spawning the notion that such demands require firms to be strategically flexible (Pearce & Winfrey, 1986) and dynamically capable (Teece et al., 1997).

Recognizing that the impact of a given environmental change may be a function of strategy type (Miles & Snow, 1978), several authors investigated threat response by prospector, analyzer, and defender type firms (DeSarbo, Di Benedetto, Song, & Sinha, 2005; Hambrick, 1983). Others have differentiated environmental threats by order, suggesting that a first-order environmental change leads to incremental adjustments by firms whereas second-order changes lead to transformational changes (Newman, 2000).

Organization and decision theorists have debated issues of environmental uncertainty since the late 1950's. Lawrence and Lorsch (1967) identified three components of uncertainty: lack of clarity, long feedback times, and ambiguous causal relationships. However, these definitions were considered too vague (Duncan, 1972) and empirically unsupported (Tosi, Aldag, & Storey, 1973). Duncan developed alternative foci based upon static-dynamic concerns versus simple-complex issues. He found that static-dynamic issues outweighed the simple-complex issues with respect to perceived environmental uncertainty. However, Downey and co-authors compared the Lawrence and Lorsch scales to those of Duncan and found contradictory evidence (Downey, Hellriegel, & Slocum, 1975).

Uncertainty measures seek to capture the range and relative levels of discomfort experienced by decision makers within firms (Hitt & Ireland, 1984; Tushman & Romanelli, 1983). The measure is often taken at the individual level, but used to represent the level of firms' uncertainty of the given environment. The work originates from Miles and Snow's (Miles & Snow, 1978; Miles, Snow, & Meyer, 1978) work on strategy, structure, and processes. It is usually measured as a perceptual variable via

survey of relevant actors and speaks to the changing conditions of activity within that industry as perceived by the actor.

Miles and Snow (1978) created their perceived environmental uncertainty (PEU) instrument of 25 items divided into six scales: suppliers, competitors, customers, capital markets, government interaction, and labor union concerns. Their empirical work supported the notion that firms operating in high PEU environments should focus externally while firms in low PEU should focus more internally. Hitt, Ireland, and Palia (1982) argued that both external and internal orientations are needed by firms in high PEU and that prescription is even more pronounced for firms with medium PEU. Interestingly, Hitt and Ireland (1984) found a lack of evidence for PEU moderating the relationship between corporate level distinctive competences and performance.

Environmental moderation between firm processes and firm performance was empirically demonstrated in the decision making literature. Judge and Miller (1991) found environmental velocity (defined as the variance in industry sales growth) to moderate between decision speed and performance. Baum and Wally (2003) found similar findings using dynamism (defined as the unpredictability of external forces acting on firms). Hitt, Ireland, and Stadter (1982) explored the relationships between grand strategies and industry types for firms and found significant influences from both. Prescott (1986) demonstrated the moderating influences of environment on the relationship between various independent variables and firm performance.

In this study, I continue the quest for empirical understanding of environmental context. To do so, I seek insight into three primary environmental issues: dynamism, munificence, and punctuated threat. Each is covered more in detail below.

Dynamism

Dess and Beard (1982; 1984) extended the discussion from Aldrich (1979) to isolate dynamism as one of three significant contributors (along with munificence and complexity) to firms' task environment. They confirmed all three task environments as significant in the organizational setting. Dynamism was investigated as a measure of stability, instability, and turbulence within industries. Priem, Rasheed, and Kotulic (1995) investigated dynamism as a moderating variable between rationality and strategic decision process. Looking at manufacturing firms specifically, they discovered that dynamism was a significant moderator. The relationship between rationality and performance held in dynamic conditions but did not hold in stable conditions. Pearce (1997) speculated about the influence of dynamic task environments in the context of joint venture performance. Using transaction cost theory, Pearce proposed that joint venture governance costs in dynamic conditions may reduce the quality of top management team decision making and ultimately its performance or even its survival.

International works have also used dynamism to investigate relationships between firm or industry attributes and performance/survival. Luo and Peng (1999) investigated dynamism with respect to multinational enterprises (MNEs) in transitional economies. Their empirical effort investigated the relationship between experience and performance exposed to various environmental forces over time. They found that greater dynamism leads to stronger relationships between experience and performance among MNE subsidiaries in China. Other work in transitional economies investigated dynamic conditions that drove uncertainty within the marketplace and affected firm response to the changing conditions within that marketplace (May, Stewart, & Sweo, 2000).

Amoako-Gyampah and Boye (2001) studied firms in Ghana to see if their choice of operations strategy was influenced by variables including dynamism. Production managers from manufacturing firms indicated that dynamism in the form of competitive hostility was a strong influencing factor in choosing strategy.

Simerly and Li (2000) demonstrated that environmental dynamism affects the capital structure of firms such that alignment of the two yields a superior economic performance. Once again, empirical evidence suggests that dynamism moderates the relationship between firm attributes and performance. Baum and Wally (2003) looked into the effects of dynamism on decision speed, which was modeled as a mediating variable to performance. Interestingly, they found decision speed positively moderated the relationship between dynamism and performance.

Garg, Walters, and Priem (2003) looked at single business manufacturing firms and found that dynamic external environments led CEOs to focus their attention to task sectors in the environment and towards the use of innovation oriented internal operations to improve performance. In stable environments, CEOs that spent time improving the efficiency of their existing internal functions enjoyed higher performance. Hough and White (2003) found dynamism to be a significant moderating influence between rational decision making and firm performance. Walters and Bhuian (2004) found that acute care hospitals that implement a hybrid strategy of organic structure and high information acquisition enjoyed higher performance as conditions of dynamism increase.

Munificence

Dess and Beard (1982; 1984) pulled from Aldrich (1979) to isolate munificence as one of three significant contributors (along with dynamism and complexity) to firms' task environment. Tushman and Anderson (1986) discovered that technological discontinuities significantly influence environmental uncertainty and munificence. Their findings suggest that firms that introduce major technological changes into their competitive environment grow faster than other firms and therefore more able to cope in uncertain environments. Later, Anderson and Tushman (2001) examined the impact of munificence, uncertainty, and complexity on exit rates within industries. They found significant contributions from uncertainty and not as much from complexity nor munificence.

Miller and Shamsie (1996) empirically demonstrated environmental moderation. Their results suggested that property-based resources are more valuable in static environments whereas knowledge-based resources are more valuable in dynamic environments. Baum and Wally (2003) investigated the relationship between environmental and organizational characteristics to decision speed. Using decision-making and organizational theories as their bases, they determined that the relationship between munificence and performance is mediated by decision speed. However, using munificence as a direct causal variable to firm performance seems inappropriate. That would imply a conditional effect generates profit, which is empirically possible but an unlikely event. My study will test environmental dynamism and munificence as a moderating effect.

Munificence deals with the availability of resources within the firms' environment to support organizational growth (Baum & Wally, 2003). The greater the available resources, the more stable the environment. The higher the munificence, the more support available to firms to respond and/or react to internal or external threats (Hambrick & Finkelstein, 1987). High munificence environments are said to increase choice (Slevin & Covin, 1995) and to be associated with higher firm performance (Baum & Wally, 2003; Beard & Dess, 1981). Low munificence environments have fewer resources, thereby limiting the available reactions that decision-makers can enact.

Punctuated Threat

Some claim that the word crisis comes from Greek medical terminology referring to a 'turning point' or 'critical point' (Robinson, 1972). Others claim it comes from the Greek word "krisis", which means "decision" (Pauchant & Douville, 1994). Hwang and Lichtenthal (2000) claim that a crisis is a critically threatening mismatch between the organization and the environment. Other authors see crisis as a control reducing activity in which top management teams respond internally to mitigate the threat and externally to reduce the risk of loss (Chattopadhyay, Glick, & Huber, 2001).

The strategy field has largely ignored crisis issues (Pearson & Clair, 1998); however, in a 'post 9-11' world the importance of managing crises has been heightened. Top management teams must integrate crisis management into their strategic planning (Mitroff, Shrivastava, & Udwadia, 1987). Thus it is important to examine punctuated environmental threats separately from other environmental characteristics such as dynamism and munificence.

Punctuated threats are discussed within the literature under numerous headings. Sensemaking (Weick, 1988, 1993), conflict (Snyder & Diesing, 1977), equilibrium disturbance (Milburn, Schuler, & Watman, 1983a, 1983b), internal or external disruptions (Meyer, Brooks, & Goes, 1990; Meyer, Frost, & Weick, 1998), high velocity (Eisenhardt, 1989, 1999; Eisenhardt & Bourgeois, 1988), downward spirals (Hambrick & D'Aveni, 1988), demand declines (Starbuck, Greve, & Hedberg, 1978), evolutionary cycles (Hannan & Freeman, 1977), environmental jolts (Meyer, 1982; Meyer et al., 1990; Venkataraman & Van de Ven, 1998), hypercompetition (D'Aveni, 1995), exogenous shock (Shrivastava, 1993), revolutionary change (Romanelli & Tushman, 1994), punctuated equilibrium (Romanelli & Tushman, 1994), flux (Haveman, Russo, & Meyer, 2001) and discontinuities (Anderson & Tushman, 1990; Tushman & Anderson, 1986) all reflect potential threats. Managers seek to understand the causes, consequences, and cautions necessary to respond to these environmental forces.

From early discussions through current literature, authors have attempted to give structure to the nature of threats and how those threats impact firms decisions and ability to create advantage. Hermann (1969) offered a three axis typology of threat events including decision time, threat level, and awareness. Later, the threat denial response (Starbuck et al., 1978) and threat-rigidity response (Staw, Sandelands, & Dutton, 1981) discussions focused on the 'noise' that is created in the heat of a threatening event that may impede on the organization's ability to obtain accurate information (D'Aveni & MacMillan, 1990). These later theoretical approaches suggest that firms may become easily distracted from their intended strategies.

Billings, Milburn, and Schaalman (1980) added the important element of perception within the top management team regarding the probability of loss, value of that loss, and time pressures involved in making the decisions. Problem sensing (Kiesler & Sproull, 1982) refers to firms' tendency to focus on the center of the crisis, even if the crisis is not as serious as initially thought, thereby turning the distraction into the real threat. Environmental scanning (Hambrick, 1981, 1982) theory predicts that managers will focus their attention on the external forces acting on a firm. Other works discuss threats as 'normal accidents' and realistically unavoidable (Perrow, 1982). They claim that a systems approach may be necessary to embrace the plethora of issues invoked during a crisis event (Pauchant & Mitroff, 1992) and that the interaction of these systems may well be the cause of crises in the first place (Perrow, 1984).

Given that top management team leaders may act differently in a crisis scenario than in a non-crisis event, D'Aveni and MacMillan (1990) studied firms that faced bankruptcy and survived. They determined that surviving firms spent their non-crisis time focused on internal and external issues with the firm but then focused their efforts on addressing the external issues in times of crisis. Firms that did not survive tended to be more internally focused, which blinded them to the external forces threatening the firm's future (Hofmann, 2000). Other discussions have delved into decision speed versus accuracy of response where speed of response can actually help to formulate the actors' perception of reality despite inaccurate or irrelevant information (Weick, 1995). Intended memory shifts that render recollections of the past into desired memories (as opposed to accurate ones) (Fiske & Taylor, 1991; Weick & Sutcliffe, 2001) add to the

complex nature of how micro level crisis handling issues affect firm decision making and ultimately affect how firms implement strategies to achieve competitive advantage.

Based on the range of discussions offered above, it is safe to suggest that existing literature disagrees on the role of environmental influences. Environmental conditions tend to alter the reference points used by top management teams (Finkelstein & Hambrick, 1996; Keats & Hitt, 1988). This change of reference normally coincides with new organizational participants and new actions designed to protect the firm from future disasters (Kunreuther & Bowman, 1997). Additionally, strategic decisions made during times of environmental stress are handled differently than strategic decisions made during non-crisis time periods (Dutton, 1986; Swartz, 1972). Thus, a mentality of crisis anticipation should be embedded within decision processes to increase organizational resilience should a crisis occur (Boin & Lagadec, 2000).

The common theme of the environmental threat literature suggests that punctuated events may cause the firm to deviate from its intended strategic path. Pearson described the impact of these events as "…a collective breakdown in sensemaking and role structuring. The consequence is a meltdown of social order, followership, and commonly held values and beliefs, where extreme individualism, incivility, and violence may increase"(Pearson & Clair, 1998). These upsets may vary greatly in their consequences and are clearly a concern of organizational leaders. These leaders must decide how much time and effort to spend dealing with the imposing threat. Normal processes are altered in response to such events, thus the focal process of bundling within firms' resource management system is likely to be altered. Thus, threatening

events are likely to moderate the relationships between constructs, as explained in the theory section.

CHAPTER III

THEORETICAL DEVELOPMENT

Bundling Sub-processes

Within the resource management (RM) literature, firms use various processes to manage their portfolio of capabilities. The acquiring process is used by firms to acquire and accumulate resources. The bundling process integrates resources to build capabilities, and the leveraging process employs capabilities to generate value for firms (Sirmon et al., 2007). Management literature continues to wrestle with the notion of value creation and its elements (Lepak, Smith, & Taylor, 2007), but in this dissertation I define value creation at the firm level of analysis and measure it as firm performance. Further, I focus on the bundling process while leaving the acquiring and leveraging processes for future exploration.

The bundling process consists of three sub-processes: stabilizing, enriching, and pioneering (Morrow et al., 2007; Sirmon et al., 2007). The stabilizing sub-process deals with maintenance of existing resources. The enriching sub-process involves the re-packaging of existing resources into new capabilities. The pioneering sub-process is the merging of old capabilities with new resource acquisitions to develop new capabilities from that union. The bundling process as a whole involves various combinations of all three sub-processes. Individual sub-processes are discussed below, followed by a compilation of the sub-processes into one bundling process.

Stabilizing Sub-process

Stabilizing is the bundling sub-process used by firms to maintain and incrementally improve their existing capabilities. Whether to defend a current advantage or to avoid losing competitive parity, firms must continuously improve their existing portfolio. Continuous improvement programs, total quality control, and other improvement procedures can help to prevent loss of competitive advantage to competitors.

An example of stabilizing activity includes the creation of formal routines that turn repetitive and predictable actions into codified procedures (Baum & Wally, 2003; Fredrickson, 1985). These actions may include payroll, process, or various safety related procedures, human resource paperwork, insurance claims, or anything that transpires in a pattern and can be turned into a codified procedure. These codified procedures are often referred to as standard operating procedures (SOP). Procedures aid in the reduction of uncertainty within firms (Weick, 1988) and enable specific processes to be executed predictably and swiftly (Nelson & Winter, 1982).

The organizational learning literature discusses the notion of absorptive capacity and the use of knowledge replication through intrafirm processes (Lane & Lubatkin, 1998; Rivkin, 2001). Converting tacit knowledge into explicit knowledge is itself a skill. Capturing valuable routines and converting them into procedures can help firms to replicate best practices throughout the organization (Zollo & Winter, 2002). Thus, the processes of codification and replication increase firms' absorptive capacity. As absorptive capacity is considered a key source of competitive advantage for firms, the use of stabilizing sub-processes is also likely to create advantage.

The competitive dynamics literature suggests that first mover advantage can be a significant precursor to improved firm performance, but that advantage is temporary. Second movers seek ways to duplicate the first mover success and to acquire capabilities that will gain them parity (Lieberman & Montgomery, 1998). The firm holding the advantage seeks mechanisms to isolate the second movers from doing so (Rumelt, 1974). Whether the attack of second movers occurs in the airline industry (Chen & Hambrick, 1995) or in foreign market settings (Eden & Molot, 2002), the incumbent firm must protect its position if it hopes to maintain advantage. The stabilizing sub-process sustains advantage by addressing this issue. Firms that obtain competitive advantage have deployed capabilities to produce a product or service that is superior to competitors. Firms must secure this advantage by continuously improving their capabilities to produce products that prevent competitors from introducing higher quality or lower cost substitutes. Firms holding advantage may improve their existing operations to add incremental value for customers. Firms may also seek incremental gains in operational efficiency to lower costs, thus adding value to shareholders.

Firms may lose competitive advantage and must therefore maintain existing capabilities while creating new ones. Eventually, any advantage is likely to diminish so firms must improve existing capabilities to keep their advantage. Firms that learn how to perform the same tasks more efficiently can lower costs, which enable them to capture larger profits or to lower prices for customers. Stabilizing sub-processes create organizational efficiencies that enable firms to execute with greater speed and with fewer errors, thereby increasing response effectiveness to customers and efficiency for the firm. Similarly, stabilizing sub-processes may increase effectiveness by enabling

firms to create higher quality products without increasing costs. Although these sub-processes are unlikely to lead to new products or new service offerings, the increases in efficiency and effectiveness may generate value for the firm and aid in maintaining its competitive advantage. Even as time progresses and advantage decreases, stabilizing activity will likely decrease the rate of loss. Historically, some firms have lost their competitive advantage and even competitive parity when they failed to protect their advantage. Stabilizing sub-processes are actions taken by the firm to defend a current advantage and to prevent the firm from losing competitive parity.

Firms seek ways to replicate knowledge within and across intraorganizational boundaries. Actions such as standard-operating-procedure formation enable firms to replicate knowledge and increase their absorptive capacity, thus, creating value. Additionally, firms may utilize stabilizing actions to protect their first mover advantage and to defend against second movers. Firms must remain diligent in the maintenance of proven, value added capabilities within the firm's portfolio to avoid losing this competitive advantage.

Generating competitive advantage will require more than maintaining the status quo. Most firms will need to actively seek new sources of value creation. These new sources may derive from a firms' resource portfolio through the bundling process, and specifically through the sub-processes of enriching and pioneering.

Enriching Sub-process

Enriching is the bundling sub-process that creates new capabilities through the repackaging of existing resources, routines, or capabilities. A firm that enacts the

bundling sub-process of enriching is drawing from its resource portfolio to create new capabilities through new combinations of existing resources. For example, a firm may employ an existing capability then discover an under-utilized resource within its portfolio that could add significant value to the capability. By blending the resource with the existing capability, the firm can create an enhanced (enriched) capability.

For example, 'Knowledge @ Wharton' is an online newsletter that combines the University of Pennsylvania's technological resources with Wharton's well known capabilities in management, marketing, entrepreneurship, and finance to generate a new source of interaction and activity with its researchers. The information technology capability already existed as did the human capital. Wharton blended them together into a dynamic, interactive, web-based tool that is used to showcase current research activity by its academics while providing a vehicle to build Wharton's brand name and increase its ability to communicate with its stakeholders (see: http://knowledge.wharton.upenn.edu).

A decision making example may illustrate how firms use enriching sub-processes to create a dynamic approach to their decision making capabilities. Firms that exclusively use existing routines such as standing operating procedures (as described above) may develop core rigidities (Leonard-Barton, 1992; Szulanski, 1996). These rigidities can occur when existing procedures for one problem are applied to problems outside the intended range of the SOP. In the search for an immediate solution, decision makers may apply pre-existing solutions to new and different problem sets, even if that solution is less than ideal (i.e., if you have a hammer, everything looks like a nail scenario). To avoid these rigidities, firms must actively seek decision routines that may

be considered ‘outside the box’ and thus break with known procedures. Wiser firms will remain flexible and will keep non-routine activities and non-repetitive actions at an informal level. This ‘non-routine’ mentality is specifically designed to keep organizations flexible so they may solve new problems in new ways instead of being tied to old solutions (Baum & Wally, 2003; Fredrickson & Mitchell, 1984).

From an organizational learning perspective, the combining of different sets of knowledge within firms adds value (Kogut & Zander, 1992). Additionally, exploitative learning is used by firms to add to their knowledge base by applying their existing knowledge to new problems (March, 1991). An example would be multinational firms deploying their resources and capabilities into emerging markets (Hitt, Li, & Worthington, 2005) to solve new problems in new regions using their existing knowledge base. Firms learn new skills by maximizing existing capabilities. Similarly, different units within a firm may engage in cooperative behavior to share information across divisional boundaries to diffuse knowledge throughout the firm (Markides & Williamson, 1996). The repackaging of existing knowledge may lead to synergy within the firm, enabling the improvement of one resource or routine to further improve another (Nahapiet & Ghoshal, 1998; Smith, Collins, & Clark, 2005).

Robins and Wiersema (2003) found that firms with highly related resources enjoy greater value creation (i.e., performance) than firms with unrelated resources (Kang, Morris, & Snell, 2007). It is less costly to use existing resources and related resources than to integrate unrelated resources. So firms that enrich existing capabilities are more likely to create value for their stakeholders. The cumulative effect of synergy building within the firm adds overall value. Related product diversification is one

manifestation of this process. Firms that seek ways to repackage existing resources and existing routines may discover ways to improve their current product line. These improvements may spawn new products related to the current product portfolio. Competitors would be unable to perform such feats by definition as they lack the inside knowledge required. Thus, the firm engaging in related product diversification engages in activity that is difficult to replicate – a prerequisite for generating competitive advantage (Lubatkin & Chatterjee, 1994).

From a competitive dynamics viewpoint, rivalry initiates from two primary conditions. The first condition is mature markets with decreasing consumer demand. The second is the condition of uncertainty within the marketplace where competitors are unsure of future revenue stability (Porter, 1980, 1991). In both cases, competitors act and react to gain a better position in the market. Firms seek to overcome this uncertainty by gaining advantage over their rivals. Developing actions and responses quickly may aid firms in times of highly fluctuating industry revenues (Fredrickson & Mitchell, 1984). Firms can utilize pre-existing resources, routines, or capabilities to create new combinations. The new combination cannot easily be duplicated by other firms because they lack the prerequisite resources or may not be able to ascertain the contents of the capabilities in order to re-create it. Therefore, firms that repackage new capabilities from their existing resource portfolio are more likely to launch successful attacks or counter-attacks against rivals, thereby rendering greater value for their firm.

From an RBV perspective, firms that utilize enriching sub-processes are able to formulate new capabilities by repackaging their existing portfolio resources or by blending in new resources. Because these capabilities are generated endogenously,

competitors are lacking in the ability to duplicate such actions. As a result, new capabilities are developed in ways that will remain causally ambiguous to competitors, making it more difficult for them to duplicate. Thus, firms that enrich their portfolios with related capabilities add to their stock of valuable, rare, and inimitable resources. With these three conditions satisfied, it is likely that firms may create competitive advantage. If firms can create these new capabilities in ways that are non-substitutable, sustained competitive advantage may be achieved (Barney, 1991).

With respect to resource portfolio management, firms exploit their current abilities and develop new ones as a result. The enriching sub-process is active when firms use their existing resource portfolio to generate new capabilities. This repackaging concept enriches the existing portfolio by fostering new understanding through new combinations of existing knowledge. Further, enriching will enable firms to respond more quickly to changing market conditions, and to out-maneuver rivalrous competitors. Finally, firms that generate related, enriching capabilities may further develop their stock of valuable/rare/inimitable/non-substitutable capabilities, yielding more sources of sustained competitive advantage.

Pioneering Sub-process

Pioneering is the bundling sub-process that creates entirely new capabilities by acquiring the needed resources from the market. The newly created capability is exploratory in nature and is meant to add new avenues of value creation for the firm. A firm may discover an opportunity to acquire an external resource or capability that will

enable it to extend its product line or service in a new way. Pioneering is the process where firms acquire a resource to develop a new capability.

For example, a major university in New York was once a community college. The administration decided to change the school into a world class research institution. The resources needed to perform this feat were not in place. Administration bundled internal resources, its location in a major metropolitan area, and its newly acquired financial and administrative commitments to achieve an entirely new goal. It explored new ways and new procedures to internally regenerate itself from a community college to a Carnegie I research institution.

Recent actions by FedEx and UPS provide examples of enriching sub-processes generating new sources of value. Both firms had logistical expertise moving packages around the world overnight. They repackaged that capability with newly acquired consulting resources to create a totally new logistical consulting arm. Now these firms offer more than just shipping of packages; they offer other firms a way to outsource their logistical operations into the hands of a world class operator.

From an organizational learning perspective, exploratory learning (March, 1991) is used by firms to expand their absorptive capacity, which enables them to learn from their past and apply that learning to new situations in the future (Kogut & Zander, 1992; Zahra & George, 2002). In essence, exploratory learning and enhanced absorptive capacity enable firms to learn how to learn (Schilling, Vidal, Ployhart, & Marangoni, 2003). Firms learn how to add value to their portfolio by exploring new concepts, ideas, or processes to the point where they have developed the learning-to-adoption process into an independent capability (Ireland, Hitt, & Vaidyanath, 2002). This meta-

organizational learning (Fiol & Lyles, 1985; Lei, Hitt, & Bettis, 1996) becomes a source for strategic flexibility (Hitt, Keats, & DeMarie, 1998; Zahra & George, 2002) where firms take advantage of their ability to quickly respond to opportunities, defend existing positions, or reverse bad decisions (Shimizu & Hitt, 2004). Firms that generate new resources or ways of repackaging existing resources are said to likely generate new avenues of value creation (Galunic & Rodan, 1998). Thus, firms that learn how to re-combine existing resources, routines, or capabilities with newly acquired resources to create new capabilities will likely increase their absorptive capacity and their strategic flexibility resulting in an increase of value creation.

From a competitive dynamics perspective, firms are known to operate in dynamic environments and must be able to respond accordingly (Eisenhardt & Martin, 2000; Teece et al., 1997). In such environments, competitors act and react in rivalry to position themselves better within the marketplace. Similar to the bundling sub-process of enriching, firms may seek advantage more quickly by basing new product and service offerings from existing capabilities. Combining newly acquired capabilities can be risky in that building synergy within an alliance or an acquisition is difficult and may lead to decreased performance if not achieved. Thus, firms take greater risk when engaged in pioneering than when engaged in enriching activities. However, acquisitions allow firms to quickly gain new abilities faster than if they developed the new ability organically (Hitt, Ireland, & Harrison, 2001). Therefore, firms that pioneer new capabilities from combining old and new capabilities are likely to create value for their stakeholders. Further, firms may actually generate synergies (Sirmon, 2003) including: sharing of tangible resources, sharing of intangible resources, and use of strategic controls

(Hoskisson & Hitt, 1988) to coordinate such sharing or to aid in the implementation of new ideas. Such synergies would further strengthen the argument that bundling activity creates value for firms.

From an RBV perspective, firms that develop new capabilities more quickly, with greater accuracy, and with more efficiency than firms that lack the existing resources (Alchian & Demsetz, 1972) gain advantage over competitors. Research suggests that organic growth (Hitt, Ireland, & Tuggle, 2006) defined as internally generated entrepreneurial growth, enables firms to more quickly and efficiently generate new sources of revenue. Firms using the bundling sub-process of pioneering will acquire new resources and blend them with existing resources (or capabilities) to form new capabilities. Sources for new resources or capabilities include strategic alliances (Hitt, Dacin, Levitas, Arregle, & Borza, 2000a), or acquisitions (Hitt, Hoskisson, Johnson, & Moesel, 1996). Although firms need to avoid poor acquisition targets to prevent value loss (Hitt et al., 2001), a well exercised acquisition can add value to firms (Hitt, Harrison, Ireland, & Best, 1998; Morrow et al., 2007) by creating unique combinations of resource deployments that competitors will be unable to imitate because the basis of the new capability was the firm's existing capabilities. By generating new capabilities using old and new resources, the firm increases the level of ambiguity of its capability, thus increasing the competitive advantage for the firm by keeping competitors from duplicating or substituting.

Firms engaged in the bundling sub-process of pioneering explore new capabilities by blending existing resources, routines, or capabilities with newly acquired resources, routines, or capabilities. The exploratory nature adds to firms' absorptive

capacity and their levels of strategic flexibility. Further, pioneering enables them to respond more quickly and efficiently to the dynamic and changing demands of the competitive landscape. Using existing capabilities, firms are able to form new, unique, and hard-to-imitate capabilities.

Multiple Sub-processes

Firms are likely to employ various combinations of all three bundling sub-processes depending on their competitive environment. If every newly formed relationship between an existing capability and its new mate forms a dyad, the new matrix of dyadic relationships increases the complexity of a firm's portfolio. The complexity renders it impervious to those who seek to duplicate it and hence acts as another isolating mechanism through ambiguity (Dierickx & Cool, 1989). As the interconnections between resources grows, the opportunities to generate value from those interactions grows as well (Teece, 1982). However, generation of knowledge has its costs and myopia towards learning can restrict firms' ability to generate advantage from existing capabilities (Levinthal & March, 1993). Thus, firms are likely to utilize multiple bundling sub-processes but will not pursue all of them with equal vigor.

From an organizational learning perspective, if combining existing capabilities in new ways adds to a firm's knowledge stock and the acquisition of new resources also adds to the firm's knowledge stock, then engaging in both sub-processes increases the absorptive capacity of the firm. Likewise from a competitive dynamics perspective, if firms repackage existing capabilities with other existing capabilities or with new capabilities to increase the speed of actions or responses to rivalrous behavior, doing

both strengthens that relationship. Finally, from the RBV perspective, if stabilizing, enriching, ***or*** pioneering sub-processes aid firms in generating new capabilities that are valuable, rare, hard to imitate, and non-substitutable, then doing all three enhances causal ambiguity and allows firms to generate complex, difficult to imitate, and impossible to duplicate arrays of capabilities. If managed effectively, these new arrays help to sustain competitive advantage for leading firms.

It can be assumed that firms have multiple capabilities. Some need to be maintained and others enriched. Additionally, because of the changing environment and competitors' development, firms must develop new capabilities. Thus, they are likely to engage in all three processes continuously.

Environmental Moderators

Many authors have suggested that environmental context matters with respect to firm strategy (Wernerfelt & Karnani, 1987) and its impact on firm performance (Hitt & Ireland, 1984; Ireland, Hitt, Bettis, & de Porras, 1987). However, the RBV literature remains weak in producing an understanding of how, when, and to what magnitude environmental influences matter.

The connecting thread among these multiple influences is uncertain environments. Changing demands within the industry environment can render existing resources obsolete, decreasing their value. Thus, changing environments add doubt to expected outcomes of strategic leaders' decisions (Baum & Wally, 2003). The threats posed from environmental forces can affect the rationality of the decision making

process (Priem et al., 1995) as well as firm performance (Keats & Hitt, 1988). Understanding these influences and their resulting effects on firms is of interest to scholars and practitioners alike.

From an organizational learning perspective, environmental context may affect firms' ability to replicate knowledge throughout the firm in an efficient manner (Kogut & Zander, 1992). Furthermore, firms' ability to utilize exploitative learning to re-package existing capabilities in new ways may be limited during times of low dynamism or low munificence because the motivation to implement such programs would decrease (Priem et al., 1995). Likewise, firms' ability to utilize exploratory learning to bundle existing capabilities with newly acquired capabilities may also be limited due to lack of environmental conditions that require the change (Garg et al., 2003). Whereas, in conditions of high dynamism, firms seek to replicate knowledge throughout the firm to increase its ability to learn from successes and failures (Garg et al., 2003). Also, firms seek more aggressive ways to exploit their existing knowledge and can do so quickly by repackaging multiple combinations of existing capabilities (enriching) or acquiring new abilities (pioneering). Firms gain new avenues of absorptive capacity production by blending existing capabilities with newly acquired capabilities. Thus, firms operating in higher dynamism are likely to engage in more aggressive bundling activity to maintain flexible response to their environment (Grant, 1996).

The competitive dynamics literature explores multiple environmental contexts where firms must consider different ways to manage their resource portfolios. Threats from buyers, suppliers, and competitors are a normal environmental concern (Porter, 1980). However, as market life cycles level off and demand from customers slows,

conditions of rivalry can arise (Chen & Miller, 1994). The opposite condition may cause the same effect where market demands fluctuate, increasing uncertainty, and thereby enhancing rivalry (Sirmon et al., 2007). During times of change or dynamism, firms seek ways to maintain perspective on their long term objectives while attempting to handle immediate threats to the firm (Weick, 1988). Firms may seek to overcome these discontinuities (Tushman & Anderson, 1986) by introducing new products or services. Because speed to market can contribute significantly to firm performance, generating products from an existing pool of capabilities enables firms to move more quickly.

Therefore, firms' actions and responses to rivalry are influenced by environmental concerns. Specifically, in conditions of low dynamism, market conditions are more stable and rivalry is generally low. Thus, the demand for firms to initiate offensive actions or create defensive responses is lessened. As such, the motivation to engage in stabilizing activities is higher, and engaging in enriching or pioneering activities is lower. As a result, the overall bundling process is likely to be less active. In conditions of high dynamism, market conditions are less stable and rivalry is likely to be higher. Thus, the demand for firms to initiate offensive actions or create defensive responses is increased. As such, the motivation to engage in stabilizing activities is less than the motivation to engage in enriching or pioneering activities.

From the RBV perspective, firms' motivation to generate capabilities that are valuable, rare, inimitable, and non-substitutable is affected by the environment. In conditions of low dynamism, firms are not as motivated to incorporate change into their product lines or to find new capabilities. Firm motivation to enrich or pioneer is likely to be lower. In contrast, firms' motivation to generate valuable/rare/inimitable/non-

substitutable capabilities in high dynamism is greatly enhanced. When dynamism is high, firms seek multiple ways to generate advantage and will likely engage in greater levels of enriching and/or pioneering activity.

Past research has claimed that a single environmental variable consideration is inadequate and has recommended the examination of multiple environmental variables (Baum & Wally, 2003; Prescott, 1986). In this research, I seek to explore the moderating effect of multiple environmental moderating conditions. First, I combine conditions of munificence and dynamism to study multiple environmental moderation effects. Then, I add a punctuated event to the existing environmental condition to observe its impact on the bundling process-to-advantage relationships.

Dynamism / Munificence

High dynamism. Dynamism refers to the rate of change in the environmental conditions within an industry. When dynamism is high, industry conditions are changing quickly. In turn, firms must rapidly re-align their strategies. Firms are forced to change their product portfolio line-up as well as their processes used to offer those products. Existing products and services become quickly obsolete. Competitor actions are difficult to detect or assess as many competitors are acting and responding to competitive stimuli. As a result, the mass of information flow makes it difficult for firms to process and understand the existing conditions. To compound the issue further, consumer desires may be fluctuating dramatically, adding to the confusion. Finally, technology can also force changes in firm spending or strategy. The conditions indicate an environment where customers and competitors are in flux. Firms can be overwhelmed with

information flow, unsure of the accuracy of that information and find it challenging to understand the changes (Priem et al., 1995).

In conditions of high environmental dynamism, firms engage in business activity where the environment is less stable. From an organizational learning perspective, firms are forced to learn new knowledge more quickly than in conditions of low dynamism and are therefore more likely to engage in activities that would increase their absorptive capacity (Hitt, Ireland, & Lee, 2000b). From a competitive dynamics perspective, actions and responses of competitors are less predictable in high dynamism, which therefore increases the likelihood of rivalry between competitors. Therefore, the motivation to respond to rivalrous conditions is greater. Finally, from an RBV standpoint, the high level of environmental changes makes inimitability and substitutability more valuable as firms seek to replicate and supersede competitors. Firms may develop new capabilities that are valuable/rare/inimitable/non-substitutable to maintain a competitive advantage, increasing the complexity of its capability portfolio thereby protecting it from competitors' efforts to replicate (Chen, 1996).

Low dynamism. When dynamism is low, industry conditions are changing slowly and firms are relatively stable in their strategies. Firms are not significantly changing their product portfolio and are rarely altering their processes used to offer those products. Competitor actions are slow and steady, thus making them easy to detect and assess. Competitive information flow is slow and easy to interpret. Consumer desires are stable and technology changes are few (Baum & Wally, 2003). These conditions indicate an environment where customers, competitors and capabilities are stable; thus, firms are confident that their advantage is sustainable.

When the external environment is stable, from an organizational learning perspective, firms are not forced to learn new things as quickly as in conditions of high dynamism and are therefore not as likely to engage in activities that would increase their absorptive capacity. As such, actions and responses of competitors are more predictable in low dynamism environments, which therefore decreases the likelihood of rivalry between competitors. As a result, there is less need to respond to rivalrous conditions. Further, the low level of environmental changes make imitability and substitutability less of a concern as firms are not seeking to replicate competitors as much, thereby decreasing the need to develop new resources for competitive advantage.

High munificence. Munificence refers to the industry environment and specifically to the availability of resources the firm may need to execute its strategy (Castrogiovanni, 1991). Conditions of high munificence suggest that the markets pursued by the firm are rich with investment capital, making it easier to attract funding at a reasonable price. Also, economic development programs are plentiful and offer support for the business community or the industry in which the firm competes. Further, the markets are likely to have profitable opportunities for the firm to exploit and the general business environment is not threatening but quite inviting for the firm.

Low munificence. In contrast, conditions of low munificence suggest that threats to firm survival are moderate to high. The markets pursued by the firm are lean with respect to investment capital, meaning it is expensive to raise capital. Also, economic development programs are few and offer little support for the business community or the industry in which the firm competes. Further, the markets have few opportunities for the

firm to exploit and the general business environment offers little or no access to resources to the firm.

Blending. Although the moderating effects of dynamism and munificence has been shown to be important (e.g., Castrogiovanni, 1991), more research is needed to determine their combined influence (Elbanna & Child, 2007). In each environmental condition, bundling processes are likely adjusted in response to those conditions in order to generate competitive advantage for firms. Thus four mixed conditions, or scenarios, are possible. For each, an expected set of bundling routines are the likely response from firms. Each scenario combination is shown in Table 1 (Appendix E) and the full empirical description is attached in Appendix B.

Scenario 1. In the first scenario, dynamism and munificence are high. In this situation, the rate at which industry conditions are changing is high, but firms enjoy favorable access to resources, capital and other opportunities for growth. Thus, firms are under heavy pressure to change, but also have access to resources to facilitate such change. Because firms have access to capital and other assistance, it is likely that firms will spend a great deal of effort to improve their portfolios to build new capabilities so they can respond more quickly to the changing environment. Thus, the pioneering sub-process is likely to be most valued. However, firms will not neglect their current portfolio and are likely to pull heavily from it to speed new ideas to market. Enriching sub-processes re-package existing resources and existing routines into new capabilities. Given the speed of the changing environment and the nature of enriching sub-processes to quickly produce new capabilities from existing portfolios, it is likely that firms will also engage enriching sub-processes to create advantage. While firms are unlikely to

eliminate stabilizing processes, they will likely decrease its emphasis. Therefore, firms are likely to utilize all three bundling sub-processes to improve performance and create competitive advantage but the order of their priority will depend upon the environmental condition. Thus it is proposed:

> **Hypothesis 1A**: In conditions of high dynamism and high munificence, managers will engage in pioneering sub-processes more than enriching sub-processes to create value.
>
> **Hypothesis 1B**: In conditions of high dynamism and high munificence, managers will engage in enriching sub-processes more than stabilizing sub-processes to create value.

Scenario 2. In scenario 2, dynamism is high but munificence is low—perhaps the most desperate of situations. In this condition, the rate at which industry conditions are changing is high, but firms enjoy little access to external resources, capital, or other opportunities for growth. Thus, firms are under heavy pressure to change, yet have little access to the resources that could facilitate that change. Because firms have little access to capital or other assistance, it is unlikely that firms will spend a great deal of effort in pioneering sub-processes as the access to new resources is low. Firms need to generate new sources of advantage and must do so quickly. The fastest way to generate new capabilities is to re-package existing resources and capabilities. That way, the lack of new resource availability due to low munificence can be counteracted by using the existing resource portfolio to develop new capabilities. Enriching processes repackage existing resources and existing routines to create new capabilities. Because the access to new resources is curtailed in conditions of low munificence, firms are less likely to add new resources and more likely to focus on the generation of new capabilities via re-

packing of existing capabilities (enriching) and the improvement of existing capabilities (stabilizing). Thus, enriching sub-processes will likely be utilized more than stabilizing sub-processes. Likewise stabilizing sub-processes will likely be utilized more than pioneering. Thus it is proposed that:

> **Hypothesis 2A**: In conditions of high dynamism and low munificence, managers will engage in enriching sub-processes more than stabilizing sub-processes to create value.
>
> **Hypothesis 2B**: In conditions of high dynamism and low munificence, managers will engage in stabilizing sub-processes more than pioneering sub-processes to create value.

Scenario 3. In scenario 3, dynamism is low yet munificence is high—perhaps the most desirable of situations. In this condition, the rate at which industry conditions are changing is low yet firms enjoy easy access to external resources, capital, or other opportunities for growth. Thus, firms are under little pressure to change yet have great access to the resources that could facilitate change when desired. Because the demand for rapid change is low, firms are less likely to engage in internal creation but instead spend time making incremental improvements. Thus, stabilizing sub-processes will be the likely focus. However, because the availability of resources is high, it is also likely that firms may experiment with new additions to their existing portfolio. Firms are less likely to bother with re-packaging existing products and services since the pressure to do so is low while the availability of new resources is so high. Pioneering sub-processes take existing resources and capabilities and combine them with externally obtained resources and/or capabilities to add new capabilities to the firm's portfolio. Thus, stabilizing and pioneering sub-processes are the most likely way for firms to improve

and bundle capabilities to create advantage, while enriching sub-processes are less likely to be used. Thus, it is proposed that:

> **Hypothesis 3A**: In conditions of low dynamism and high munificence, managers will engage in stabilizing sub-processes more than pioneering sub-processes to create value.
>
> **Hypothesis 3B**: In conditions of low dynamism and high munificence, managers will engage in pioneering sub-processes more than enriching sub-processes to create value.

Scenario 4. In scenario 4, dynamism and munificence are both low. In this condition, the rate at which industry conditions are changing is low and firms have little access to resources, capital, and other opportunities for growth. Thus, firms are under little pressure to change and have little access to resources to facilitate such change. Because firms have such low access to capital and other assistance, it is unlikely that firms will spend a great deal of effort in creating new capabilities by pulling from an environment that offers few resources. Instead, the need for incremental improvements will likely be the primary focus of managers as the demand for change is low. Enriching processes take existing resources and existing routines and re-package them into new capabilities; because demand for change is low, firms may expend some time and effort to enrich but their emphasis will be stabilizing. Pioneering sub-processes require new resources for firms to acquire from the marketplace; thus, because access to external resources is low, firms will be discouraged from utilizing pioneering sub-processes. Firms' main concern in this environmental context is likely to be loss of competitive parity. Thus, stabilizing sub-processes are the main focal point for managers to ensure that continuous improvements are ongoing so that parity may be protected. Enriching

and pioneering sub-processes are less likely to command attention. Thus, it is proposed that:

> **Hypothesis 4A**: In conditions of low dynamism and low munificence, managers will engage in stabilizing sub-processes more than enriching sub-processes to create value.
>
> **Hypothesis 4B**: In conditions of low dynamism and low munificence, managers will engage in enriching sub-processes more than pioneering sub-processes to create value.

Punctuated Event

I seek insight into the moderating influences of munificence and dynamism with respect to firms' bundling process management and in particular on its ability to gain competitive advantage using that process. Uncertain environments alter information flow, thereby disrupting organizational processes used to generate value within firms (Sirmon et al., 2007). These disruptions may occur from a variety of sources. However, dynamism and munificence are considered 'normal' environmental influences. Punctuated threats are quite different. They are difficult to predict and thus occur without warning and often affect many industries simultaneously.

In punctuated events, environmental conditions change abruptly and demand immediate response from firms (Meyer et al., 1990). Additionally, sudden uncertainty generates ambiguous and/or equivocal information, thereby confusing cause-effect associations during times of exogenous shocks (Keats & Hitt, 1988). Then conditions, in turn, affect the immediate decision making processes within the firm (Khanna & Palepu, 1999).

In contrast to environmental conditions of dynamism and munificence, a punctuated event dramatically changes the "normal" condition. One industry may experience conditions of high dynamism and high munificence while another industry experiences conditions of low dynamism and low munificence. Yet, both industries may be dramatically affected by a single punctuated event. The response of firms to punctuated events that are introduced into pre-existing environmental conditions of munificence and dynamism is a focal issue. The research question, then, is how do firms change their bundling sub-processes to respond to a punctuated change in their operating environment?

Changing environmental conditions often affect industries in different ways. For example, recent geo-political events in the world have led to higher energy costs. Two Gulf wars, increased terrorist activity, and greater levels of political unrest have taken their toll on the international commodities market and specifically on the price of oil. Recent prices have climbed above $70 per barrel (Farivar, 2006) and experts have predicted even higher prices over the next few years. High oil prices translate into higher costs for gasoline, heating oil, and all other petroleum based products. Those increases have a domino effect, thereby increasing transportation costs for nearly all products and for many services. Thus, the majority of industries are affected significantly when energy prices increase dramatically.

If a punctuated event were introduced into a given munificence / dynamism setting, firms are forced to alter their processes to respond to the new threat. An energy crisis may elevate the prices of oil, gasoline, and other transportation costs to many times their normal level. If a major political event (such as the collapse of the Saudi

Arabian government) were to occur, oil prices could increase as high as $262 per barrel (Schwartz, 2006). If such a change drives gasoline prices to $15 per gallon, most firms would be forced to alter their business practices in response to this threat. Empirical treatments of scenarios with punctuated events may be read in scenarios 5 through 8 attached in Appendix B.

Given that an environmental context of munificence and dynamism exists for a firm, the addition of a punctuated event forces the firm to re-evaluate its strategy and, in particular, its bundling processes. In environments without punctuation, it was hypothesized that firms should engage in stabilizing sub-processes, regardless of scenario, to protect competitive parity. However, when a punctuated event strikes, I propose that firms will abandon stabilizing sub-processes until the impact of the punctuated event has been removed or has been absorbed into a 'new normal' environmental context. Firms that maintain their stabilizing sub-processes will likely experience decreased performance. Firms that decrease or even abandon stabilizing sub-processes will experience an increase in performance. Thus, it is hypothesized that:

> **Hypothesis 5**: In conditions of punctuated threat, firms that decrease or abandon stabilizing sub-processes will experience greater performance than firms who do not.

A summary of hypotheses is included as Table 3.

CHAPTER IV

METHODOLOGY

Study Design

Policy Capturing Tool

The policy capturing tool was based on some critical research in behavioral decision theory (Slovic, Fischoff, & Lichtenstein, 1977; Slovic & Lichtenstein, 1971). A survey instrument was developed to apply the tool to evaluate criteria used in rendering various decisions including: labor management negotiations (Balke, Hammond, & Meyer, 1973), performance appraisals (Taylor & Wilsted, 1974), sub-unit effectiveness (Hitt, Ireland, Keats, & Vianna, 1983; Hitt & Middlemist, 1979), promotion candidates (Stumpf & London, 1981), affirmative action programs (Hitt & Keats, 1984), strategy process evaluation (Ireland et al., 1987), psychological contracts (Rousseau, 2005; Rousseau & Anton, 1988), selection of managers (Hitt & Barr, 1989), acquisition targets (Hitt, Dacin, Tyler, & Park, 1997; Hitt & Tyler, 1991), technology collaborations (Tyler & Steensma, 1998), emerging market partner selection (Hitt et al., 2000a), and strategic alliance partner selection (Hitt, Ahlstrom, Dacin, Levitas, & Svobodina, 2004).

Managers may be unable to articulate the criteria used in decision making (Hitt & Keats, 1984). Policy capturing 'captures' the criteria elements that managers use in their decision making as well as the weights applied to those elements (Karren & Barringer, 2002). In this study, the policy capturing tool evaluates what bundling processes

managers use to generate competitive advantage for their firm. The tool works as follows.

The manager is given a survey instrument with a series of cases to evaluate. Each case consists of a written hypothetical scenario where conditions of environmental dynamism and munificence are manipulated high/low for each—a total of four scenarios. Following the written scenarios, the manager reviews different combinations of the bundling sub-processes (stabilizing, enriching, pioneering), an explanation of these items is detailed below. Each of the bundling process items is randomly scored between 1 (little) and 5 (much). The items are given random scores to avoid issues of multicollinearity. For each scenario, the respondent evaluates how effective the scored measures (the bundling sub-processes) will be in creating competitive advantage with respect to the written scenario (the environmental condition). The respondent is asked to hypothetically place her/his firm into the scenario and judge its effectiveness with respect to their industry competitors. S/he does so using a 7 point Likert scale ranging from “likely ineffective” to “highly effective” (see Appendix A).

Consistent with past policy capturing research, an orthogonal design was avoided due to its lack of practicality and representativeness (Aiman-Smith, Scullen, & Barr, 2002). A fully crossed design would have increased the survey length to an unreasonable level and introduced the potential for respondent fatigue. Thus, a confounded factorial design was utilized (Karren & Barringer, 2002). For each of the four written environmental scenarios, four sets (or cases) of random bundling process criteria scores are provided. Respondents are asked to determine the effectiveness of each case, for a total of 16 cases per respondent. This is consistent with past policy capturing research

which calls for a minimum of five cases per cue (Karren & Barringer, 2002). Because there are three environmental cues and three bundling cues of interest, at least thirty cases were needed. Respondents were randomly split into two groups, each responding to only half (16) of the total number of possible (32) cases, thus reducing the effect of response fatigue.

Each bundling sub-process has 4 items. Since there are 3 sub-processes, the size of the randomized test matrix is 12 processes by 16 cases. A randomly generated table of numbers from 1 to 5 was created for each cell of the 12 x 16 matrix. A correlation table was produced and tests for inter-correlation were conducted. Pearson R^2 values were utilized. None of the correlations was above .53, 91% of the correlations were below .4 and 79% below .3. In addition, a single factor ANOVA test was run to test the null hypothesis that all cases were not significantly differentiated. The F value was 1.31 which is less than the critical F value of 1.84 which leads us to accept the null hypothesis and conclude that the case values are randomly distributed. The test matrix and associated ANOVA and correlation table are attached as Appendix C.

Half of the surveys expose respondents to a punctuated event. This alternate survey set is identical to the first, but includes a punctuated threat added to each of the four written scenarios. The bundling process conditions and the competitive advantage questions remain the same. This survey set is designed to tease out differences in effectiveness of firm bundling processes in environmental conditions that have been besieged with a dramatic (punctuated) event.

Both instruments are 23 pages long including instructions, respondent demographics, and firm information. Long surveys are common for policy capturing,

however a 23 page survey is significantly less than past research. Past work has validated this method as a means to assess the actual performance of the target firm by investigating these hypothetical scenarios (Hitt & Middlemist, 1979).

Face Validity Study

No survey items exist to measure bundling sub-processes within firms. Before the policy capturing tool described could be utilized, the individual measures used for each sub-process were developed. First, each of the three bundling sub-processes was operationalized using general statements representing activities associated with each sub-process. Existing items from various sources in the literature (Tyler & Steensma, 1998) were blended with new items to create a list of thirty-two measures to represent the constructs of stabilizing, enriching, and pioneering. A panel of academic strategy experts were recruited (Amabile, 1988; Tyler & Steensma, 1998). That panel read qualitative descriptions of all three bundling sub-processes including examples of each. The panel then evaluated the individual survey items by indicating if that item measures stabilizing, enriching, pioneering, multiple items, or none of the above. Face validity respondent sheets were tallied.

Chronbach's alpha was used to determine the inter-rater reliability (IRR). The one-way random effect interclass coefficient method was used to calculate IRR, using SPSS software, to examine the degree of agreement in expert panel item identifications (Shrout & Fleiss, 1979). Alpha's of .6 or higher are generally sought; although, .7 or higher is preferred (Nunnally, 1978). Appendix D shows the results of the IRR with alpha of .86, confirming high agreement between the expert raters.

For each construct, individual item-to-total correlations were determined, the lowest correlations were to be eliminated (Churchill, 1979). However, several items had full agreement between raters; thus, negating the need for that approach. Alternatively, the items were recoded as dichotomous variables based upon their original intention. In other words, an item originally written as a stabilizing measure was coded as 1 if the rater described that item as stabilizing and 0 if the rater described the item otherwise. All like-minded measures were then listed in a descending order of means. The highest four means were chosen as the items to represent the construct. The resulting items are discussed below.

Items selected as probable indicators of stabilizing sub-processes included:

1 converting repetitive actions (i.e., payroll or safety routines) into codified procedures to increase efficiency
2 refining standard operating procedures to increase efficiency
3 protecting current market position by preventing competitor imitations
4 maintaining current capabilities to defend current market position

Items selected as probable indicators of enriching sub-processes (several items had equivalent means) included:

1 re-configuring capabilities from within the firm to create new business opportunities
2 creating new products by re-configuring existing products
3 discovering new ways of using existing capabilities to create new opportunities
4 exploiting current capabilities to generate new ones
5 combining existing capabilities from two departments to add new products
6 exchanging personnel from different departments to transfer ideas internally

However, items 2, 3 and 4 were determined to be similar. Item 3 was maintained thus, eliminating items 2 and 4, and reducing the final list to four items.

Items selected as probable indicators of pioneering sub-processes included:

1 acquiring a new capability from outside the firm to implement a new strategy
2 merging with another firm to add a new product to the existing portfolio
3 acquiring another firm to add a new product to the existing portfolio
4 adding a manufacturing capability to an existing R&D capability (or vice versa)
5 partnering with another firm to offer a blended product (e.g., animated movie characters added to McDonald's 'Happy Meals')

Items 2 and 5 were determined to be similar. Item 2 was dropped thus, eliminating item 5, and reducing the final list to four items. The panel was encouraged to add qualitative comments. Comments and scores were used to reduce the number of items for each construct down to four to reduce respondent fatigue. The items were then grouped with the random test-case matrix and the written scenarios to form the pilot study core. Instructions, firm data, and respondent demographic information were added and the pilot study was administered.

Pilot Study

To further test the understanding and operationalization of the survey instrument, a representative group of executives were recruited. The Center for Entrepreneurship and New Venture Studies sponsors an MBA technology transfer competition annually. Judges used for the competition are recruited from industry. These judges represent the same demographic and industry characteristics targeted within the study sample. Volunteers from the group were sought. Twenty agreed to participate. Each participant was emailed a link to the SurveyMonkey® website containing the survey. Half the participants were sent to the base survey, while the others were sent to the punctuated survey. 17 of the 20 (85%) completed the pilot study. Survey data was collected online through the SurveyMonkey® website.

The participants seemed to have little difficulty understanding the survey instructions or items. A few improvements in language were pointed out and incorporated into the final survey instrument.

Sample

The main survey was targeted to small and medium sized businesses associated with the Center for Entrepreneurship and New Venture Studies at Mays Business School. The contact was sent via email distribution. The Center has around 1200 firms in its email distribution list which represents the target population of firms sought. In addition, 'Aggie 100' firms that have demonstrated past willingness to participate in research activities of the Management Department were specifically targeted with additional emails. The 'Aggie 100' firms consist of award winners from 2005 and 2006, along with several firms that applied but were not chosen for recognition. This 'Aggie 100' subset represents approximately 250 of the 1200 firms on the CNVE distribution list. Aggie 100 firms are similar in industry and respondent characteristics to the larger population.

Response Rate

Given the low survey response rates (median 36% in SMJ 2000-2001) experienced by researchers in strategy (Slater & Atuahene-Gima, 2004), a five step tailor-designed survey procedure recommended by Dillman (2000:151) was modified into a comprehensive multi-step procedure as follows:

1. Pre-notification email sent to respondents
2. Email sent with link to SurveyMonkey® online survey 1 week later
3. Second email sent with link to SurveyMonkey® after 2 weeks
4. Center for Entrepreneurship and New Venture studies electronic newsletter sent after 2 weeks with a reminder message and survey link attached

In order to have adequate statistical power to test the hypotheses, a target sample size of 100 was sought (Tabachnick & Fidell, 2001). HLM rule of thumb sample sizes are based on 30 respondents from 30 groups, thus n=900 (Hofmann, Griffin, & Gavin, 2000). Using policy capturing, each respondent produces a sample of 16 (in this study), thus 100 respondents would produce an n=1,600. When using fewer than 30 groups, a larger sample size is recommended (Hofmann, 1997). Although the difference between 900 and 1,600 is high, it provided a worthy goal. 1200 emails were sent in the first wave. 203 were bounced back due to invalid email addresses. In total, 997 surveys were sent and likely received by the target recipients. 174 replied for a total response rate of 17.5%. The actual response rate is likely much higher due to spam filters that may have restricted the survey emails from reaching their intended recipients yet did not bounce a warning message back to me. Thus, some recipients may have never received an invitation to respond. Given the higher demands placed on respondents, it is not unusual to have lower response rates in policy capturing research. Past research has pulled from captive response pools such as undergraduate / MBA / Executive MBA students completing the survey as a class requirement (Hurt, Maver, & Hofmann, 1999). However, given the nature of the repeated design and the associated increase in power associated with a policy capturing, requirements for statistical power were exceeded.

Measures

Dependent Variable - Performance

To answer the call for multiple measures of the dependent variable (Prescott, 1986), I use four measures for performance: revenue growth, market share, profit growth and the average of all three. The respondents were asked to evaluate the outcome of a firm's bundling process portfolio given the criteria values listed and the environmental condition offered in each scenario. For each performance measure, respondents were asked, using a 7-point Likert scale, to indicate their perception of the firm's performance based on its application of various bundling sub-processes in response to each environmental context.

Independent Variables - Bundling Sub-processes

The final survey consisted of four measures for each bundling sub-process, totaling twelve bundling criteria. For example, the stabilizing sub-process was represented by four statements such as "The firm often promotes continuous quality improvement of its product or service renderings". The 5-point Likert scale to the right of each measure indicated the hypothetical level of firm concentration on that item. A score of 5 indicated high firm concentration on an item, whereas a score of 1 indicated low activity. Each sub-process was represented with four such items for a total of twelve items to consider for each scenario.

Each case in the survey had randomly assigned Likert scores to avoid experimenter bias. The twelve criteria by sixteen cases formed a construct matrix.

Random numbers were assigned to each cell similar to past research methodology (Hitt & Keats, 1984). A correlation table was used to test for issues of multicollinearity. Multiple attempts were required to yield a randomly generated matrix that avoided issues of multicollinearity (Hitt & Keats, 1984). For each case, the variances of the predictor variables were balanced. Consequently, each independent variable had equal opportunity to affect the dependent variable (Hitt et al., 2004). The items were randomly listed to avoid order effects; however, the list for each scenario was kept in the same order. A sample survey case sheet is attached in Appendix A.

Variables - Dynamism, Munificence, and Punctuated Threat

Dynamism was operationalized via written scenario. Conditions of dynamism were manipulated into high and low and then combined with a condition of munificence (described below). The attributes of the written scenario were obtained from the literature (Baum & Wally, 2003; Priem et al., 1995). In Baum and Wally (2003), respondents were asked to score their firm on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) along five measures. Each measure made inquiry to the dynamism conditions perceived by the respondent. The measures were:

- Our firm must frequently change its products and practices to keep up with competitors.
- Products / services quickly become obsolete in our industry.
- Actions of competitors are quite easy to predict. [R]
- Consumer tastes are fairly easy to forecast in our industry. [R]
- Technology changes more quickly in our industry than in the healthcare industry.

In this study, I used these statements to create two written scenarios. Both scenarios were comprised of the five statements above. One scenario written in a manner

that communicates conditions of high dynamism; the other to communicate conditions of low dynamism.

Munificence was also operationalized via written scenario. Conditions of munificence were manipulated into high and low conditions and combined with the conditions of dynamism explained above. In a similar manner, the attributes of munificence were pulled from current literature (Baum & Wally, 2003; Hambrick & Finkelstein, 1987). There, respondents were asked to score their firm on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) along five measures. Each measure referenced the munificence conditions perceived by the respondent. The measures were:

- There are few external threats to the survival and well-being of our firm.
- Our markets are rich in investment capital.
- Economic development programs offer sufficient support for our business community.
- Our markets are rich in profitable opportunities.
- Our firm operates in a threatening business environment. [R]

Again, these statements were used to create two written scenarios. One scenario was written to communicate conditions of high munificence; the other low.

Because it is feasible that mixed environmental conditions can occur, these two environmental conditions were permutated. Thus, four written scenarios were created. Each scenario contained conditions of dynamism and munificence. Scenario one communicated high dynamism along with high munificence. Scenario two communicated high dynamism along with low munificence. Scenario three communicated low dynamism along with high munificence, and scenario four communicated low dynamism along with low munificence.

Punctuated threat is also operationalized by written scenario. The collapse of the House of Saud example, explained in the theory development section, was used to create a modified scenario to be considered by the respondent. The written scenarios that explain the dynamism/munificence environment are pre-existing. The punctuated event scenario is then introduced as an 'add-on'. Thus, response of managers to punctuated events occurring post environmental condition will be captured.

A total of eight environmental scenarios were created. Four that represent the permutated conditions of high/low munificence and high/low dynamism. Four more that represent those same conditions but then have a punctuated event introduced. The eight scenarios are attached in Appendix B.

To reduce the survey size, each respondent was exposed to only four of the eight scenarios. Thus, the survey population was split into two groups, non-punctuated and punctuated. The non-punctuated group was exposed to the high/low munificence and dynamism scenarios without the addition of the punctuated event. The others were exposed to the punctuated scenarios. To increase variance to isolate bundling sub-process attention from managers, each scenario had 4 cases of 12 randomly generated bundling sub-process item scores (explained earlier). Thus, each respondent had 16 total cases to analyze future performance.

Control Variables

Firm size. Researchers have consistently determined size to be a significant, confounding influence (Child, 1972; Hitt & Ireland, 1984; Pugh, Hickson, Hinings, & Turner, 1969). The larger firms' become, the greater their complexity in structure,

process, and interactions of people and processes. Thus, because I seek relationships between bundling processes and competitive advantage, it is important to control for the complexity of firms when they grow in size. Therefore size becomes an important control variable. A 7-point Likert scale was used to measure relative firm size.

Industry. Past research has demonstrated that industry conditions significantly contribute to the relationships studied in strategy (Dess, Ireland, & Hitt, 1990; Hitt et al., 2004). This study seeks insights into the relationships between firm bundling process activity and how firms generate competitive advantage with those processes. Therefore it is prudent to control for industry conditions to remove the confounding influence known to exist.

Past performance. Researchers have shown association between past firm performance and future firm performance (Hitt et al., 2004), therefore the firms' overall performance will be evaluated using a modification of the procedure used in Khandwalla (1976). A 7-point Likert scale will capture relative values of profitability, growth rate, financial strength, and public image. Those values will come from the respondent and will be averaged to create the dummy variable for past performance. Past experiences of their firm (including its past performance) will likely influence their evaluation criteria. Thus, firm performance will be used as a control variable.

Methods

HLM

Hypotheses will be tested using hierarchical linear modeling (HLM) methodology. When studying multi level contexts, the methodological assumptions inherent with ordinary least squares (OLS) regression techniques are violated. For example, OLS regression combines residual error variances calculated at both level 1 (firm) and level 2 (environmental scenario). This violates the assumption that errors are to remain independent. HLM calculates the error variances separately, thus maintaining the integrity of independence.

HLM methods have been used extensively in micro research to identify differences between individual actors and the various contexts that influence those actors. The classic example involves performance of school children affected by their school environment (Griffin, 1997; Raudenbush & Bryk, 2002; Vancouver, 1997). Recent literature in the macro research has drawn on more sophisticated empirical methodologies, such as HLM (Gavin & Hofmann, 2002; Hofmann, 1997; Hofmann & Gavin, 1998; McNamara, Deephouse, & Luce, 2003; Short, Ketchen, Palmer, & Hult, 2007). The combination of HLM methodology and policy capturing survey instruments is relatively new (Hitt et al., 2004) and promises to uncover interesting relationships as researchers become more sophisticated in dealing with multilevel issues.

In this study, the level 1 unit of analysis is the respondent-case. Respondents provided their perceptual evaluation of the dependent variable values for each case offered. Thus 16 respondent-case observations are collected from every completed

survey. The level 1 equation consists of the independent variables directly influencing the dependent variable at the respondent-case level. Bundling sub-processes and control variables are regressed onto the various performance measures. The formal level 1 model is shown below. The beta coefficients represent the magnitude and significance of each bundling sub-process on the DV. For example, $\beta 1j$ represents the magnitude of the stabilizing sub-processes' influence on the DV for the first environmental scenario.

The level 2 variables are the dichotomous environmental variables of dynamism and munificence (where 1=high, 0=low), as well as punctuation (where 1=punctuated event, 0=not). The governing HLM equations then are as follows:

Level 1:

$$DV = \beta oj + \beta 1j(Stabilizing) + \beta 2j(Enriching) + \beta 3j(Pioneering) + Rij$$

Level 2:

$$\beta oj = \gamma oo + \gamma o1(Dynamism) + \gamma o2(Munificence) + \gamma o3(Punctuation) + Uoj$$

$$\beta 1j = \gamma 1o + \gamma 11(Dynamism) + \gamma 12(Munificence) + \gamma 13(Punctuation) + U1j$$

$$\beta 2j = \gamma 2o + \gamma 21(Dynamism) + \gamma 22(Munificence) + \gamma 23(Punctuation) + U2j$$

$$\beta 3j = \gamma 3o + \gamma 31(Dynamism) + \gamma 32(Munificence) + \gamma 33(Punctuation) + U3j$$

The HLM procedure simultaneously solves the above equations and renders values for each gamma coefficient.

Hypotheses Testing

Each hypothesis involves a separate combination of the environmental contexts associated in the level 2 equations above. For each hypothesis, the HLM prediction equation can be simplified to account for each environmental context. For example, in hypothesis 1, the environmental condition is high dynamism and high munificence. The resulting simplifications are then, dynamism=1, munificence=1, punctuation=0. The predicted equation will then drop gamma coefficients 03, 13, 23, and 33 (because the value of punctuation=0) while retaining all others. Then, the beta coefficients are calculated with the reduced equation, thus solving the prediction equation at the first level. Each hypothesis assumes a different environmental context, thus a slightly different level 1 prediction equation will result. These beta values are the key to testing the hypotheses.

Hypothesis 1 predicts that managers will emphasize pioneering sub-processes, enriching sub-processes and stabilizing sub-processes in that order as criteria for effective response to the environmental stimuli of high dynamism and high munificence. Referring to the simplified level 1 equation, Hypotheses 1A and 1B would be supported if: $\beta 3\,j > \beta 2\,j > \beta 1\,j$.

Hypotheses 2A and 2B predicts that managers will emphasize enriching, stabilizing, and pioneering sub-processes in that order as criteria for effective response to the environmental stimuli of high dynamism and low munificence. Thus dynamism=1, munificence=0, and punctuation=0. Gamma coefficients 02, 03, 12, 13, 22, 23, 32, and 33 are eliminated. Beta coefficients are recalculated and hypotheses 2A and 2B are

supported if: $\beta 2 > \beta 1 > \beta 3$. Each hypothesis imposes different environmental conditions and requires slightly different testing criteria as summarized in the Table 4.

The testing for hypothesis 5 will require investigation of the stabilizing coefficients mentioned above, comparing the punctuated vs. non-punctuated. A reduction in magnitude or a switch from significant to non-significant would indicate support for hypothesis 5.

CHAPTER V

RESULTS

Descriptive Analysis

Descriptive statistics of the respondents and their firms (level 1) are reported in Table 5 (Appendix E). There were 174 respondents of which 90.3% were male. Educational backgrounds ranged from high school education (1.18%) to PhD (8.24%) with the largest portion of respondents having baccalaureate degrees (45.88%) or masters (44.71%). The functional background of the respondents included engineering (17.65%), sales (10.59%), finance (22.35%), information science (4.71%), marketing (10.59%), management (20%), political science/law (1.18%), or other (12.94%). The title held by respondents was most frequently reported as CEO/President (45.24%). Other titles included chairman of the board (7.14%), board member (2.38%), chief operating officer (2.38%), chief financial officer (1.19%), upper level manager (16.67%), middle manager (13.10%), or other (11.90%). Thus, 75% of respondents considered themselves to be upper level management or higher.

Experience levels also varied. The average tenure at the current firm was 11.5 years (s.d. 9.2) with a range from 1 to 36 years. The average tenure at the current position was 9.5 years (s.d. 7.9) with a range from 1 to 36 years. The average industry tenure was 20.8 years (s.d. 10.4) with a range from 1 to 50 years.

Firms represented in the sample were primarily smaller with 64.7% having 100 or fewer employees. 11.8% of respondents came from larger firms with over 5,000

employees. The remaining 23.5% of firms were evenly distributed in size. The most common industry type represented in the sample was professional service firms at 44.71%, along with manufacturing (14.12%), construction (8.24%) and other (32.9%). Respondents rated the past performance of their firms using a 7 point Likert scale. The average firm performance reported (with respect to competitors in their industry) was 4.99 (s.d. 0.83) with a range from 1 to 6.5 which yields a wide variance of self-reported perceptual performance measures while allying fears of responder bias.

Differences Between Levels

Before testing for multi-level effects, it is first necessary to confirm that significant variation exists in either the slope or the intercept of the level 1 HLM model (Bryk & Raudenbush, 1992; Davison, Kwak, Seo, & Choi, 2002). Thus, null hypotheses must first be tested:

$$Ho = \sigma^2(\beta oj) = 0$$

$$Ho = \sigma^2(\beta 1j) = 0$$

To test these initial nulls, an unconditional means model was run in SAS using the PROC MIXED command (Singer, 1998); the SAS code is included in Appendix F and the resulting output is included as Appendix G. The test is equivalent to a one-way random effects ANOVA model (Hofmann et al., 2000) with one fixed effect and two variance elements – one accounting for variance between environmental scenarios and one representing variation between cases within environmental scenarios. The results are reported in Table 6.

The intercept value of 0.1487 is significantly different from zero, indicating that differences do exist between environmental scenarios, confirming that environment matters. Furthermore, the residual value of 1.0036 is also statistically significant, demonstrating that variance within environmental settings is 14.82 (0.1487 / 1.0036) times that between settings. The interclass correlation between the two variances are calculated as 0.1487 / (0.1487+1.0036) = 0.129 which suggests that 12.9% of the variance occurs between scenarios (individuals are grouped into different scenario types) while 87.1% of variance occurs within firms (within respondent-cases).

Differences Between Coefficients

Establishing significant differences between bundling sub-process coefficients is required before comparing their relative magnitudes which, in turn, are required to test the proposed hypotheses. Testing for differences between level 1 coefficients in a multi-level model is more complex than testing for differences between coefficients of a linear regression model. Although researchers use slightly different metrics to perform the test, the basic premise between them remains consistent. I first explain the basic testing philosophy, and then explain how that philosophy is applied to this study.

To establish that two variables are statistically different, two models are compared. The first model combines the two variables into one variable, while the second model keeps them separate. The null hypothesis equates the two models, stating that no statistical difference exists. The factors needed for the test include a distribution profile, a model fit statistic and the degrees of freedom. The test results are determined

by comparing the net fit statistic to a critical value determined by the distribution profile. The critical value is a function of the alpha (typically .05) and the net difference between the two models' degrees of freedom. If the net fit statistic value is higher than the critical value, then it can be concluded that the null hypothesis is false, therefore the two models are statistically different. Since the only difference between the two models was the handling of the variables (combined vs. separate), it can be determined that the variables are statistically different. In other words, more variance can be explained by separating the variables then by keeping them together, thus distinguishing them as statistically distinct.

In this study, three bundling sub-processes are compared. Before determining the relative differences between stabilizing, enriching, or pioneering sub-processes, differences between them must first be established statistically. Three model comparisons were made: first, to test for significant difference between the stabilizing and enriching sub-processes; second, to test for differences between the enriching and pioneering sub-processes; and third, to test for differences between the stabilizing and pioneering sub-processes.

Recall that the full theoretical HLM level 1 model appears as follows:

$$DV = \beta oj + \beta 1\, j(Stabilizing) + \beta 2\, j(Enriching) + \beta 3\, j(Pioneering) + Rij$$

To render the first test, the null hypothesis states that stabilizing and enriching are not statistically different, which is to say they are the same. If that is so, then β1=β2.

So if β1=β2, then the model can be algebraically simplified by combining the two variables, thus reducing the full equation to:

$$DV = \beta oj + \beta 1\, j(Stabilizing + Enriching) + \beta 3\, j(Pioneering) + Rij$$

Here, the stabilizing variable is combined with the enriching variable to form a single variable. The two models (full vs. reduced) are then compared to determine if they are statistically different. That test is performed by using the appropriate fit statistic (-2 Res Log Likelihood), and the net degrees of freedom between the two models. A chi-squared (χ^2) distribution table is used to determine the critical chi squared value based on an alpha of 0.05 and the net degrees of freedom between the two models.

The full model yields a -2 Res Log Likelihood score of 3645.7 with 9 degrees of freedom. The restricted model yields a -2 Res Log Likelihood score of 3651.2 with 6 degrees of freedom. The critical chi square (χ^2) value based on an alpha of .05 and net degrees of freedom of 3 (9 – 6) is 7.81. The actual net difference between the two models is 5.5 (3651.2 - 3645.7). Since the actual value is less than the critical value, the null hypothesis is accepted, concluding that stabilizing and enriching sub-processes are not distinct. Thus no significant difference exists between the two.

Continuing, stabilizing sub-processes are compared to pioneering sub-processes. Following the same procedure described above, the coefficients for stabilizing and pioneering are constrained as equal to form the restricted model ($\beta1=\beta3$). The restricted model yields a -2 Res Log Likelihood score of 3653.6 and a resulting net difference of 7.9 (3653.6 - 3645.7). Since the actual value is greater than the critical (which remains at 7.81), the null hypothesis is rejected, concluding that stabilizing and pioneering sub-processes are distinct. Thus, significant differences exist between the two. Finally, enriching and pioneering sub-processes are compared ($\beta2=\beta3$). The -2 Res Log Likelihood score of the restricted model is 3649.0, yielding a net difference of 3.3. Thus,

the null is accepted and we conclude that enriching and pioneering sub-processes are not distinct.

Clearly, the lack of statistical difference between pioneering sub-processes will have ramifications on the proposed hypotheses. First, I report the results of the full HLM model keeping all the sub-processes in place to ensure that a complete report is rendered. Afterwards, the hypotheses are tested individually.

Full Model Results

The theoretical HLM model used in the analysis appears as follows:

Level 1:

$$DV = \beta oj + \beta 1\, j\big(Stabilizing\big) + \beta 2\, j(Enriching) + \beta 3\, j(Pioneering) + Rij$$

Level 2:

$$\beta oj = \gamma oo + \gamma o1(Dynamism) + \gamma o2(Munificenœ) + \gamma o3(Punctuation) + Uoj$$

$$\beta 1\, j = \gamma 1o + \gamma 11(Dynamism) + \gamma 12(Munificenœ) + \gamma 13(Punctuation) + U1\, j$$

$$\beta 2\, j = \gamma 2o + \gamma 21(Dynamism) + \gamma 22(Munificenœ) + \gamma 23(Punctuation) + U2\, j$$

$$\beta 3\, j = \gamma 3o + \gamma 31(Dynamism) + \gamma 32(Munificenœ) + \gamma 33(Punctuation) + U3\, j$$

Level 1 represents the individual respondent-case reporting on the perceived performance of the firm described within the survey. Level 1 variables include the control variables of firm size, past performance and industry as well as the independent variables of stabilizing, enriching and pioneering. Environmental variables of dynamism, munificence and punctuation are applied in the level 2 equations.

Direct effects and moderations of the full model were tested and reported in Table 7. Running the full model in SAS yields the following coefficient results:

$$\beta oj = 2.135 - 1.367(Dynamism) - 0.945(Munificence) - 0.441(Punctuation)$$

$$\beta 1j = 0.282 - 0.021(Dynamism) + 0.528(Munificence) - 0.019(Punctuation)$$

$$\beta 2j = -0.081 + 0.294(Dynamism) + 0.262(Munificence) + 0.002(Punctuation)$$

$$\beta 3j = 0.417 + 0.254(Dynamism) - 0.417(Munificence) + 0.070(Punctuation)$$

However, not all the coefficients were statistically significant, which reduces the results to the following:

$$\beta oj = 2.135 - 1.367(Dynamism) - 0(Munificence) - 0(Punctuation)$$

$$\beta 1j = 0.282 - 0(Dynamism) + 0.528(Munificence) - 0(Punctuation)$$

$$\beta 2j = 0 + 0(Dynamism) + 0(Munificence) + 0(Punctuation)$$

$$\beta 3j = 0.4174 + 0(Dynamism) - 0.4165(Munificence) + 0(Punctuation)$$

A zero coefficient implies a result that is statistically not significant. Here further empirical evidence suggests that enriching sub-processes are not statistically significant as $\gamma 20=\gamma 21=\gamma 22=\gamma 23=0$ meaning that both direct effects of enriching are non-significant and moderating effects of dynamism, munificence, and punctuation on enriching are all non-significant. With the full model tested and coefficients determined, the testing of hypotheses becomes an elegantly straightforward process.

Hypotheses Testing

Hypothesis testing is performed as explained in the methodology chapter. In hypotheses 1A and 1B, dynamism is high (=1), munificence is high (=1), and punctuation is not present (=0). The values for dynamism, munificence, and pioneering are then substituted into the level 2 equations as follows:

$$\beta oj = 2.135 - 1.367(1) - 0(1) - 0(0)$$
$$\beta 1j = 0.282 - 0(1) + 0.528(1) - 0(0)$$
$$\beta 2j = 0 + 0(1) + 0(1) + 0(0)$$
$$\beta 3j = 0.4174 + 0(1) - 0.4165(1) + 0(0)$$

Which further simplifies to:

$$\beta oj = 2.135 - 1.367 - 0 \Rightarrow 0.768$$
$$\beta 1j = 0.282 - 0 + 0.528 - 0 \Rightarrow 0.810$$
$$\beta 2j = -0 + 0 + 0 \Rightarrow 0$$
$$\beta 3j = 0.4174 - .4165 + 0 \Rightarrow .001$$

Remembering that the level 1 equation is:

$$DV = \beta oj + \beta 1j(Stabilizing) + \beta 2j(Enriching) + \beta 3j(Pioneering)$$

We substitute the values for the beta coefficients calculated above into the level 1 equation. Thus:

$$DV = 0.768 + 0.810(Stabilizing) + 0(Enriching) + 0.001(Pioneering)$$

Hypothesis 1A predicted that when dynamism and munificence are high (=1) and punctuation is not present (=0), firms will choose pioneering sub-processes over enriching. However, as seen earlier, pioneering and enriching are not significantly different. Thus, hypothesis 1A is not supported.

Hypothesis 1B predicted that when dynamism and munificence are high (=1) and punctuation is not present (=0), firms will choose enriching sub-processes over stabilizing. However, once again, enriching and pioneering sub-processes are not significantly different. Thus, hypothesis 1B is not supported.

The dependent variable was measured in three ways: profit, revenue growth, and market share. The results reported herein are based on a DV index measure that averaged the response of all three measures. However, analysis was also conducted using each individual DV measure. All four DV measures (market share, profit, revenue growth and the average of all three) yielded similar results.

In hypotheses 2A and 2B, dynamism is high (=1), munificence is low (=0), and punctuation is not present (=0). In the manner used above, values for dynamism, munificence and pioneering are substituted into the level 2 equations. Those substitutions result in new values for the level 1 beta coefficients:

$$\beta oj = 2.135 - 1.367 \Rightarrow 0.768$$
$$\beta 1j = 0.282$$
$$\beta 2j = -0 + 0 + 0 \Rightarrow 0$$
$$\beta 3j = 0.4174 + 0 \Rightarrow 0.4174$$

Substituting into the level 1 equation:

$$DV = \beta oj + \beta 1j(Stabilizing) + \beta 2j(Enriching) + \beta 3j(Pioneering)$$

We get:

$$DV = 0.768 + 0.282(Stabilizing) + 0(Enriching) + 0.4174(Pioneering)$$

Hypothesis 2A predicts that when dynamism is high and munificence is low, firms would choose enriching sub-processes over stabilizing. However, enriching and

stabilizing sub-processes are not statistically different. Thus, hypothesis 2A is not supported.

Hypothesis 2B predicted that when dynamism is high and munificence is low, firms would choose stabilizing sub-processes over pioneering. The value for pioneering is .4174 while the value for stabilizing is .282. Thus, analysis shows that firms in fact choose pioneering over stabilizing; the exact opposite order of that predicted. Therefore, hypothesis 2 is not supported.

In hypotheses 3A and 3B, dynamism is low (=0) and munificence is high (=1), again punctuation is not present (=0). Values are substituted and the level 2 equations are reduced as follows:

$$\beta oj = 2.135$$
$$\beta 1j = 0.282 + 0.528 \Rightarrow 0.810$$
$$\beta 2j = 0$$
$$\beta 3j = 0.4174 - 0.4165 \Rightarrow .001$$

Which reduces the Level 1 equation as follows:

$$DV = \beta oj + \beta 1j(Stabilizing) + \beta 2j(Enriching) + \beta 3j(Pioneering)$$

$$DV = 2.135 + 0.810(Stabilizing) + 0(Enriching) + 0.001(Pioneering)$$

The prediction for hypothesis 3A was that firms, in conditions of low dynamism and high munificence would choose stabilizing sub-processes over pioneering. Stabilizing coefficient is .810 while the pioneering coefficient is .001. Thus, analysis results indicate that firms in fact choose stabilizing over pioneering. Therefore, hypothesis 3A is fully supported.

The prediction for hypothesis 3B was that firms, in conditions of low dynamism and high munificence would choose pioneering sub-processes over enriching. However,

pioneering and enriching sub-processes are not statistically significant. Thus, hypothesis 3B is not supported.

In hypotheses 4A and 4B, both dynamism and munificence are low (=0) with punctuation not present (=0). The level 2 governing equations are thus reduced as follows:

$$\beta oj = 2.135$$
$$\beta 1j = 0.282$$
$$\beta 2j = 0$$
$$\beta 3j = 0.4174$$

Which reduces the Level 1 equation as follows:

$$DV = \beta oj + \beta 1j(Stabilizing) + \beta 2j(Enriching) + \beta 3j(Pioneering)$$

$$DV = 2.135 + 0.282(Stabilizing) + 0(Enriching) + 0.4174(Pioneering)$$

The prediction for hypothesis 4A was that firms, in conditions of low dynamism and low munificence would choose stabilizing sub-processes over enriching. However, stabilizing sub-processes and enriching are not statistically different. Therefore, hypothesis 4A is not significant.

The prediction for hypothesis 4B was that firms, in conditions of low dynamism and low munificence would choose enriching sub-processes over pioneering. However, as before, enriching and pioneering sub-processes are not statistically significant. Therefore, hypothesis 4B is not supported.

Recapping the results for the first four hypotheses, an interesting pattern appears, as shown in Table 8. To view it graphically, the original scenario / hypothesis table is reproduced showing predicted (H#) versus observed results (R#) and are reported in Table 9.

Hypothesis 5 predicted that in conditions of punctuated threat, firms that decrease or abandon stabilizing sub-processes will experience greater performance than firms who do not. The testing for hypothesis 5 requires investigation of the stabilizing coefficients mentioned above, comparing the punctuated versus non-punctuated condition. A reduction in magnitude of the stabilizing coefficient would indicate support for hypothesis 5. However, none of the punctuation coefficients were statistically significant, thus, no comparison can be made. Essentially there is no difference among the punctuation coefficients therefore no support can be found for hypothesis 5.

Other empirical observations are worthy to note. Multi-level model results are displayed in Table 7 of Appendix E. Although the direct effects of munificence are non-significant, its moderating effect on the bundling sub-processes is greater than dynamism. Managers do not seem to parse out differences between bundling sub-processes as a function of dynamism. Coefficients $\gamma 11$, $\gamma 21$ and $\gamma 31$ represent the interactive effects of dynamism with stabilizing, enriching and pioneering respectively. All three are non-significant. In contrast, coefficients $\gamma 12$ and $\gamma 32$ in the level 2 equation indicate that munificence moderates the effects of stabilizing and pioneering sub-processes on performance but has no moderating effects on the enriching sub-process to performance relationship. Thus, it seems that dynamism does not moderate the relationships between the bundling sub-processes and performance; however, munificence does.

CHAPTER VI

DISCUSSION AND CONCLUSIONS

Discussion

Results suggest that bundling resources into capabilities creates value for firms, lending support to the notion that the resource based view may in fact be more adequately labeled the capabilities based view (Newbert, 2007) this conclusion further substantiates Penrose's (1959) notion that resources are necessary, but not sufficient. It is the utilization of resources that drives advantage. Specifically, the direct effects of stabilizing and pioneering sub-processes on firm performance are positive and statistically significant (see Table 7). Thus, it can be concluded that managers associate actions of stabilizing and pioneering sub-processes with higher firm performance to confirm past research that suggests the restructuring of firm resource portfolios enhances performance (Bergh, 1998). However, other empirical observations result in a mixed set of conclusions. Only one out of nine hypotheses was supported. The theoretical reasoning behind the lack of predicted results can best be viewed from the aggregate, as opposed to a systematic breakdown of each hypothesis. The overview yields a more enriching explanation and provides interesting insights into resource management theory.

Two observations are apparent. First, punctuated events are not salient to managers beyond the 'normal' environmental condition (all punctuation coefficients are statistically non-significant). The casual observer might conclude that punctuated events

are not important; however, that would be naïve. Instead, managers may be unsure how to handle the additional stress of a punctuated event. Such events are, by definition, confusing and tend to create uncertainty (Weick, 1988). Managers are forced to adjust for situations where the long term outlook is not entirely clear (Weick, 1993). Thus, when asked how a firm will perform based upon various bundling sub-processes, managers may not know in advance what the firm should do and thus be unclear on how performance will be affected (Hitt & Ireland, 1984). Alternatively, managers may not perceive a need to adjust bundling sub-processes in response to punctuated events (Kiesler & Sproull, 1982). Thus, managers may recognize the urgency of punctuated events yet not consider the maneuvering of bundling sub-processes to be a direct response to that event.

Managers may consider issues of munificence to be more important than dynamism. In fact, no relative difference in the ordering of bundling sub-processes was found when the condition of dynamism changed from low to high. When comparing the results of hypothesis 1 to hypothesis 3, managers felt that in conditions of high munificence, stabilizing sub-processes are more important than pioneering. This was true regardless of the level of dynamism (low and high yielded the same result). Likewise, when comparing the results of hypothesis 2 to hypothesis 4, managers felt that in conditions of low munificence, pioneering sub-processes are more important than stabilizing. Again, this was true regardless of the level of dynamism.

Is this to say that dynamism is of no importance? Dynamism has a significant, negative, direct effect on performance. Thus, dynamism does seem to create uncertainty and yield a negative impact on performance (Swamidass & Newell, 1987). Interestingly,

the direct effect of munificence on performance is non-significant, suggesting that the condition of resource availability alone does not affect performance (see Mehra, 1996 for a related discussion). Similarly, the direct effect of punctuation on performance is non-significant. Suggesting that managers do not see punctuation as having a direct effect, but perhaps an event that may cause disruption and uncertainty which may then lead to performance impacts (Haveman et al., 2001).

Although managers associate performance with stabilizing and pioneering sub-processes, the moderating effects of munificence are opposite of those predicted. For example, when conditions of munificence are high, managers are predicted to associate pioneering activity with performance. Intuition suggests that if resources are abundant, firms acquire those resources to bundle with their existing product mix (Mehra, 1996). However, the moderating effect is statistically significant but negative, suggesting that in conditions of high munificence, use of pioneering sub-processes has a negative effect on firm performance.

Likewise, the moderating effect of munificence on stabilizing is opposite that predicted. The hypothesis predicted that in conditions of low munificence, firms would increase stabilizing activity. Intuition suggests that when resources are not readily available, firms need to consolidate operations (Kahneman & Tversky, 1984) . However, when conditions of munificence are high, firms that adopt stabilizing sub-processes perform at higher levels. The direct effect of the stabilizing sub-process was also statistically significant and positive, suggesting that mangers value stabilizing processes regardless of environmental condition, lending more empirical evidence to contrary

opinion (Mone, McKinley, & Barker, 1998). But when munificence is high, managers value stabilizing sub-processes even more.

Managers valued enriching sub-processes the least, regardless of environmental context which was confirmed when no statistical difference was observed between enriching sub-processes and stabilizing nor pioneering. What is more interesting is that managers valued stabilizing sub-processes over pioneering sub-processes in times of high munificence (as discussed above). And, managers valued pioneering sub-processes over stabilizing sub-processes in times of low munificence. Strategic fit theory suggests that managers alter strategy to align with changing environments. If that were so, managers in this study should have responded as predicted. They did not. This suggests that firms consider high munificence a threat as opposed to an opportunity. If munificence is high, then competitors have easy access to resources that can be acquired to imitate or substitute for the firms' existing advantages. Thus, firms with access to ample resources had better protect their strengths from competitors who also have ample access to resources. Managers may fear their competitors' ability to achieve competitive parity or create new substitutes. Furthermore, these results may support the notion that 2nd mover firms can respond to known challenges faster than 1st movers can innovate (D'Aveni, 1994). Managers in this study are experienced, yet the firms they work for are relatively small and have fewer assets then Fortune 1000 firms. Thus, they may have less to loose and therefore more risk seeking in times of low munificence. However, when munificence is high, they may instead have less ability to take advantage of available resources and therefore seek to protect what they have (Wiklund & Shepherd, 2003).

Managers seek to protect advantage. The risk adverse behavior runs parallel to prospect theory (Kahneman & Tversky, 1984) in that firms that are doing well become risk adverse while firms who are doing poorly become risk seeking. Firms that fear competitor attack will use stabilizing activity to secure their advantage, especially when competitors' access to resources is high.

Firms seek isolating mechanisms to protect their advantage against competitors (Rumelt, 1984). In conditions of high munificence, competitors have access to many resources that can be used to create destructive innovation designed to overcome incumbent advantages enjoyed within the industry (Schumpeter, 1942). Firms that enjoy the advantage seek to protect it as long as possible. Thus, when munificence runs high, managers may focus on the creation of stronger isolating mechanisms and therefore embrace stabilizing sub-processes as a means of creating those mechanisms more quickly.

Likewise, in times of low munificence, it seems managers are not responsive to the environment but instead seek to subdue it. Theory suggests that in environments where resources are low, managers are forced to secure what position they have and to seek ways to protect parity. However, managers in this study believe that pioneering sub-processes are critical in times of low munificence. Thus, in times of low resources, managers feel pressured to act. These observations further support the work of Khaneman and Tversky (1984). When industry conditions are lacking in resources, firms become risk-seeking. Managers look for ways to create new capabilities and utilize pioneering sub-processes to do so. A new capability added to the firm's portfolio expands the options that managers have for initiating competitive action or response.

Thus, pioneering sub-processes aide managers in both securing a firms' survival as well as equipping it for launching new products or services.

In this context, firms with access to resources become risk adverse because competitors have amble opportunity to achieve parity or attack advantage. Thus, managers may recoil from risk taking to instead savor past returns (Hoskisson, Hitt, & Hill, 1991) and chose defensive strategies to defend performance (Tan & Litschert, 1994). In contrast, firms with limited access to resources become risk seeking and begin to increase their pioneering sub-processes in order to create advantage. These observations are contrary to more recent literature that suggests firms "…are more likely to innovate when they face uncertain environments…" (Brown & Eisenhardt, 1997; Lepak et al., 2007:184).

Managerial cognition may also explain some of the variance observed (Forbes & Milliken, 1999; Kiesler & Sproull, 1982). It may be that managers are so busy working the day-to-day issues within their firm that they miss key cues within their operating environment (Boyd & Fulk, 1996). That may explain why managers felt that stabilizing sub-processes in high munificence environments would lead to higher performance when it is more likely that such action would lead to lost opportunity. Likewise, deemphasizing pioneering sub-processes in conditions of high munificence would seem to be inappropriate, yet managers' actions suggest otherwise. In sum, managers may suffer from bounded rationality (March & Simon, 1958) and may not understand what changes, if any, that need to be implemented in times of environmental change and may have difficulty framing decisions when uncertainties arise (Hodgkinson, Maule, Bown, Pearman, & Glaister, 2002). Thus, managers may simplify decision models used in

rendering decisions of strategic change (Song, Calantone, & Di Benedetto, 2002) and likely, the bundling process decisions used to implement that change.

Despite these observations, it is important to note that the direct effect of pioneering sub-processes onto performance were nearly twice that of stabilizing sub-processes. When environmental conditions are low in dynamism and low in munificence, managers value pioneering efforts over stabilizing. This supports the notions that exploitation (March, 1991) efforts from firms are not sufficient. Firms must also engage in exploration efforts to avoid stagnation and to increase search. Furthermore, firms may need to engage in both to create value long term (Kang et al., 2007).

Yet another interesting empirical feature is that none of the environmental conditions had a moderating effect on the enriching sub-process to performance relationship. Furthermore, enriching sub-processes had no direct effects on the DV. In contrast, direct effects from stabilizing and pioneering sub-processes were statistically significant. The combination of these observations may indicate that managers have a difficult time distinguishing an enriching sub-process from a pioneering or a stabilizing sub-process. The enriching sub-processes were the most difficult ones to converge upon during the instrument development stage. As a whole, it may be prudent to investigate these differences further in future research to determine if enough discrimination is possible among the three bundling sub-processes. Furthermore, tests of differences between level 1 coefficients demonstrate significant differences between stabilizing and pioneering, but no difference between stabilizing and enriching nor between enriching and pioneering. Managers may not delineate bundling processes to such a fine grain

when rendering decisions about firm response. Managers may remain bounded in their rationality (March & Simon, 1958) and see no need to make such fine distinctions. Thus, keeping simple choice frames for managers to choose from in future research may enrich our understanding of how decisions are rendered (Spender, 1996). Based on the empirical evidence presented herein, the resource management literature may be able to reduce the number of bundling sub-processes from three down to two. Keeping stabilizing and pioneering sub-processes within the discussion while removing the distinction of enriching may free future research to explore other effects of bundling processes and thus reduce an overly conditioned model (Denrell, 2003).

In contrast, it is possible that managers in fact recognize four (or more) bundling sub-processes and thus, three are insufficient. The framing of this study began with the presumption of three sub-processes and never considered possible additions; thus, future research is needed to confirm the appropriate number of firm bundling sub-processes.

Despite the limitations disclosed, this dissertation contributes to the strategy literature in three significant ways. First, it contributes to theory by adding to the RBV/resource management literature while also contributing to the environmental context streams. Second, it contributes to the research methods literature by combining two interesting and popular research tools. Finally, it contributes to practice by shedding practical light onto how firms manage their resource portfolio while responding to punctuated events.

First, with respect to the literature, some limitations of the RBV (Priem & Butler, 2001) are overcome by shedding light on the 'black box' of firm processes to illuminate the resource bundling-to-performance relationship. Furthermore, finer grained insights

into resource portfolio management and the sub-processes that firms use to bundle existing resources into capabilities to improve performance are demonstrated. Also, multiple environmental contexts are studied simultaneously. Munificence, dynamism, and punctuated threats are integrated and their effects on firms' bundling processes-to-advantage relationship are examined. This research establishes an environmental condition (dynamism and munificence) then adds the punctuated event. The temporal nature of the punctuated event is modeled more realistically than in past research; thus, yielding more accurate insights into its impact. Interestingly, results indicate that punctuated events may overwhelm managers (Meyer et al., 1990) as they seem unable to discern differences between punctuated events and scenarios void of punctuation. As discussed in the results section, it is unlikely that punctuation has no impact but more likely that punctuation increases uncertainty (Meyer, 1982). As such, it seems managers are likely to avoid making different decisions in times of crisis, and will instead opt to wait out the punctuated event until it becomes more clear what direct impact the punctuated event will have on their firm (Hermann, Hermann, & Cantor, 1974). Future work may benefit from exploring punctuation in greater depth and over a longitudinal time frame to observe how managers begin to change their approach to management processes (Fredrickson & Mitchell, 1984).

Furthermore, this work offers greater delineation of the premise that firms must align their strategies to their context (i.e., the surrounding environmental conditions) if they hope to gain a competitive advantage (Powell, 1992). Specifically, I further demonstrate that firms change their bundling processes based upon changes in the environment (Morrow et al., 2007). Empirical results demonstrate that as environments

grow in dynamism, managers clearly become concerned (Priem et al., 1995). Also, managers associate stabilizing and pioneering sub-processes with improved firm performance. However, not all environmental conditions proved salient. The impact of munificence was not as direct and significant as previously thought. Yet, differences were observed in the ordering of bundling sub-processes chosen by firms in conditions of high versus low munificence. In total, these results confirm and lend finer grained detail to the nature of the strategic fit literature (Andersen, Denrell, & Bettis, 2007; Andrews, 1971; Hofer & Schendel, 1978) by demonstrating that context does matter. Yet, the question of how firms respond to that context with respect to resource portfolio management still requires further investigation.

Second, from a research methods perspective, this work combines a policy capturing tool to collect data with the innovations of hierarchical linear modeling to test for statistical significance between variables at the firm level versus the environmental level (Hofmann, 1997). Although both have been used extensively in literature, rarely have they been used together (see Hofmann et al., 2000 for an exception). Their combination generates a complex set of challenges as well as insights. This work advances the methodological conversation regarding their combination, a discussion that needs further refinement. The combination identifies variance of respondents' bundling processes within different environmental settings and between those different settings in a more statistically integrated manner. HLM allows error to vary within and between multiple levels, as opposed to aggregation of data in OLS regression which stifles these effects (Hofmann, 1997). Thus, a more accurate picture using dual level variance is created, allowing researchers to parse out new relationships. In this dissertation,

relationships between firms within a given environmental setting may be compared to other firms within the same setting, or compared to firms in different environmental settings. Thus, an enriched picture of the relationship between firm bundling processes and firm value creation is generated.

Finally, practicing managers may benefit from insights gained into the processes of resource portfolio management. Managers know that acquiring resources, bundling them into capabilities, and leveraging them to create value are important functions. However, they are unlikely to have an in-depth understanding of these processes and less likely to understand how their views compare with other managers. Managers may benefit by reviewing more closely the relationship between their firm and the munificence environment in which they compete (Castrogiovanni, 1991).

Limitations and Future Research

As with any research effort, this work suffers from various limitations of theory and research design. A detailed discussion of each is presented along with suggestions for future research improvements.

Theory – RM

The resource management literature is relatively new and under-developed. This study pulls from a developing theory and, thus, may suffer. For example, the notion that resource management processes consist primarily of acquiring, bundling, and leveraging has yet to be shown empirically. Of course, this work advances that effort while acknowledging that much more work is needed to test these theories.

Theory – Environment

Researchers have discussed environmental moderators for many years, but have yet to converge upon paradigms regarding their influence. As a result, to keep the empirical effort manageable, only three environmental dimensions were considered (munificence, dynamism and punctuation). Other important environmental variables were not included for practical reasons. Dess and Beard's (1984) notion of complexity is noticeably absent. Measures of complexity are, of course, complex and thus too extravagant to include at this stage of research. Miles and Snow's efforts regarding perceived environmental uncertainty are also missing due to its 26 item length, making a reasonable survey length unlikely. Additionally, the constructs of uncertainty and dynamism are difficult to separate, rendering confounding issues with the uncertainty notion (Tosi et al., 1973). The discussions of perceived environmental uncertainty (Hitt & Ireland, 1984) are important and will likely add valuable future direction to the resource management theory with respect to environmental context. Future work should include these measures (Anderson & Tushman, 2001) to offer greater theoretical insights (Lawrence & Lorsch, 1973).

Design Study

The choice of bundling process items used for stabilizing, enriching and pioneering were developed using an expert panel of academic researchers in the field of strategy. Improvements to these survey items may be derived from more extensive interviews with business managers.

The survey design mixes the conditions of munificence and dynamism at high and low levels. Additionally, punctuation is represented as a dichotomous condition. Managers may not stratify environments into high or low, but instead perceive levels of influence in a more fluid manner. Future studies may benefit from finer-grained measures of environmental context.

The sample population was randomly assigned to one of two surveys. The first survey set blended two conditions of high/low munificence with two conditions of high/low dynamism for a total of four scenarios. Punctuation was not introduced (punctuation=0) in any of the scenarios. The second survey blended the same four scenarios mentioned above, but for each scenario a punctuated condition was added. Thus, every respondent experienced a blend of dynamism and munificence but was limited to an all or nothing condition with respect to a punctuated event. This is similar to policy capturing and HLM work where various respondents are limited in their experimental conditions by nature (i.e., school children cannot attend private and public schools simultaneously). However, future research may enable a given respondent to experience a full mix of dynamism, munificence and punctuation. A fully crossed experimental design would have required 8 (2x2x2) scenarios instead of the current design of 4 (2x2x1). Likewise, the number of cases would have increased from 16 to 32 thus doubling the instrument size. It was determined that long surveys would likely reduce survey response rate. Even though the given n per respondent would double, the number of respondents may decrease significantly. If the number of respondents were cut in half, for example, the total n would have remained the same, but the variety of possible responses would have decreased. Thus, the sample likely would have been less

representative of the population. Increased funding may allow for greater incentives to be offered to respondents. Greater incentives may enable greater response rates despite longer surveys.

Policy Capturing

Two concerns about the policy capturing methodology should be mentioned. The first reiterates concerns found in the research methods literature about policy capturing. The second concerns the randomly generated matrix for the item x case array used to avoid collinearity. The literature suggests that the underlying presumption of policy capturing is vague in that researchers hoping to capture the intentions of managers by asking them questions based on hypothetical short scenarios is not consistent with the contextual nature of real decisions. Thus, policy-capturing may suffer from a lack of realism (Karren & Barringer, 2002).

Managers will make decisions based upon an array of existing knowledge that has developed over time and been assessed along the way. Thus, a short hypothetical scenario forces the manager to render decisions without a greater sense of the environment and so their responses may not accurately reflect their actual responses in different contexts (Aiman-Smith et al., 2002). Other factors may influence managers' answers to questions. The length of the survey instrument may render physical or mental fatigue on the respondent, either of which may cause the respondent to answer carelessly to hasten the process. Therefore, start-up effects were not corrected for in this study because the remedy is to include a number of practice scenarios for the respondent to consider. This would have worked against the design as its intention was to investigate

the managers' decisions in a variety of scenario / bundling combinations. Increasing the number of cases would have added to respondent fatigue and reduced the validity of the data.

Future web based survey tools may enable the researcher to randomly order the scenarios which would serve to mitigate start-up effects. Karren and Barringer (2002) suggest that a good policy capturing design include several practice cases at the beginning of the instrument to serve two purposes. First, it would provide training for the respondent in hopes of reducing start-up effects (Aiman-Smith et al., 2002). Second, it would serve as a good reliability measure if those same practice cases were repeated later in the survey. Respondent answers from the practice cases could be compared to the latter cases and a reasonable measure of reliability obtained (Karren & Barringer, 2002).

Technology may assist the researcher in this regard. A sophisticated web-based tool might allow researchers to randomize the order of the scenarios given to respondents. Current web based survey tools force the researcher to embed scenarios into a survey. Thus, if a researcher wants to change the order of the scenarios, s/he must create multiple surveys and randomly assign the population to each survey. Inevitably, the number of responses to each survey will be unequal. A better method would use a single survey with multiple scenarios that are given to respondents in random order. The first few scenarios would be used for training, the rest for collection of data. Again, the training scenarios would be repeated among the data collection group to enable reliability analyses.

The policy capturing tool used herein assigns a random choice of bundling resource levels (5 point Likert scale) to each of the twelve bundling items. This is done

to address issues of multicollinearity. A more realistic blend of bundling item scores may be more logical to managers. For example, in case 1, four items represent pioneering sub processes. Two items have Likert scores of 5 while the other two have 1 and 2 for an average score of 3.13. Yet the manager may see the two high (or the two low) activities and respond to those cues while ignoring the others. To increase the internal validity of the measure, a cross sectional design of the bundling sub-processes might yield clear delineations where managers can clearly see the patterns of different responses and researchers could more accurately assess managers' intentions. Presently, the need to avoid multicollinearity ranks a higher priority. Future research may discover ways to mix a reasonable blend of bundling item scores for each case yet avoid issues of multicollinearity and provide a more reasonable scenario case for managers to respond.

HLM

Hierarchial linear modeling enables testing of multi-level intricacies; however, limitations are often noted. HLM assumes variables are random, but the variables considered in this work are specified. HLM also assumes multivariate normality of measures (Hofmann et al., 2000; Short et al., 2007). Additionally, HLM requires that subject identity be contained within one group (Short et al., 2007). In this study the subjects are managers while the group level is the set of environmental scenarios the manager is asked to consider. Although an argument could be made that individual managers cannot be in multiple environments at the same time, I submit that managers are expected to handle changing competitive conditions and so it is reasonable to assume that any given manager would experience multiple environmental conditions during the

course of her career. Thus, the independence of the response is predicated by the understanding that a manager will recognize different environmental condition sets and respond differently to different stimuli. Thus, it is reasonable to test a given manager across different conditions and to treat those responses as independent observations.

Generalizability

The sample of this study represents a wide array of industries, asset size and revenue; however, the firms are located in the United States and most in the state of Texas. Thus, issues of generalizability for foreign firms or even for firms from other states may legitimately arise. Also, differences may exist between entrepreneurial managers and those of large organizations (Busenitz & Barney, 1997; Chen & Hambrick, 1995). This study sampled firms subscribed to the Center for New Venture Studies listserve, and are considered entrepreneurs. Entrepreneurs tend to be growth oriented and thus perceive performance differently than managers of large firms (Kuratko, Ireland, & Hornsby, 2001). Similarly, the firms in this study were relatively young, although the managers were quite experienced. Younger firms may perceive threats differently than older, more established firms (Wiklund & Shepherd, 2003). As small and medium sized firms were the concentration in this study, future research may illuminate bundling sub-process changes occurring within larger firms and perhaps between SBUs within conglomerate firms. Entrepreneurs tend to have high levels of confidence and may not react to changing environments in the same manner as managers of larger firms. *Fortune* 500 firms are likely to engage in different bundling processes for different operating segments, thus future research may shed light on the interactive

nature of bundling processes within organizations. Expanding the study to international settings while comparing firms in developed, emerging and developing countries would also yield insight into the sophistication of managerial responses in different economic and institutional environments.

Longitudinal

The survey represents a cross sectional study measuring the intention of managers' response for given environmental conditions at a particular point in time. However, managers' intentions are likely to change over time as they grow more experienced or as the attributes of the firm for which they work changes. Also, global market conditions may alter managers' responses as different issues within the marketplace flow and ebb. Changing salience of various strategic issues may alter managers' perceptions of best practice and thus affect their responses to the survey (Ralston, Holt, Terpstra, & Yu, 1997). A more complex empirical study would test the intentions of managers over various time periods to test for these effects.

This study focused on the bundling processes of resource management. Acquiring processes and leveraging processes were not considered (Sirmon et al., 2007). In the future, researchers may gain valuable insight by investigating the sub-processes of acquiring and/or leveraging. Further, future work may also combine insights learned about all three RM processes and seek to expand the understanding of their moderators.

From a research methods perspective, HLM allows the researcher to investigate differences between units within and between different groups. This research examined differences between groups (different environmental contexts) while controlling for, but

not investigating differences between units within those environmental contexts. Furthermore, differences between firm sizes, past firm performance, and industry are all controlled but not investigated. Future research may yield interesting differences in the effects of one or more of these variables.

The research sample was drawn from a localized group of small and medium sized businesses in the state of Texas. Although these organizations represent a wide range of industries, firm size and past performance, arguments could be made with respect to generalizability. Thus, future research may benefit by sampling small to medium sized organizations in a different geographic settings. Other samples could be targeted from the *Fortune* 1000 to compare and contrast with the smaller firm setting. Family businesses could be targeted to investigate variances within and between industry settings. Furthermore, demographic information was also captured during data collection and may become an interesting point of future work. For example, responses between younger versus older managers can be contrasted theoretically then tested empirically. Additionally, interactions between manager age versus firm age can be explored.

Any of these ideas could be transplanted into an international setting to investigate bundling processes and/or punctuated events in different countries including developed nations, emerging markets, transition economies, or developing nations. Other work could explore the differences between and among any of these settings, and all of that work could be done with the research design introduced in this dissertation. Clearly, there is much more work to be done to understand the management of resources within firms.

Conclusions

This dissertation has contributed primarily to the resource management literature stream particularly with respect to the bundling processes used by managers to adjust their resource portfolios in response to changing environmental conditions. Empirical evidence was derived from primary data using appropriate multi-level statistical analysis consistent with the field's most current trends. That evidence demonstrated possible flaws in the theory development which was based on current literature; thus, exposing possible imperfections in the current literature stream or perhaps in the research design. Despite these concerns, the fundamental theory behind resource portfolio management has been supported herein. Additionally, managers and researchers will benefit from further investigation of the resource management processes and their impact on firm strategy. Finally, this dissertation has further demonstrated the importance of and need for continuing discussions of environmental influence over firm resource management strategies.

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APPENDIX A

SAMPLE SURVEY SHEET

Bundling items	Little (1)	2	3	4	Much (5)
combining existing capabilities from two departments to add new products					
adding a manufacturing capability to an existing R&D capability (or vice versa)					
exchanging personnel from different departments to transfer ideas internally					
acquiring a new capability from outside the firm to implement a new strategy					
partnering with another firm to offer a blended product (e.g., animated movie characters added to McDonald's 'Happy Meals')					
converting repetitive actions (i.e., payroll or safety routines) into codified procedures to increase efficiency					
protecting current market position by preventing competitor imitations					
maintaining current capabilities to defend current market position					
discovering new ways of using existing capabilities to create new opportunities					
re-configuring capabilities from within the firm to create new business opportunities					
acquiring another firm to add a new product to the existing portfolio					
refining standard operating procedures to increase efficiency					

Based upon the information above and the scenario presented,

Please rate the impact on **Sales Growth** of your firm relative to other firms in your industry

Likely Ineffective	1	2	3	4	5	6	7	Highly Effective

Please rate the impact on **Profit Growth** of your firm relative to other firms in your industry

Likely Ineffective	1	2	3	4	5	6	7	Highly Effective

Please rate the impact on **Market Share** of your firm relative to other firms in your industry

Likely Ineffective	1	2	3	4	5	6	7	Highly Effective

APPENDIX B

SCENARIOS

Scenario 1: Dynamism High Munificence High

In scenario 1, the rate at which industry conditions are changing is high, but the firm enjoys favorable access to resources, capital, and other opportunities for growth. The firm is under heavy pressure to change its product offerings to keep up with competitors who are often upgrading existing product lines or offering entirely new products. Meanwhile, the firm is under constant pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing so rapidly, that product and service offerings quickly become obsolete and the firm is forced to offer updates and changes to both in an environment where predicting the moves of competitors is quite difficult. Furthermore, consumer tastes are changing frequently and technology changes are occurring rapidly.

However, despite the rapid changes occurring within the industry, the firm enjoys favorable access to resources. The threats to the firm's survival are low; the prospects of the firm are well. The markets in which the firm competes are rich with investor capital, with many investors competing for investment opportunities. Economic development programs offer sufficient support for the business community in general. Profitable market opportunities abound while threats seem distant.

Scenario 2: Dynamism High Munificence Low

In scenario 2, dynamism is high but munificence is low - perhaps the most desperate of situations. In this condition, the rate at which industry conditions are changing is high, but to make matters worse, firms enjoy little access to external resources, capital, or other opportunities for growth. Thus, firms are under heavy pressure to change, yet have little access to the resources that could help facilitate that change. The firm is under heavy pressure to change its product offerings to keep up with competitors who are often upgrading existing product lines or offering entirely new products. Meanwhile, the firm is under constant pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing so rapidly, that product and service offerings quickly become obsolete and the firm is forced to offer updates and changes to both in an environment where predicting the moves of competitors is quite difficult. Furthermore, consumer tastes are changing frequently and technology changes are occurring rapidly.

Furthermore, rapid changes occurring within the industry are compounded by a lack of favorable access to resources. The threats to the firm's survival are high; the prospects for the firm are dim. The markets in which the firm competes are poor with investor capital, with few investors choosing from many investment opportunities. Economic development programs offer little support for the business community in general. Market opportunities are few and far between.

Scenario 3: Dynamism Low Munificence High

In scenario 3, dynamism is low yet munificence is high - perhaps the most desirable of situations. In this condition, the rate at which industry conditions are changing is low yet firms enjoy easy access to external resources, capital, or other opportunities for growth. Thus, firms are under little pressure to change yet have great access to the resources that could help facilitate any change. The firm is under no pressure to change its product offerings to keep up with competitors who are rarely upgrading their existing product lines or offering new products. Additionally, the firm is under little pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing slowly, if at all, so new product and service offerings are rare. Competitors actions are slow and predictable. Consumer tastes are steady and technology changes are not a common event.

However, despite the slow changes occurring within the industry, the firm enjoys favorable access to resources. The threats to the firm's survival are low; the prospects for the firm are well. The markets in which the firm competes are rich with investor capital, with many investors competing for investment opportunities. Economic development programs offer sufficient support for the business community in general. Profitable market opportunities abound while threats seem distant.

Scenario 4: Dynamism Low Munificence Low

In scenario 4, dynamism and munificence are both low. In this condition, the rate at which industry conditions are changing is low and firms have little access to resources, capital, and other opportunities for growth. Thus, firms are under little pressure to change and have little access to resources to facilitate such change. The firm is under no pressure to change its product offerings to keep up with competitors who are rarely upgrading their existing product lines or offering new products. Additionally, the firm is under little pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing slowly, if at all, so new product and service offerings are rare. Competitors actions are slow and predictable. Consumer tastes are steady and technology changes are not a common event.

Furthermore, the slow changes occurring within the industry are compounded by a lack of favorable access to resources. The threats to the firm's survival are high; the prospects for the firm are dim. The markets in which the firm competes are poor with investor capital, with few investors choosing from many investment opportunities. Economic development programs offer little support for the business community in general. Market opportunities are few and far between.

Scenario 5: Dynamism High Munificence High – Punctuated Event

In scenario 1 (5), the rate at which industry conditions are changing is high, but the firm enjoys favorable access to resources, capital, and other opportunities for growth. The firm is under heavy pressure to change its product offerings to keep up with competitors who are often upgrading existing product lines or offering entirely new products. Meanwhile, the firm is under constant pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing so rapidly, that product and service offerings quickly become obsolete and the firm is forced to offer updates and changes to both in an environment where predicting the moves of competitors is quite difficult. Furthermore, consumer tastes are changing frequently and technology changes are occurring rapidly.

However, despite the rapid changes occurring within the industry, the firm enjoys favorable access to resources. The threats to the firm's survival are low; the prospects of the firm are well. The markets in which the firm competes are rich with investor capital, with many investors competing for investment opportunities. Economic development programs offer sufficient support for the business community in general. Profitable market opportunities abound while threats seem distant.

But, now assume a major political event suddenly affects all the competitors within your industry that was experiencing the environmental conditions discussed above. Assume the government of Saudi Arabia suddenly collapses, driving oil prices above $250 per barrel (current prices are around $50 per barrel). Such changes would likely drive gasoline prices above $15 per gallon while adding unrest to the global economy.

Scenario 6: Dynamism High Munificence Low – Punctuated Event

In scenario 2 (6), dynamism is high but munificence is low - perhaps the most desperate of situations. In this condition, the rate at which industry conditions are changing is high, but to make matters worse, firms enjoy little access to external resources, capital, or other opportunities for growth. Thus, firms are under heavy pressure to change, yet have little access to the resources that could help facilitate that change. The firm is under heavy pressure to change its product offerings to keep up with competitors who are often upgrading existing product lines or offering entirely new products. Meanwhile, the firm is under constant pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing so rapidly, that product and service offerings quickly become obsolete and the firm is forced to offer updates and changes to both in an environment where predicting the moves of competitors is quite difficult. Furthermore, consumer tastes are changing frequently and technology changes are occurring rapidly.

Furthermore, rapid changes occurring within the industry are compounded by a lack of favorable access to resources. The threats to the firm's survival are high; the prospects for the firm are dim. The markets in which the firm competes are poor with investor capital, with few investors choosing from many investment opportunities. Economic development programs offer little support for the business community in general. Market opportunities are few and far between.

But now assume a major political event suddenly affects all the competitors within your industry that was experiencing the environmental conditions discussed above. Assume the government of Saudi Arabia suddenly collapses, driving oil prices

above $250 per barrel (current prices are around $50 per barrel). Such changes would likely drive gasoline prices above $15 per gallon while adding unrest to the global economy.

Scenario 7: Dynamism Low Munificence High – Punctuated Event

In scenario 3 (7), dynamism is low yet munificence is high - perhaps the most desirable of situations. In this condition, the rate at which industry conditions are changing is low yet firms enjoy easy access to external resources, capital, or other opportunities for growth. Thus, firms are under little pressure to change yet have great access to the resources that could help facilitate any change. The firm is under no pressure to change its product offerings to keep up with competitors who are rarely upgrading their existing product lines or offering new products. Additionally, the firm is under little pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing slowly, if at all, so new product and service offerings are rare. Competitors actions are slow and predictable. Consumer tastes are steady and technology changes are not a common event.

However, despite the slow changes occurring within the industry, the firm enjoys favorable access to resources. The threats to the firm's survival are low; the prospects for the firm are well. The markets in which the firm competes are rich with investor capital, with many investors competing for investment opportunities. Economic development programs offer sufficient support for the business community in general. Profitable market opportunities abound while threats seem distant.

But now assume a major political event suddenly affects all the competitors within your industry that was experiencing the environmental conditions discussed above. Assume the government of Saudi Arabia suddenly collapses, driving oil prices above $250 per barrel (current prices are around $50 per barrel). Such changes would

likely drive gasoline prices above $15 per gallon while adding unrest to the global economy.

Scenario 8: Dynamism Low Munificence Low – Punctuated Event

In scenario 4 (8), dynamism and munificence are both low. In this condition, the rate at which industry conditions are changing is low and firms have little access to resources, capital, and other opportunities for growth. Thus, firms are under little pressure to change and have little access to resources to facilitate such change. The firm is under no pressure to change its product offerings to keep up with competitors who are rarely upgrading their existing product lines or offering new products. Additionally, the firm is under little pressure to update its internal practices to improve efficiency and/or quality control. The industry is changing slowly, if at all, so new product and service offerings are rare. Competitors actions are slow and predictable. Consumer tastes are steady and technology changes are not a common event.

Furthermore, the slow changes occurring within the industry are compounded by a lack of favorable access to resources. The threats to the firm's survival are high; the prospects for the firm are dim. The markets in which the firm competes are poor with investor capital, with few investors choosing from many investment opportunities. Economic development programs offer little support for the business community in general. Market opportunities are few and far between.

But now assume a major political event suddenly affects all the competitors within your industry that was experiencing the environmental conditions discussed above. Assume the government of Saudi Arabia suddenly collapses, driving oil prices above $250 per barrel (current prices are around $50 per barrel). Such changes would likely drive gasoline prices above $15 per gallon while adding unrest to the global economy.

APPENDIX C

RANDOM TEST MATRIX WITH ANOVA

Case	item1	item2	item3	item4	item5	item6	item7	item8	item9	item10	item11	item12
1	3	1	3	5	5	5	1	3	4	2	2	1
2	1	2	2	1	2	2	3	2	2	2	5	3
3	3	2	5	4	5	2	5	1	4	4	5	3
4	2	4	2	4	1	2	1	2	3	3	2	5
5	1	2	1	5	1	2	4	4	4	4	1	2
6	4	4	2	3	3	4	3	2	5	4	3	4
7	4	2	2	4	1	1	4	4	5	5	5	3
8	3	4	3	2	1	4	4	4	3	2	5	3
9	2	2	2	2	2	4	4	2	5	1	4	3
10	3	2	2	4	4	4	4	5	3	4	5	2
11	4	3	4	3	2	4	2	4	4	3	2	1
12	5	2	3	3	5	5	4	5	3	4	3	1
13	5	3	1	4	4	4	4	2	4	4	4	1
14	4	5	1	3	5	5	3	3	5	3	2	4
15	3	4	4	5	3	2	1	1	3	3	3	3
16	3	5	3	2	1	3	4	1	2	4	3	2

ANOVA: Single Factor

Item	Count	Sum	Average	Variance
item1	16	49.850	3.116	1.360
item2	16	46.056	2.879	1.316
item3	16	41.451	2.591	1.320
item4	16	52.690	3.293	1.553
item5	16	46.300	2.894	2.141
item6	16	52.705	3.294	1.537
item7	16	52.131	3.258	1.414
item8	16	44.905	2.807	1.506
item9	16	60.512	3.782	0.756
item10	16	50.619	3.164	1.094
item11	16	53.364	3.335	1.437
item12	16	42.402	2.650	1.363

Source of Variation	SS	*df*	MS	F	P-value	F crit
Between Groups	20.2023	11	1.836572	1.311888	0.220833	1.842165
Within Groups	251.9903	180	1.399946			
Total	272.1926	191				

Inter-item Correlation

	item1	item2	item3	item4	item5	item6	item7	item8	item9	item10	item11	item12
item1												
item2	0.27											
item3	0.13	0.06										
item4	0.02	-0.20	-0.01									
item5	0.34	-0.23	0.14	0.28								
item6	0.35	0.02	0.05	-0.38	0.41							
item7	0.12	-0.22	-0.19	-0.26	0.10	-0.01						
item8	0.21	-0.32	-0.22	0.02	0.01	0.28	0.20					
item9	0.21	-0.26	-0.33	0.40	0.27	0.22	0.05	0.16				
item10	0.38	0.07	-0.12	0.41	0.16	-0.53	0.42	0.01	-0.01			
item11	0.03	-0.30	0.05	-0.15	0.06	-0.23	0.42	-0.02	-0.10	0.12		
item12	-0.16	0.52	-0.21	-0.06	-0.18	-0.34	-0.16	-0.29	0.04	0.08	0.05	

APPENDIX D

INTER-RATER RELIABILITY

Intraclass Correlation Coefficients
Two-Way Mixed Effects Model (Consistency Definition)

Measure	ICC Value	Lower CI	Upper CI	F-Value	Sig.
Single Rater	.4985	.3489	.6619	6.9648	.0000
Average of Raters	.8564	.7628	.9216		

Degrees of freedom for F-tests are 31 and 155. Test Value = 0.

Alpha = .8564

APPENDIX E

TABLES

TABLE 1
Environmental Conditions by Scenario

Scenario	Dynamism	Munificence
1	High	High
2	High	Low
3	Low	High
4	Low	Low

TABLE 2
Normative Bundling Sub-Process Choice vs. Environmental Condition
(without punctuated event)

	Dynamism	
Munificence	**High**	**Low**
High	**H1** Pioneer Enrich Stabilize	**H3** Stabilize Pioneer Enrich
Low	**H2** Enrich Stabilize Pioneer	**H4** Stabilize Enrich Pioneer

TABLE 3
Summary of Hypotheses

Number	Hypotheses
1A	In conditions of high dynamism and high munificence, managers will engage in pioneering sub-processes more than enriching to create value.
1B	In conditions of high dynamism and high munificence, managers will engage in enriching sub-processes more than stabilizing to create value.
2A	In conditions of high dynamism and low munificence, managers will engage in enriching sub-processes more than stabilizing to create value.
2B	In conditions of high dynamism and low munificence, managers will engage in stabilizing sub-processes more than pioneering to create value.
3A	In conditions of low dynamism and high munificence, managers will engage in stabilizing sub-processes more than pioneering to create value.
3B	In conditions of low dynamism and high munificence, managers will engage in pioneering sub-processes more than enriching to create value.
4A	In conditions of low dynamism and low munificence, managers will engage in stabilizing sub-processes more than enriching to create value.
4B	In conditions of low dynamism and low munificence, managers will engage in enriching sub-processes more than pioneering to create value.
5	In conditions of punctuated threat, firms that decrease or abandon stabilizing sub-processes will experience greater performance than firms who do not.

TABLE 4
Hypothesis Testing Criteria

Hyp	Dynamism 1=high	Munificence 1=high	Punctuation 1=yes	Testing Criteria (Beta…)
1A	1	1	0	3>2
1B	1	1	0	2>1
2A	1	0	0	2>1
2B	1	0	0	1>3
3A	0	1	0	1>3
3B	0	1	0	3>2
4A	0	0	0	1>2
4B	0	0	0	2>3

TABLE 5
Descriptive Statistics

Variable	N	Mean	Std Dev	Minimum	Maximum
Male	2480	0.903	0.296	0.000	1.000
Education	1360	2.600	0.655	1.000	4.000
Background	1360	4.094	2.305	1.000	8.000
Firm tenure	1312	11.512	9.168	1.000	36.000
Position tenure	1328	9.506	7.856	1.000	36.000
Industry tenure	1328	20.819	10.425	1.000	50.000
Title	1344	5.333	3.108	1.000	10.000
Employee number	1360	2.435	2.205	1.000	7.000
Industry	1360	3.259	1.978	1.000	6.000
Financial Strength	1216	4.934	1.081	1.000	7.000
Growth	1360	4.953	1.028	1.000	7.000
Profit	1360	4.882	1.045	1.000	7.000
Public Image	1216	5.145	1.097	1.000	7.000
Past Performance	1360	4.997	0.830	1.000	6.500

TABLE 6
Initial Null Testing

Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Intercept	ID	0.1487	0.02997	4.96	<.0001
Residual		1.0036	0.03695	27.16	<.0001

TABLE 7
Solution for Full HLM Model

Effect	Coefficient	Estimate	Error	DF	t Value	Pr>|t|
Intercept	γ00	.1345	0.6240	80	3.42	0.0010
Employee Number	-	-0.01258	0.02234	80	-0.56	0.5748
Industry	-	-0.01039	0.02320	80	-0.45	0.6555
Past Performance	-	0.07680	0.05734	80	1.34	0.1842
Stabilize	γ10	0.2822	0.07156	1261	3.94	<.0001
Enrich	γ20	-0.08142	0.1980	1261	-0.41	0.6809
Pioneer	γ30	0.4174	0.1199	1261	3.48	0.0005
Dynamism	γ01	-1.3672	0.5647	1261	-2.42	0.0156
Munificence	γ02	-0.9451	0.6151	1261	-1.54	0.1247
Punctuation	γ03	-0.4409	0.4117	80	-1.07	0.2874
Stabilize*Dynamism	γ11	-0.02063	0.1974	1261	-0.10	0.9168
Stabilize*Munificence	γ12	0.5282	0.2330	1261	2.27	0.0236
Stabilize*Punctuation	γ13	-0.01888	0.08779	1261	-0.22	0.8297
Enrich*Dynamism	γ21	0.2937	0.2259	1261	1.30	0.1938
Enrich*Munificence	γ22	0.2617	0.1720	1261	1.52	0.1283
Enrich*Punctuation	γ23	0.002456	0.1022	1261	0.02	0.9808
Pioneer*Dynamism	γ31	0.2541	0.3164	1261	0.80	0.4220
Pioneer*Munificence	γ32	-0.4165	0.2020	1261	-2.06	0.0395
Pioneer*Punctuation	γ33	0.07015	0.1032	1261	0.68	0.4967

TABLE 8
Hypotheses Testing Criteria - Results

Hyp	**Dynamism** 1=high	**Munificence** 1=high	**Punctuation** 1=yes	**Testing Criteria** (Beta…)	**Support?**
1A	1	1	0	3>2	none
1B	1	1	0	2>1	none
2A	1	0	0	2>1	none
2B	1	0	0	1>3	none
3A	0	1	0	1>3	full
3B	0	1	0	3>2	none
4A	0	0	0	1>2	none
4B	0	0	0	2>3	none

TABLE 9
Bundling Sub-Processes - Predictions vs. Observations

Munificence	**Dynamism**			
	High		**Low**	
High	**H1** Pioneer Enrich Stabilize	**R1** Stabilize Pioneer ~~Enrich~~	**H3** Stabilize Pioneer Enrich	**R3** Stabilize Pioneer ~~Enrich~~
Low	**H2** Enrich Stabilize Pioneer	**R2** Pioneer Stabilize ~~Enrich~~	**H4** Stabilize Enrich Pioneer	**R4** Pioneer Stabilize ~~Enrich~~

VITA

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