

INSIDE THE BLACK BOX: INVESTIGATING AGILITY AS A DYNAMIC
CAPABILITY FOR SUSTAINING A COMPETITIVE ADVANTAGE WITHIN
CONSULTING FIRMS

by

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A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

Capella University

October 2010

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Abstract

A fundamental question in the field of strategic management is how firms achieve and sustain a competitive advantage. The resource-based view (RBV) and its dynamic capabilities extensions have been used in answering this question but are criticized for being defined at too high a level and not resulting in a prescription for practicing managers. The primary purpose of the study was to explore organizational agility as a dynamic capability for sustaining a competitive advantage. In addition, a secondary purpose of the study was to provide applicable knowledge for attaining and maintaining a sustainable advantage. Five questions addressing (a) the relationship between organizational agility and firm performance within the consulting industry; (b) the modifying effects of environmental dynamism, environmental complexity, and coordination uncertainty on the relationship between organizational agility and firm performance within the consulting industry; (c) significant differences in these relationships across consulting firms of different sizes (small, medium, large); (d) the impact of environmental dynamism, environmental complexity, and coordination uncertainty within the consulting industry; and (e) whether the competitive advantage mediates the relationship between organizational agility and performance were investigated using MANOVA, multivariate regression models, and bivariate and partial correlation tests. The results showed (a) a strong positive correlation exists between operational agility activities and both market-related overall performance and internal overall performance; (b) customer agility was related to market-related overall performance and internal overall performance only through the relationship with operational agility; (c) environmental dynamism, environmental complexity, and

coordination uncertainty had no effect on the relationship between agility and performance, but environmental dynamism and coordination uncertainty were significantly related to agility; (d) firm size had no significant effect on performance and agility activities; and (e) competitive advantage did not mediate the relationship between organizational agility and performance. Suggestions for practical activities to sustain a competitive advantage were also developed for use by practicing managers.

Dedication

This dissertation is dedicated to the pursuit of normal science and those who encourage it.

A man may be attracted to science for all sorts of reasons. Among them are the desire to be useful, the excitement of exploring new territory, the hope of finding order, and the drive to test established knowledge . . . though the result is occasional frustration. . . what challenges him is the conviction that if only he is skilful enough, he will succeed in solving a puzzle that no one before has solved or solved so well. (Kuhn, 1996, pp. 37-38)

Acknowledgments

First, I need to acknowledge my loving wife Tamilla who made this journey with me from Phoenix 2006, through the birth of our two children, up until now. Thank you for having the patience and allowing me the opportunity to pursue a dream.

I would also like to thank my mentor, Dr. Martin Lees, for masterfully guiding me through the various phases of the dissertation program as well as my committee members, Dr. Paul Hardt and Dr. Jay Avella, for their constructive evaluation throughout this process leading to work that I could be eventually proud of. Thank you Dr. Drumm McNaughton for taking the drive up to meet me in Anaheim and helping me validate my topic and Dr. Lu for developing the instrument that allowed me to fulfill my dream as well as giving me the permission to utilize it. For all professors and teachers I have encountered along the way, even though I may not have followed your exact guidelines, I appreciate your encouragement and belief in my abilities.

I would also like to thank my family and friends for their encouragement, especially my mother who offered her graduate thesis as a guideline. I remember transferring her manuscript from paper to a computer for her at age fourteen and now I actually understand what was written. I would also like to thank my father for doing what it took to get me through the early stages of my tertiary education and always encouraging me in my pursuits.

Finally, without God, none of this would be possible. My day to day pray - I thank you for always being there.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

From its early beginnings, strategic management has sought to answer the fundamental question of how firms achieve a sustainable competitive advantage (Herrmann, 2005). Strategic management is complex both in theory and practice because it involves analyzing an entire organization in the context of a partially understood and largely uncontrollable environment (Viljoen & Dann, 2000). One definition of strategic management is as follows:

The process of identifying, choosing and implementing activities that will enhance the long-term performance of an organisation [*sic*] by setting direction and by creating ongoing compatibility between the internal skills and resources of the organisation, and the changing external environment within which it operates. (Viljoen & Dann, 2000, p. 618)

Furthermore, according to Dess, Lumpkin, and Eisner (2006),

[s]trategic management consists of the analysis, decisions, and actions an organization undertakes in order to create and sustain competitive advantages.

Thus, an important focus of strategic management is how firms gain knowledge and how they learn to achieve sustainable competitive advantages through continuous innovation (Herrmann, 2005).

One of the most influential frameworks for understanding strategic management is the resource-based view (RBV) of the firm (Barney, Wright, & Ketchen, 2001). The RBV argues that sustainable competitive advantage is derived when a firm controls resources and capabilities that are valuable, rare, imperfectly imitable, and not

substitutable (Barney et al., 2001). The ability to understand the environment, anticipate change, develop business models, and quickly, concurrently, and continuously design and create organizations that can implement the business models is the task of modern day managers (Greiner & Poulfelt, 2005). However, the RBV and its extensions still leave a “black box” when it comes to explaining how firms use their resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003).

Background of the Study

Over the years, consulting firms have made significant worldwide contributions to management knowledge, which in turn has greatly advanced the cause of professionalism in management (Greiner & Poulfelt, 2005). Despite the success of consulting firms, the industry is in a state of continuing economic transformation, insecurity, and heightened uncertainty about its future (Greiner & Poulfelt, 2005). These challenges are relevant not only to the consulting industry, for firms in other industries are also facing an even more complex environment shaped by the impact of technology, deregulation, changing competition, and the rise of knowledge as a key economic resource (Herrmann, 2005). Coupled with these environmental factors, the accelerating impact of globalization presents larger issues.

The global economy has created a new competitive landscape in which events change constantly and unpredictably (Ireland & Hitt, 1999). The long-term trend for the global economy is the lowering of trade barriers, thereby increasing global competition (Schiller, 2002). The primary factors drawing companies into the international arena are that (a) foreign markets present higher profit opportunities than the domestic market, (b) a larger customer base can help achieve economies of scale, (c) dependency on one

market can be reduced, (d) becoming international can counteract competitor global firms that offer better products or lower prices, and (e) current customers are moving abroad and require international servicing (Kotler & Keller, 2006). However, the global economy does not consist only of flow of products, but also of flow of capital, people, and information across global borders (Dess et al., 2006). In the global economy, knowledge work and knowledge workers are the primary sources of economic growth (Ireland & Hitt, 1999). In addition, “products are shipped anywhere in the world in a matter of days; communications are instant; and new product introductions and their life cycles have never been shorter” (Ireland & Hitt, 1999, p. 44). Globalization requires that organizations, not just top-level managers, increase their ability to learn, collaborate, and manage diversity, complexity, and ambiguity (Dess et al., 2006). Thus, organizational responsiveness is a central issue in determining business success in any industry (Hoyt, Huq, & Kreiser, 2007).

In manufacturing, goods are tangible and can be consumed immediately or in the future (Ricketts, 2008). However, consulting services are intangible and cannot be produced in advance (Ricketts, 2008). Furthermore, in the new competitive landscape, consumers are increasingly willing to participate in the creation of value (Prahalad & Ramaswamy, 2004). Therefore, consulting firms need to be on-demand enterprises capable of rapidly and flexibly responding to customer demands, market opportunities, and external threats (Ricketts, 2008). As Ricketts (2008) indicated, “On-demand enterprises earn more gross profit and have higher earnings growth than the median for their industries” (p. 17). The consulting firm must be agile when developing a comprehensive response to the global environment. However, services management

practices usually come from “experience, judgment, risk-taking—and occasionally just muddling through the inevitable rough patches” (Ricketts, 2008, p. 23). In addition, most companies grapple with new and poorly understood problems as they adapt to rapidly changing environments (Mohrman, Gibson, & Mohrman, 2001). Therefore, managers within organizations may follow bad advice from business books or consultants based on weak empirical evidence (Rousseau, 2006). Given the globally experienced need for immediate action, managers pressed for short-term results may reduce necessary collaborations with researchers in order to obtain the evidence needed for effective and efficient management (Rousseau, 2006).

Statement of the Problem

Due to high environmental uncertainty and varying degrees of environmental munificence within the global economy, sustaining a competitive advantage over time is unlikely (Sirmon, Hitt, & Ireland, 2007). *Strategic capability* is “defined as the capability of an enterprise to successfully undertake action that is intended to affect its long-term growth and development” (Lenz, 1980, p. 226). By structuring the firm’s resource portfolio, bundling resources, and leveraging capabilities, enterprises can maintain value for customers (Sirmon et al., 2007). However, there is little theory explaining how firms transform resources to create value (Sirmon et al., 2007). Even if such literature exists, there has been little investigation into the practical usefulness of various organizational science approaches (Mohrman et al., 2001).

The RBV suggests that firms’ resources drive value creation, leading to a competitive advantage (Sirmon et al., 2007). However, merely possessing resources does not guarantee the creation of value (Sirmon et al., 2007). To realize value, firms must

accumulate, combine, and exploit resources (Sirmon et al., 2007). Nevertheless, it is difficult to explain fully how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003). The RBV and dynamic capabilities are defined at such an abstract level that no prescription can be offered to practicing managers concerning the actions that could increase performance. Further understanding is needed regarding how to effectively structure a firm's resource portfolio, bundle resources into valuable capabilities, and formulate leveraging strategies that exploit the firm's capabilities to create value for its customers (Sirmon et al., 2007).

In addition to its being relatively new and fragmented, management and organization scholarship is challenged to develop scientific knowledge while also contributing to practice and policy making (Pettigrew, Woodman, & Cameron, 2001). Management studies have been found wanting because of disputes in the chosen method of performance measurement or because of the tendency to use univariate explanations of performance (Pettigrew et al., 2001). In very few studies do researchers seek to link change capacity and action—in other words, agility—to organizational performance. In fact, Herbert Simon chided scholars for limiting ambitions to delivering “how to” knowledge (Pettigrew et al., 2001). Therefore, a specific methodology for how to sustain a competitive advantage needs to be identified.

Purpose of the Study

The primary purpose of the present study is to demystify the black box, at least in part, and explore organizational agility as a dynamic capability for sustaining a competitive advantage. The term *black box* is used when the inputs and outputs to a device, process, or system are known but the internal structure is not very well

understood (“Black Box,” n.d.). Based on assumptions regarding the variables within the black box, the study is focused on the investigation of the relationship between organizational agility and overall organizational performance within consulting firms as agility and performance relate to the moderating variables of environmental dynamism, environmental complexity, and coordination uncertainty.

A secondary purpose of this study is the identification of simple yet practical activities that can be used by practicing managers to create a sustainable advantage. Researchers and practicing managers can be conceived as coproducers of knowledge (Pettigrew et al., 2001). Thus, identifying certain actions that are highly related to performance would help bridge the gap between academic research and meaningful practice.

Rationale

The goal of this present study is not to develop a new theory. Instead, the study is based on the incomplete theoretical context of the RBV and its extensions for the purpose of exploring the link between specific activities and a sustained competitive advantage. One problem that incomplete theoretical systems face is that they do not provide explanations (Bacharach, 1989). A good theory is one that provides a framework for analysis, efficient methods for field development, and clear explanations for the pragmatic world (Wacker, 1998). In essence, utility is just as important as falsifiability in the development of a theory (Bacharach, 1989). By investigating the black box and providing practical prescriptions, the results of the study could assist in completing the theoretical context of the RBV.

Research Questions

The following research questions were initially used for investigation of the black box.

Research Question 1: What relationships exist among the independent variables (operational agility and customer agility) and the dependent variables (market-related overall performance and internal overall performance) within the consulting industry?

Research Question 2: How do certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry?

Research Question 3: Do any significant differences in the relationships among the independent and dependent variables exist across consulting firms of different sizes (small, medium, large)?

The following null and alternative hypotheses were developed to investigate the research questions:

Hypothesis 1₀: No relationship exists between operational agility and internal overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 2₀: No relationship exists between operational agility and market-related overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 3₀: No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 3_a: Customer agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 4₀: No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 4_a: Customer agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 5₀: No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Hypothesis 5_a: A difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Significance of the Study

The most fundamental question in the field of strategic management is how firms achieve and sustain a competitive advantage (Teece, Pisano, & Shuen, 1997). “Rapidly

shifting environmental contingencies provide a premium for firms capable of quickly identifying and understanding the contingencies and then making decisions about how to leverage their capabilities without undue delay” (Sirmon et al., 2007, p. 287). Answering the question of how firms achieve and sustain a competitive advantage requires exposure to a continuous change process and engagement with practice (Pettigrew et al., 2001). Thus, an understanding of the relationship between a firm’s resources and the effectiveness of its processes and routines would present opportunities for analyzing the empirical implications of the resource-based theory (Ray, Barney, & Muhanna, 2004).

Practicing consultants view research as useful when they can jointly interpret such research with the researchers and find it informative in terms of firm design activities (Mohrman et al., 2001). Herrmann (2005) suggested that future research should specify areas of applicability and focus not only on resource endowments but also activities and routines in which resources need to be deployed (Herrmann, 2005). Identifying the relevant strategies, structures, and capabilities will allow firms to compete effectively and adapt quickly to the dynamic competitive environment (Barkema, Baum, & Mannix, 2002). This study is focused on identifying and providing specific actions consulting firms could take in creating a sustainable competitive advantage. Linking organizational agility to RBV could also expand the RBV approach to a large body of empirical research that has often been neglected within the paradigm (Eisenhardt & Martin, 2000).

Definition of Terms

The following is a list of key terms used in the study. These definitions are provided to aid the reader in understanding how these terms relate to the study.

Agility. *Agility* is a comprehensive response to the challenges posed by a business environment dominated by change and uncertainty (Goldman, Nagel, & Preiss, 1994).

Black box. This term refers to a device, process, or system whose inputs and outputs are known, but whose internal structure of working is not well, or at all, understood (“Black Box,” n.d.).

Change capacity. *Change capacity* refers to the ability to implement large scale changes without compromising daily operations or subsequent change processes (Meyer & Stensaker, 2006).

Competitive advantage. This term refers to the advantage a firm obtains when it produces greater utility for customers than competitors do (Sirmon et al., 2007).

Coordination uncertainty. *Coordination uncertainty* refers to the level of uncertainty due to interdependence demands among organizational subunits (Lu, 2006).

Customer agility. Customer agility reflects a firm’s ability to attend to customer concerns and to detect opportunities for competitive advances (Lu, 2006).

Dynamic capabilities. This term refers to a firm’s ability to integrate, build, and reconfigure internal and external competencies to address changing environments (Teece et al., 1997).

Environmental complexity. *Environmental complexity* refers to the number of environmental elements that the firm has to contend with as well as the level of interdependence among them (Lu, 2006).

Environmental dynamism. *Environmental dynamism* refers to the relative rate and unpredictability of change in the environment (Lu, 2006).

Environmental munificence. *Environmental munificence* refers to the capacity or opportunity for firms to grow within the environment (Lu, 2006).

Internal overall performance. This term refers to performance in terms of productivity and expertise (Lu, 2006).

Market-related overall performance. This form of performance refers to sales growth, market share, and new products and services (Lu, 2006).

Operational agility. *Operational agility* reflects a firm's ability to exploit opportunities for competitive advances (Lu, 2006).

Real options. Real options present a firm with a greater variety of future opportunities to alter existing capabilities or to create new ones while restricting the risks and costs of doing so to only the loss of the initial investment in the option (Sirmon et al., 2007).

Resource bundling. This term refers to the processes used to integrate resources to form capabilities (Sirmon et al., 2007).

Resource leveraging. *Resource leveraging* refers to the processes used to exploit capabilities to take advantage of specific market opportunities (Sirmon et al., 2007).

Strategic capability. This term refers to the capability of an enterprise to successfully undertake action that is intended to affect its long-term growth and development (Lenz, 1980).

Assumptions and Limitations

Due to the post-positivist paradigm used to explore the topic, the following assumptions were made:

1. Human resources that are rare and inimitable are likely to leave a firm if the employees' perceptions of the firm's internal and market performance are low, thus ultimately decreasing the firm's ability to sustain a competitive advantage.
2. Survey participants would have adequate high level knowledge of their firms' performance both internally and relative to their competitors.
3. Participants would be truthful in their responses to the survey questions.
4. All consulting organizations have the opportunity to grow within the environment and therefore meet the munificence requirements.

Like most RBV approaches, the present study included quantitative tests to correlate criteria for generating sustained competitive advantages in order to measure firm performance (Ray et al., 2004). However, aggregated firm performance depends on the net effect of business activities (Ray et al., 2004). It is possible that some business activities may create a competitive advantage while others may not. In addition, by measuring aggregated performance, it is possible that profits a business generates are taken by stakeholders before they can affect a firm's overall performance (Ray et al., 2004). Furthermore, overconfidence among managers about their own resources and capabilities can be a limitation to the study (Armstrong & Shimizu, 2007). In addition, decision makers may not be focused on top performance, only good enough performance.

Therefore, even though organization representatives may say that they want optimum performance, it may not necessarily be the case.

In addition, Child (1975) implied that the relationship between performance and the organizational structure may be constrained by a dominant coalition and recommended that performance research include the decision-making processes of the dominant coalition within an organization. However, this present study is not focused on taking the direct impact of the dominant coalition into consideration.

Theoretical and Conceptual Framework

As indicated, the purpose of this survey study is to delve into the black box and explore organizational agility as a dynamic capability for bundling and leveraging resources. The study is focused on investigating the relationship between organizational agility and overall organizational performance within consulting firms as agility and performance relate to the moderating variables of environmental dynamism, environmental complexity, and coordination uncertainty. The study is conducted in a quantitative, post-positivist design in order to explore the relationship among the variables. The conceptual framework shown in Figure 1 is used initially to guide the study within the context of the consulting industry. The conceptual framework builds on the underlying theories and concepts of systems theory, contingency theory, and the RBV and its dynamic capabilities extension, as well as the concept of agility, which arose from manufacturing research. These theories and concepts are discussed further in Chapter 2.

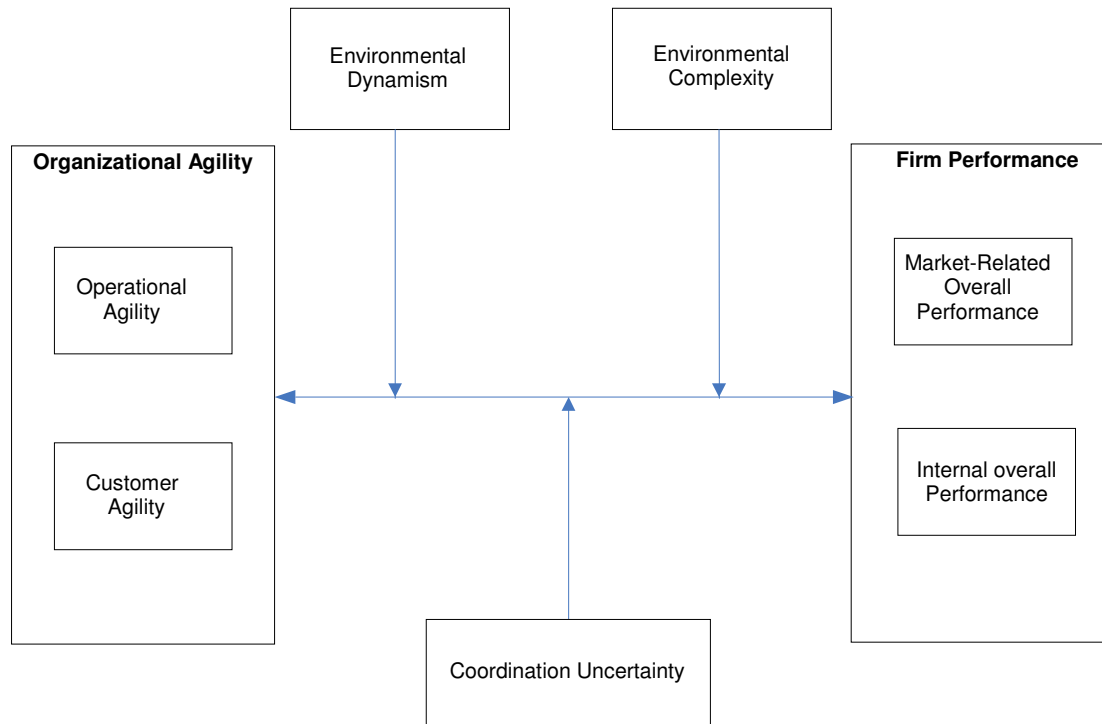


Figure 1. Initial conceptual framework.

Organization of the Remainder of the Study

Relevant literature concerning the problem statement will be reviewed in Chapter 2. Key topics include the RBV, dynamic capabilities, organizational theory, organizational environments, organizational performance, organizational agility, and the nature of consulting firms. Chapter 2 includes a theoretical foundation for conducting the study as well as the rationale for why specific measures and instruments are chosen within the study. In Chapter 3, the design and methodology of the study as well as the choice of instruments are described. Chapter 4 includes the results of the quantitative analysis and tests of the developed Hypotheses. In Chapter 5, the key findings are summarized and discussed, including implications for current theory and practice, the limitations of the study, and recommendations for future study.

CHAPTER 2. LITERATURE REVIEW

This chapter begins with a review of the literature on organizational performance and its importance and measurement. This review is then followed by an overview of organizational theory and its environmental contingencies, the resource based view, and a discussion of dynamic capabilities of a firm. This logical order leads to a review of organizational agility literature and the possibility of providing answers that can explain the dynamic capabilities used to sustain a competitive advantage within the consulting industry.

Performance

A competitive advantage is typically created when a firm produces greater utility for customers than its competitors do (Sirmon et al., 2007). Strong performance occurs when a firm exceeds its competitors' ability to provide solutions to customers' needs while maintaining or improving its profit margins (Sirmon et al., 2007). Doing so does not imply that competitive advantage and performance will be equivalent from an empirical standpoint (Newbert, 2008). In fact, some researchers have hypothesized that competitive advantage mediates the relationship between performance and a resource or capability (Newbert, 2008). However, in order to gain a better understanding of how to achieve a sustainable competitive advantage, researchers frequently take empirical investigation of organizational performance into account.

The ability to measure firm performance effectively is critical to a firm's ability to survive and efficiently manage operations (Maltz, 2001). The more complexity and change occur, the more crucial the ability to measure performance becomes (Spitzer, 2007). Performance measurement may use numbers, but the value lies more in perception, understanding, and insight than it does in the numbers (Spitzer, 2007). Furthermore, transformational measures lead to improvements in many aspects of organizational performance (Spitzer, 2007). In addition, achieving coordination and alignment is difficult without exceptional performance measurement (Spitzer, 2007). However, even with the volume of literature available on the topic of performance the treatment of performance in research is one of the most difficult issues confronting the academic researcher (Venkatraman & Ramanujam, 1986).

Organizational researchers tend to live in two worlds that demand and reward speculation about how to improve performance while balancing the demands and rewards of adhering to rigorous academic standards (March & Sutton, 1997). In addition, "identifying the true casual structure of organizational performance phenomena on the basis of incomplete information generated by historical experience is problematic" (March & Sutton, 1997, p. 699). Many studies use performance as a dependent variable. However, the effects of performance on the organizational predictor variables (and thus ultimately on performance) are largely ignored in research attempting to predict performance (March & Sutton, 1997). Little evidence supports the existence of a relatively simple unidirectional causal relationship between supposedly predictor variables and performance when discussing enterprises (Lenz, 1981). Nevertheless, the strategic management researcher does not have the option to avoid defining and

measuring performance because it lies at the center of strategic management (Venkatraman & Ramanujam, 1986). In order to define and measure performance, organizational performance (OP) research must address the two basic issues of selecting an appropriate conceptual framework within which to define performance and identifying available measures for organizational performance (Dess & Robinson, 1984).

Three major frameworks have frequently been used to conceptualize OP (Dess & Robinson, 1984). The goal approach conceptualizes OP based on explicit goals or goals that can be inferred from the behavior of organizational members (Dess & Robinson, 1984). The goal approach has been challenged because (a) goals as ideal states do not offer the possibility of realistic assessment and (b) goals arise outside of the organization as a social system and cannot arbitrarily be attributed to the properties of the organization itself (Yuchtman & Seashore, 1967). The systems resource approach assesses OP in terms of the key internal and external factors that the organization depends on for survival (Dess & Robinson, 1984; Yuchtman & Seashore, 1967). Finally, the constituency approach assesses OP based on the ability to fulfill the needs of both internal and external constituencies of the organization (Dess & Robinson, 1984; Thompson, 2003).

Operationalizing the measures of organizational performance is complex because of the multidimensionality of OP (Dess & Robinson, 1984). Firms typically use financial measures only to measure performance. However, a firm's market share is also a powerful predictor of financial performance (Lenz, 1981). Because measures are surrogates for actual performance, performance measures will always be imperfect (Spitzer, 2007). However, even with such imperfection, performance measures provide

high-quality information to assist in learning and improvement (Spitzer, 2007). The following discussion will address the two major types of categories for measuring performance.

The dominant model for measuring performance within empirical strategy research is the use of simple outcome-based financial indicators. When discussing performance measures, after taxes return on total assets is commonly viewed as an appropriate measure for the efficiency of use of a firm's assets (Dess & Robinson, 1984). In addition, return on investment is widely accepted as a measure of business success (Dess & Robinson, 1984). Growth in sales is another measure of economic performance that reflects how well an organization relates to its environment (Dess & Robinson, 1984). Yet another measure is Tobin's Q, a market-based measure of economic performance to compare a firm's market value to the replacement costs of its assets (Sirmon & Hitt, 2009). Tobin's Q can be used to gain a speedy assessment of the market's reaction to a firm's actions and indicate whether a firm is managing its resources poorly (Sirmon & Hitt, 2009). However, nonfinancial measures are also commonly used.

Approximately half of the published studies on Human Resource Management (HRM) and performance use subjective performance measures (Wall et al., 2004). Good reasons for using subjective measure include cost effectiveness and the lack of viable alternative measures for certain types of organizations and levels of analysis (Wall et al., 2004). The most important drivers of performance in present-day organizations are largely intangible (Spitzer, 2007). As Spitzer (2007) suggested

the future competitiveness of our organizations and our entire society will depend on our ability to more effectively measure and manage intangibles that have been long considered the softer side of performance measurement and are now becoming the essence of competitive advantage. (p. 99)

Subjective measures tend to focus on overall performance whereas objective measures tend to focus on more specific financial indicators (Wall et al., 2004). Subjective measures also tend to rely on asking respondents to rate their companies' performance relative to their competitors whereas objective measures have been more focused on internal absolute responses (Wall et al., 2004). Limitations of subjective measures include random error and systematic bias, which may indicate relationships between practices and performance that do not really exist (Wall et al., 2004). In addition, one of the difficulties of using nonfinancial measures is the inability to quantify an amount and the relationship between nonfinancial measures and financial performance (Maltz, 2001). Based on their research, Wall et al. (2004) concluded that subjective and objective measures of performance are positively correlated.

Yuchtman and Seashore (1967) proposed that the effectiveness of an organization lies in the ability of the organization to exploit its environment in the acquisition of scarce and valued resources. However, acquisition of scarce and valued resources is not enough. The bargaining position of an organization at any point in time is a function of the importation of resources as well as their allocation and processing and their exportation in some output that aids further input (Yuchtman & Seashore, 1967). Effectively and efficiently managing resources within the firm's environmental context ultimately determines the value the firm generates and maintains over time (Sirmon et al., 2007). These efforts themselves, if successful, can create disequilibrium and uncertainty within the environment (Jauch & Kraft, 1986).

Organizational Theory

Organizations are complex systems. During the 20th century, the three perspectives of rational, natural, and open systems were critical in attempting to understand organizations (Scott & Davis, 2006). These differing perspectives are important because it is difficult to comprehend and analyze the vast amount of literature on organizations without understanding the underlying perspectives (Scott & Davis, 2006).

The rational view presents organizations as “collectivities oriented to the pursuit of relatively specific goals and exhibiting relatively highly formalized social structures” (Scott et al., 2007, p. 29). Simon (1997) proposed that the appropriateness of design, structure, and assessments can be judged only in light of the contextual variables and uncertainty present for the organization. Furthermore, the rational decisions made are bounded by the perceptions and beliefs of administrators (Simon, 1997). Formalized structures support rational decision making by parceling out responsibilities among participants and providing them with the necessary means to handle their resources, information, and equipment (Scott & Davis, 2006). The structural arrangements are designed as tools to achieve efficient realization of ends (Scott & Davis, 2006). Through “delimiting responsibilities, control over resources, and other matters, organizations provide their participating members with boundaries within which efficiency may be a reasonable expectation” (Thompson, 2003, p. 54). However, where numerous spheres of bounded rationality exist, the appropriate structure must facilitate the coordinated action of interdependent elements (Thompson, 2003).

The natural view presents organizations as “collectivities whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important resource” (Scott et al., 2007, p. 30). In other words, organizations are more than just instruments for attaining defined goals but are, fundamentally, social groups attempting to adapt and survive based on the environment (Scott & Davis, 2006). Natural system analysts emphasize that formalization places heavy burdens on those responsible for designing and managing an organization (Scott & Davis, 2006). Natural system analysts claim that, because planners are not able to anticipate all possible contingencies, the rational behaviors promote maladaptive, ineffective, and inefficient behavior (Scott & Davis, 2006). Whereas the rational view focuses on formalization, the natural view focuses on behavior.

The open-system view presents organizations as “congeries of interdependent flows and activities linking shifting coalitions of participants embedded in wider material-resource and institutional environments” (Scott et al., 2007, p. 32). Nine key characteristics of all open systems are (a) importation of energy; (b) through-put; (c) output; (d) cycles of events; (e) negative entropy; (f) information input, negative feedback, and the coding process; (g) steady state and dynamic homeostasis; (h) differentiation; and (i) equifinality (Katz & Kahn, 1978).

To summarize these characteristics, *cycles of events* represent the typical business cycle of an organization. *Output* refers to the final product or service offered by a company. *Importation of energy* refers to the acquisition of resources in order to create an end product or service. *Through-put* refers to the process of converting organizational resources into the end product or service. The first four characteristics represent the

productivity function within an organization. The last five characteristics are required to survive.

Entropy means that all forms of organization naturally move towards disorganization or death (Katz & Kahn, 1978). *Negative entropy* is the opposing activity required to negate this natural process. Information input from the environment provides a mechanism for the firm to make decisions regarding its current structure and its functioning relative to the environment. This coding process can be linked to the strategic analysis process (Katz & Kahn, 1978). Based on steady-state and dynamic homeostasis attributes, a company will attempt to cope with existing forces by incorporating them within its boundaries or acquiring control over them (Katz & Kahn, 1978). In order to optimize functional capabilities, firms will use differentiation and move towards the elaboration of roles with greater specialization (Katz & Kahn, 1978). Finally, *equifinality* means that firms may start from different starting points and the final state can be reached through a variety of paths (Thompson, 2003).

In a seminal study, Lawrence and Lorsch (1986) concluded that rational and natural systems theory both define an organization, and in addition, organizations are open systems, with the differences in their structures mirroring differences in the environments to which they are attempting to adapt. Lawrence and Lorsch (1986) argued that the divergent views of rational versus natural perspectives may have been shaped by the experiences of the analysts. Promoters of the rational view tended to be practical men with managerial or engineering experience whereas promoters of the natural view tended to be academics. Therefore, if an open-system perspective were taken, the rational and natural system perspectives would serve to identify different organizational types, which

may vary based on the environment (Scott & Davis, 2006). The more homogenous and stable the environment, the more prevalent the need for a rational system view. On the other hand, the more diverse and changing the environment, the more prevalent the need for a natural system view (Lawrence & Lorsch, 1986; Thompson, 2003).

Taken together, the works of Lawrence and Lorsch (1986) and Thompson (2003) define the contingency theory, which remains arguably the most influential theory of organizations. Furthermore, Thompson (2003) used organizational levels to represent the three perspectives. The rational view is represented at the technical level or the part of the organization responsible for the production functions (Scott & Davis, 2006; Thompson, 2003). The natural view is represented at the managerial level or the part of the organization responsible for designing, controlling, procuring, securing, and allocating resources (Scott & Davis, 2006; Thompson, 2003). The open-system view is represented at the institutional level or the part of the organization that relates to the wider environment and establishes domains, boundaries, and legitimacy (Scott & Davis, 2006; Thompson, 2003).

Environmental Uncertainty

As shown by the systems resource, contingency, and constituency theories, the relationship between an organization and the environment is one in which the organization will not receive the inputs necessary to survive unless it offers something desirable to those it comes in contact with (Thompson, 2003). Every organization exists in a specific environment to which it must adapt (Scott & Davis, 2006). Complex organizations exist as agencies of their environments (Thompson, 2003). Therefore, it is

understandable that environmental conditions have been identified as the major factor contributing to uncertainty within an organization (Child, 1972).

One of the most fundamental problems within a complex organization is uncertainty. Three sources of uncertainty are (a) lack of cause-and-effect understanding of the external culture; (b) outcomes of organizational action, in part, determined by the actions of elements within the external environment; and (c) interdependence of components within the firm (Thompson, 2003). The first two sources of uncertainty represent the external uncertainty concept. The last represents the internal uncertainty concept. The dimensions widely used to describe external environmental uncertainty are munificence, dynamism, and complexity.

Munificence describes the capacity or opportunity for firms to grow within the environment (Dess & Beard, 1984; Lu, 2006). *Dynamism* refers to the relative rate and unpredictability of change in the environment (Dess & Beard, 1984; Lu, 2006).

Complexity refers to the number of environmental elements that the firm has to contend with as well as the level of interdependence between the firm and the environment (Dess & Beard, 1984; Lu, 2006).

The administrative process must reduce uncertainty while remaining flexible (Thompson, 2003). Internal-uncertainty reduction strategies can be viewed as a means of acquiring knowledge about the operation of the organization (Jauch & Kraft, 1986). However, internal-uncertainty reduction is one of four strategic options for managing uncertainty (Jauch & Kraft, 1986). External-uncertainty reduction strategies are a means of acquiring knowledge about the operating environment of the firm (Jauch & Kraft, 1986). Internal and external uncertainty simulation strategies can be used to overcome

group think and stimulate conflict both internally and externally as a means of overcoming structural deficiencies such as goal incompatibility (Robbins, 2005).

In the past, treatments of environmental uncertainty have focused on identifying and prescribing ways managers could reduce or absorb negative consequences (Jauch & Kraft, 1986). However, organizations are dependent on environmental uncertainty, and the appropriateness of different strategies depends on the competitive setting, and such strategies are agents of their environment (Herrmann, 2005; Thompson, 2003). Not only are organizations influenced by their environment, but, as noted by Jauch and Kraft (1986), “Through its influence on the environment, an organization can create greater uncertainty for competitors, thereby enhancing its own competitive position” (p. 777).

Three uncertainty views—classical, transition, and process—are set forth in the literature. The classical view asserts that the external environment is a source of uncertainty and that the reality of the objective environment influences decisions, structure, and performance (Jauch & Kraft, 1986). The transition view asserts that the source of uncertainty is both external and internal and that decision makers have choices and influence rather than an uncertainty imperative (Jauch & Kraft, 1986). The process view asserts that objective properties of the environment can be ignored and that the decision maker’s perceptions, influenced by internal factors, mediate the link between uncertainty and system characteristics (Jauch & Kraft, 1986). Furthermore, as indicated by Porter (1980), the competitive environment can be affected through five major forces. These forces are new entrants, buyer power, supplier power, substitute products, and existing competition between rivalries. However, it is important to recognize the

organization as a social open system consisting of the patterned activities of a number of individuals (Katz & Kahn, 1978).

The crucial problem for units within an organization is not coordination of what can be controlled, but adjustments to the constraints and contingencies created by the external environment (Thompson, 2003). The more dynamic the environment, the greater the contingencies presented to the organization (Thompson, 2003). However, value is created only when resources are evaluated, manipulated, and deployed appropriately within the firm's environmental context (Sirmon et al., 2007). Therefore, an important factor for attaining high performance appears to be the internal consistency of demands that a structure imposes on organizational participants (Lenz, 1981). Thus the management of resources should also be dynamic, with change resulting from adapting to environmental contingencies and from exploiting opportunities created by those contingencies (Sirmon et al., 2007).

A Resource-Based View

The traditional concept of strategy is phrased in terms of the strengths and weaknesses of the firm, and most economic tools were used to review the resource position based on the company's products (Wernerfelt, 1984). The seminal work of Edith Penrose first examined how variations in an organization's access to key resources might lead to differences in performance (Scott & Davis, 2006). This resource perspective provided a basis for addressing the key issues of (a) which of the firm's current resources diversification should be based, (b) which resources should be developed through diversification, (c) what sequence and what markets diversification should take place in, (d) and what types of firms should be acquired (Wernerfelt, 1984). In studying the effect

of resources within an organization, Wernerfelt (1984) identified that, by viewing firms in terms of their resources rather than in terms of their products, new strategic options could be proposed. One of the most influential frameworks created based on this proposed view for understanding strategic management is the resource-based view (RBV) of the firm (Barney et al., 2001). “While Wernerfelt (1984) emphasizes resources and diversification, Barney provides what is arguably the most detailed and formalized depiction of the business-level resources-based perspective” (Priem & Butler, 2001, p. 23).

Prior research on environmental models of competitive advantage assumed that (a) firms within an industry are identical in terms of the strategically relevant resource they control and the strategies they pursue and (b) resource heterogeneity developed in an industry or group is short lived because the resources firms use to implement strategies are highly mobile (Barney, 1991). Although this knowledge is useful for clarifying the impact of a firm’s environment on performance, Barney (1991) argued that these assumptions would not hold up when examining the link between a firm’s internal characteristics and performance because they eliminate resource heterogeneity and immobility as possible sources of competitive advantage. Yuchtman and Seashore (1967) noted that valued resources are, for the most part, the focus of competition between organizations. Instead, Barney (1991) assumed that firms may be heterogeneous with respect to the strategic resources they control and that resources may not be perfectly mobile across firms. In essence, the RBV argues that sustainable advantage is derived when a firm controls resources and capabilities that are valuable, rare, imperfectly imitable, and not substitutable (Barney et al., 2001).

Barney (1991) defined a firm's resources as including all assets, capabilities, organizational processes, information, and knowledge controlled by a firm and stated that they fall into three categories: physical capital, human capital, and organizational capital. A resource is considered valuable when it can increase firm performance through exploitation of opportunities and neutralization of threats (Barney, 1991). This value is determined in relation to the organizational strategy and external environments (Priem & Butler, 2001). A resource is considered to be rare when the number of firms that possess a valuable resource is less than the number of firms needed to generate perfect competition dynamics in an industry (Barney, 1991). However, inimitable resources are typically intangible and hard to observe, making them inherently difficult to measure in RBV research (Armstrong & Shimizu, 2007). Barney (1991) proposed that valuable organizational resources can only be sources of sustainable competitive advantage if firms that do not possess these resources cannot obtain them. Further, a substitutable resource is defined as a valuable resource that is not strategically equivalent to another valuable resource, nor is it rare or imitable (Barney, 1991). However, the resource enables a firm to conceive of and implement the same strategies (Barney, 1991).

Although an influential theory, the RBV has not achieved a dominant design status and is criticized for its vague and tautological character as well as its lack of empirical grounding (Herrmann, 2005). The RBV has been criticized as being conceptually vague and tautological in terms of inattention to the ways in which resources actually contribute to competitive advantage (Eisenhardt & Martin, 2000). Thus, the usefulness of the RBV in developing meaningful management tools for practitioners has also been questioned (Priem & Butler, 2001). To the practitioner, simply

being advised to obtain rare and valuable resources that are hard to imitate and substitute for so as to achieve competitive advantage does not meet the operational validity criterion required of suitable research (Priem & Butler, 2001). The RBV and its extensions still leave a black box in terms of explaining how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003).

These challenges have also generated concern about the testability of the RBV (Barney et al., 2001). However, strategic management has not developed tests that can falsify RBV claims (Herrmann, 2005). In light of a meta-analysis of the RBV literature, scholars have typically used four approaches for testing RBV. The resource heterogeneity approach argues that a given resource, capability, or core competency is valuable, rare, inimitable, and nonsubstitutable (Newbert, 2007). The organizing approach seeks to identify firm-level conditions that enable the effective exploitation of the resources and capabilities under examination (Newbert, 2007). The conceptual-level approach seeks to test not the resources themselves but the attributes of the resources that are essential for a resource to contribute to a firm's advantage (Newbert, 2007). Finally, the dynamic capabilities approach tests the degree to which the interaction of specific resources and processes lead to a competitive advantage (Newbert, 2007). The empirical results of the meta-analysis seem to suggest that capabilities and core competencies do contribute significantly to a firm's competitive advantage and performance whereas a focus on specific resources does not (Newbert, 2007). However, capabilities and core competencies are not easily quantifiable and accessible (Newbert, 2007). Thus, the RBV requires further elaboration to explain the link between the management of resources and the creation of value (Sirmon et al., 2007).

To the extent that key constructs of the RBV are inherently observable, instead of using readily available measures, new measures that will challenge and contribute to further development of the RBV are needed (Armstrong & Shimizu, 2007). Armstrong and Shimizu (2007) suggested that large sample methods should not be de-emphasized and that creative operational constructs should be used to advance the RBV. Developing an appropriate survey based on in-depth interviews with focal firms or experts should mitigate measurement problems in RBV research (Armstrong & Shimizu, 2007). The results of critically examining prior empirical research on the RBV indicate that research should move towards an organizing approach or dynamic capability approach using either a specific organizational condition or a specific dynamic capability on performance (Armstrong & Shimizu, 2007; Tuan & Yoshi, 2010).

Dynamic Capabilities

Although theoretical models have performed well in firm-level analyses for sustaining and safeguarding competitive advantage, they have not performed as well in assisting the understanding of how and why firms build competitive advantages in times of rapid change. New strategic management designs should involve a dynamic model by which firms obtain valuable information, create knowledge, and accumulate capabilities in a continuous reinforcing process of individual and organizational learning (Herrmann, 2005). Expanding beyond the strategic management field, the dynamic capabilities approach incorporates fields such as organizational learning, product and process development, manufacturing, and human resources with other strategic management models to understand newer sources of competitive advantage (Teece et al., 1997). As noted by Teece et al. (1997), “The dynamic capabilities approach seeks to provide a

coherent framework which can both integrate existing conceptual and empirical knowledge, and facilitate prescription” (p. 515). *Dynamic* refers to the “capacity to renew competencies so as to achieve congruence with the changing business environment” (Teece et al., 1997, p. 515). *Capabilities* refer to the “role of strategic management in appropriately adopting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies to match the requirements of a changing environment” (Teece et al., 1997, p. 515). The dynamic capabilities of a firm, therefore, are the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece et al., 1997).

The essence of dynamic capabilities is the organizational processes shaped by the firm’s asset positions and is molded by its evolutionary and co-evolutionary paths (Teece et al., 1997, p. 518). Organizational processes are identified as the learned and practiced routines that define the way things are done in a firm (Teece et al., 1997). Organizational processes display high levels of coherence, making replication difficult because it requires systemic changes through the organization that may be hard to implement (Teece et al., 1997). “The ability to learn and the ability to change are likely to be among the most important capabilities that a firm can possess” (Barney, 2001, pp. 631-632).

A firm’s asset positions refer to specific “technology, intellectual property, complementary assets, customer base, and its external relations with suppliers” (Teece et al., 1997, p. 518). The value of a firm’s capabilities must be evaluated in the market context within which the firm is operating (Barney et al., 2001). Dynamic capabilities consist of specific strategic and organizational processes that create value for firms within

dynamic markets by manipulating resources into new value-creating strategies

(Eisenhardt & Martin, 2000). According to Barney et al. (2001),

To the extent that some firms in a rapidly changing market are more nimble, more able to change quickly, and more alert to changes in their competitive environment, they will be able to adapt to changing market conditions more rapidly than competitors, and thus can gain competitive advantage. (p. 631)

Because dynamic capabilities can be duplicated across firms, the value for competitive advantage lies in the resource configurations rather than in the capabilities (Eisenhardt & Martin, 2000). Thus, dynamic capabilities consist of identifiable and specific routines that often have been the subject of extensive empirical research outside of strategic management (Eisenhardt & Martin, 2000).

One capability that is growing as a method for assisting organizations to maintain a sustainable advantage is the capacity for change. *Change capacity* is the ability to implement large scale changes without compromising daily operations or subsequent change processes (Meyer & Stensaker, 2006). Change can be either discontinuous or continuous. Discontinuous change occurs in leaps, spurts, and disruptions (Burke, 2007). Continuous change, which is a characteristic of most organizations, is not abrupt nor discontinuous, but rather focused on small incremental changes and continual improvement (Burke, 2007). However, a noted weakness in the literature is that the change process is generally treated in terms of single and isolated events (Meyer & Stensaker, 2006). Thus, a comprehensive approach to managing all the changes within an organization and maintaining the ability to respond whether change is continuous or discontinuous is needed. Agility offers a comprehensive response to the challenges posed by a business environment dominated by change and uncertainty (Goldman et al., 1994).

Therefore, organizational agility, which originated in operations research and manufacturing, could hold some answers related to the RBV and dynamic capabilities configurations.

Organizational Agility

In 1991, the U.S. Congress commissioned Steven Goldman, Roger Nagel, Kenneth Preiss, and an independent consultant, Rick Dove, to identify ways of returning the U.S. industry to global manufacturing competitiveness (Bradish, Metes, & Gundry, 1997). The Agility Forum, the operating name of the Agile Manufacturing Enterprise Forum at the Iacocca Institute at Lehigh University, led a team of manufacturing executives to create a strategy for agility built from experience. As previously defined, “agility is a comprehensive response to the challenges posed by a business environment dominated by change and uncertainty” (Goldman et al., 1994, p. 3). Similar to the equifinality concept in systems theory, the findings of this group were that there is no one right way to organize and operate a company and no one mode of operation that will be successful for long (Goldman et al., 1994). “Even if organizations make similar interpretations of their environments, and initiate strategic changes that seem similar in content, differences remain in terms of what they are actually able to do and the results they attain” (Meyer & Stensaker, 2006, p. 218).

Attaining agility requires a new mind-set using new metrics for assessing the performance of the company because the use of traditional financial measures only will obstruct the development of agility (Goldman et al., 1994). The problem of how organizations can successfully deal with uncertain and dynamic environments has been a prevailing topic for a few decades (Sherehiy, Karwowski, & Layer, 2007). An agile

company “must have the right core competencies with which to create customer opportunities and to respond to customer opportunities that present themselves often unpredictably” (Goldman et al., 1994). Proposals for how to deal with these uncertain and dynamic environments generally point to possessing the ability to adjust and respond to change (Sherehiy et al., 2007).

Developing agility entails finding new ways of running companies in order to overcome the challenges of the 21st century (Gunasekaran, 1999). An organization that possesses this ability to adjust and respond to change in order to survive is an agile organization. Within manufacturing, *agility* is defined as the capacity to survive and prosper in a competitive environment of continuous and unpredictable change by responding quickly and effectively to changing markets (Gunasekaran, 1999). Thus, agile metrics are multidimensional (Goldman et al., 1994). Based on the results of the commissioned study that originally envisioned agile competition, Goldman, Nagel, and Preiss (1994) identified four strategic dimensions of agile competition: (a) enriching the customer, (b) cooperating to enhance competitiveness, (c) organizing to master change and uncertainty, and (d) leveraging the impact of people and information.

The goal in enriching the customer is to create strategic stable, long-term relationships that can survive constant marketplace change (Goldman et al., 1994). The agile organization is really selling skills, knowledge, expertise, and information in a relationship that spans time (Goldman et al., 1994). Therefore, an agile company’s most important asset is a set of core competencies, first, in the form of personnel and, second, in the form of technologies (Goldman et al., 1994). Once the true productivity of a firm’s core competencies is understood, the goal emerges to organize the firm in ways that

permit exploiting those competencies to create solutions for customers as rapidly and as cost effectively as possible (Goldman et al., 1994). This principle is linked directly to research on the dynamic capabilities of a firm. To exploit these competencies cooperation must exist not only within organizations but between organizations.

Thompson (2003) emphasized that organizational structure and dynamics are heavily dependent upon the imperatives of technology, goals, environmental pressures, and the problems of coordination .In order to adapt to the various imperatives, Thompson (2003) suggested that all organizations should be open to their environment as differentiated systems made up of subunits that are designed to be more open or more closed based on the environmental influences. Thus, organizations must seek internal arrangements that are more flexible and resilient (Greiner & Poulfelt, 2005).

An agile organization creates a culture that supports communication and cooperation across departments, divisions, subsidiaries, and affiliates of companies, including direct competitors (Goldman et al., 1994). Suitable organizational structures are needed to allow this communication and cooperation to occur while exploiting opportunities and entail restructuring the organization to enable these competencies to be exploited. Agile organizations maintain flexible and dynamic organizational structures to support the differing requirements of stakeholders (Goldman et al., 1994). Understanding that people and information are the differentiators, agile firms encourage continuous learning while allowing employees to accept customer service responsibilities and ownership of problems and shared responsibility for the organization's success (Goldman et al., 1994). Thus, agility is a continual process of managed change in addition to

constant adaptation of internal practices and external relationships to new customer opportunities (Goldman et al., 1994).

Sambamurthy, Bharadwaj, and Grover (2003) further proposed that agility has the three dimensions of customer, partnering, and operating agility. *Customer agility* is defined as the inclusion of customers in the exploration and exploitation of opportunities for innovation and competitive moves (Sambamurthy et al., 2003). *Partnering agility* is the ability to leverage assets, knowledge, and competencies of suppliers through partnerships, alliances, and joint ventures (Sambamurthy et al., 2003). *Operational agility* is the ability to accomplish business processes with speed, accuracy, and cost economies while exploiting opportunities for innovation and competitive action (Sambamurthy et al., 2003). In reconciling the two views on agility of Goldman et al. (1994) and Sambamurthy et al. (2003), it can be seen that customer agility parallels the dimension of enriching the customer, partnering agility is the dimension of cooperating to compete, and operational agility aligns with the dimensions of mastering change and leveraging resources.

Nevertheless, little empirical research has been done on the agile organization (Sherehiy et al., 2007). In consideration of the claim made by Sherehiy et al. (2007) and others, a literature search was performed using the Proquest Business–ABI/Inform Global database. A search was performed within the citation and document text of various scholarly documents for multiple combinations of the variables in the research questions and hypotheses for this present study. Although much literature exists regarding organization and performance, only nine documents contained information on the clustered variables of organization, performance, uncertainty, complexity, and dynamism. Two documents contained the clustered variables of organization, performance,

uncertainty, agility, complexity, and dynamism. Both documents tested survey instruments built to measure agility. Although the instrument developed by Hoyt, Huq, and Kreiser (2007) was developed for measuring manufacturing companies, the instrument developed by Lu (2006) could be used across industries. No documents were found when all variables were included. Even when the agility variable was removed, no documents were found within the search. Research conducted in the consulting industry on the concepts described in the hypotheses was not found.

The Consulting Industry

The consulting industry is a dynamic, knowledge-based industry filled with uncertainty and excitement. Innovations in strategy are dominated by management consultants, not by managers or academics (Canback, 1998). As a service to their clients, consulting firms typically have participative stances to enable organizations to develop and maintain a competitive advantage. Over the years, consultants have made significant contributions to management knowledge and the advancement of professionalism in management (Greiner & Poulfelt, 2005). However, despite its success, the consulting industry is constantly in a state of economic transformation, insecurity, and uncertainty about its future (Greiner & Poulfelt, 2005). Nevertheless, consultants will play an increasingly important role in the global economy and may ultimately take on the role of network manager (Canback, 1999). The future will belong to consulting firms that are not bound to the past but can sense emerging changes and work faster and more flexibly than their competitors (Greiner & Poulfelt, 2005).

Summary

A fundamental question in strategic management is how firms derive a competitive advantage. The answers provided thus far have been vague and lack practical prescriptions (Dess & Robinson, 1984). A competitive advantage is typically created when a firm produces greater utility for customers than competitors do (Sirmon et al., 2007). In order to gain a better understanding of how to achieve a sustainable competitive advantage based on empirical investigation, researchers frequently take the performance of an organization into account. In order to define and measure performance, organizational performance (OP) research must address the two basic issues of selecting an appropriate conceptual framework within which to define performance and identifying available measures for organizational performance (Dess & Robinson, 1984).

With regard to the measurement of organizational performance, though typically supported by internal financial performance only, market performance can also be used to complement internal financial performance. However, a difficulty inherent in performance research is the ability to define the causal relationship between other variables and firm performance. Despite substantial evidence, the effects of performance on organizational predictor variables are largely ignored in research that purports to identify factors in organizational performance (March & Sutton, 1997). Another issue is that of identifying performance measures. In order to capture the intangibles that describe future competitiveness within organizations, using subjective measures, which are now becoming the essence of competitive advantage, may be more effective (Spitzer, 2007). Furthermore, research has shown that the external and internal environment of a firm play important roles in determining firm performance.

The external environment is constantly changing, not only due to the actions of the firm but also because of the actions of its customers, suppliers, and competitors. The RBV has been proposed to explain how firms achieve a sustainable competitive advantage. Although an influential theory, the RBV has not achieved a dominant design status and is criticized for its vague and tautological character as well as its lack of empirical grounding (Herrmann, 2005). Stemming from a report commissioned by the U.S Congress to identify ways of returning the U.S. industry to global manufacturing competitiveness, the concept of organizational agility addresses ways that a company can be managed in order to adapt and survive. However, little empirical research has been done on organizational agility (Sherehiy et al., 2007). The empirical research performed by Lu (2006) was focused specifically on the use of IT technology in the achievement of organizational agility. Thus, an opportunity exists to link agility to the RBV and dynamic capabilities concepts within strategic management.

CHAPTER 3. METHODOLOGY

As noted in Chapter 1 and Chapter 2, strategic management has sought, from its early beginnings, to answer the fundamental question of how firms achieve sustainable competitive advantage (Herrmann, 2005, p. 111). The RBV and its extensions suggest that firms' resources drive value creation, thereby leading to a competitive advantage (Sirmon et al., 2007). However, the RBV and its extensions still leave a black box in terms of explaining how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003). The concept of agility addresses new ways of running companies in order to overcome the challenges of the 21st century (Gunasekaran, 1999), yet little empirical research has been done on the agile organization (Sherehiy et al., 2007).

The primary purpose of this survey study was to delve into the black box and explore organizational agility as a dynamic capability for sustaining a competitive advantage within consulting firms. The study investigated the relationship between organizational agility and overall organizational performance within consulting firms as agility and performance relate to the moderating variables of environmental dynamism, environmental complexity, and coordination uncertainty. In addition, a secondary purpose of this study was the identification of simple yet practical activities that can be used by practicing managers to create a sustainable advantage. Should the study show that certain actions are highly related to performance, it will help bridge the gap between

academic research and meaningful practice. This chapter describes the methodology, design, and procedures used in answering the following research questions, which were initially used for investigation of the black box:

Research Question 1: What relationships exist among the independent variables (operational agility and customer agility) and the dependent variables (market-related overall performance and internal overall performance) within the consulting industry?

Research Question 2: How do certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry?

Research Question 3: Do any significant differences in the relations among the independent and dependent variables exist across consulting firms of different sizes (small, medium, large)?

In addition, the following null and alternative hypotheses were initially developed to investigate the research questions:

Hypothesis 1₀: No relationship exists between operational agility and internal overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 2₀: No relationship exists between operational agility and market-related overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 3₀: No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 3_a: Customer agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 4₀: No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 4_a: Customer agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 5₀: No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Hypothesis 5_a: A difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Researcher's Philosophy

The researcher chose to use a post-positivist view in researching the problem. Post-positivism focuses on actively constructing scientific knowledge versus noting laws that are found in nature (Crotty, 2003). The post-positivist assumes that an objective world exists that might not be readily represented and that the relationships among variables may be more probabilistic than deterministic (Gephart, 1999). The underlying philosophy behind this study was that past studies may have used paradigms focused within the researchers' own disciplines. Given that the processes for bundling and leveraging resources appears to remain in a black box (Sirmon et al., 2007), for the present study, a different paradigm and sample were used to enable discovery. The goal was to adopt a certain view as a starting point of research versus a conclusion (Crotty, 2003). As indicated by Kuhn (1996), the "truth emerges more readily from error than from confusion" (p. 18). Therefore, the study was focused not on making a discovery and showing it to be correct but making a guess and showing it to be wrong (Crotty, 2003).

Research Design

Considering this post-positivist view and the nature of the research questions, a quantitative research design was used for the study. Quantitative research is used to answer five core questions: (a) What are the characteristics of a group or groups of people? (b) Are two or more groups the same or different on some characteristic? (c) Are two variables related and, if so, what is the strength of their relationship? (d) Can measures be used to predict something in the future? (e) Given some outcome or phenomenon, why does it occur? (Swanson & Holton, 2005). The research questions proposed earlier address the second and third core questions.

Although qualitative research can provide a working foundation for quantitative research, especially in areas in which little is known about the subject (Meadows, 2003), quantitative research can be used on an exploratory basis to discover relationships, interpretations, and characteristics that suggest a new theory and to define problems (Swanson & Holton, 2005). Qualitative research seeks to answer the question of why; however, the purpose of this present study was not to discover why something occurs. This study used the quantitative research design to identify whether two variables were related and the strength of their relationship (Crotty, 2003). Because generalizations can be made based on the study of large groups of people, the quantitative design was appropriate (Swanson & Holton, 2005). A survey research design was used in the study because surveys are most appropriate when participants are uniquely qualified to provide the required information (Cooper & Schindler, 2002). In addition, surveys are versatile and allow for the efficient capture of information about past events (Cooper & Schindler, 2002). Specifically, an Internet-based self-administered survey was used in this study. Web-based surveys allow for a shorter turn-around time for results, anonymity, broader access to the population, and systematic tallying of results (Cooper & Schindler, 2002). The survey was cross-sectional with data collected at one point in time due to limitations on time and budget.

Sample

The study was focused on identifying how consulting firms can create a sustainable competitive advantage. Although the element of study was consulting firms, the perceptions of consultants were used in order to gain a better understanding of the consulting firm. The population for this study was represented by a total collection of all

of the consultants. However, surveying such a large number of consultants would be costly, lengthy, and in many cases, unlikely. Instead, a sample of the population was used to draw conclusions about the entire population. This study used a cluster sampling procedure to select participants. A clustering procedure is ideal when it is impossible or impractical to survey an entire population (Creswell, 2009). Instead, the researcher identified various groups and contacted individuals within the groups to obtain a sample (Creswell, 2009).

The initial cluster group chosen for sampling within this study was the Consultants Network group on the LinkedIn.com website. The Consultant Network group is one of the largest and fastest growing social network groups for practicing consultants. This cluster group was also selected because of the accessibility of practicing consulting professionals who are willing to connect, discuss and share, and provide suggestions in order to resolve today's management problems. The Consultants Network group consisted of over 135,000 members and catered specifically to consulting professionals. Each member of the group had an equal probability of being represented within the study.

Sample size is an important consideration in multiple regression because the size of the sample affects statistical power as well as the generalizability of the study results (Swanson & Holton, 2005). Using an adequate sample size along with high-quality data collection procedures results in more reliable, valid, and generalizable results (Bartlett, Kotrlik, & Higgins, 2001). As a general rule, some researchers have suggested that the ratio of observations to independent variables should not fall below five when using multiple regression techniques (Bartlett et al., 2001; Swanson & Holton, 2005). Because five continuous variables were investigated, the number of observations required was 25.

Using an optimal ratio of 10:1, the number of observations required was 50. In this case, a response rate of .037% of all participants in the Consultant Network would be required. However, in addition to the number of independent variables, researchers should also consider expected effect size, power requirements, and level of accuracy desired (Swanson & Holton, 2005). According to a table developed by Maxwell (2000), when using six predictors, a sample size of 543 is required for the power of the statistical test to equal .80. This sample size equates to a response rate of 4%. The average response rate for those invited to participate in online surveys ranges from 5% to 30% (Maronick, 2009). Usually, using a sample size that is too large may waste resources. However, because the data collection and analysis procedures were computerized, the difference between analyzing 25 observations and 135,000 observations was considered negligible.

Instrumentation

The instrument used in this study was developed by Dr. Ying Lu. Permission was granted by Dr. Lu via e-mail to use the instrument. Dr Lu's instrument includes two parts. Part A addresses organizational and environmental contexts as well as organizational agility and firm performance (Lu, 2006). Part B addresses IT capability and other IT functions (Lu, 2006). Because Part B was not relevant for this study, only Part A of the instrument was used.

The measurement scales were previously validated using pre-test and pilot-testing procedures in order to ensure initial validity and reliability (Lu, 2006). To ensure content validity, prevalidated scales for environmental dynamism, environmental complexity, coordination uncertainty, and performance were adopted (Lu, 2006). The

scales for organizational agility were developed after an exhaustive analysis of the relevant literature (Lu, 2006).

Draft scales were pre-tested for construct validity using two rounds of sorting via the Q-sort method. Four judges, consisting of doctoral students in non-IS business majors, were selected to sort the items into different construct categories (Lu, 2006). In the first round of sorting, judges were asked to group items into categories without being informed about the underlying theoretical constructs (Lu, 2006). In the second round, judges were asked to sort items based on given target labels. The overall hit ratio received for Part A was 83% and demonstrated adequate initial construct validity. However, further modification, removal of ambiguous items, and rephrasing were performed for the scales representing environmental dynamism, which had relatively low hit ratios (Lu, 2006). Inter-rater reliability was also assessed by measuring the agreement between pairs of judges using Cohen's Kappa (Lu, 2006). Part A received an average Kappa score of .82, which demonstrated satisfactory reliability of the sorting scheme (Lu, 2006).

The questionnaire was further pilot tested with four local firms in the Wisconsin area to evaluate phrasing, clarity, adequacy of the construct, and instructions about the instrument (Lu, 2006). Two executives from each firm were chosen to respond to the survey, followed by a detailed interview with the respondents to further establish construct and content validity (Lu, 2006). Factor analysis was conducted to assess construct validity (Lu, 2006). The list of variables used in this study and their corresponding Cronbach's alpha scores are shown in Table 1. The instrument was not originally used in the consulting context. However, using a different paradigm, the survey questions and the concepts being measured were relative to the context within this study.

Table 1

Cronbach's Alpha Scores of Original Instrument use

Variable	Factor	Abbreviations	Data type	Cronbach's alpha
Environmental dynamism		DYN	Interval	0.87
Environmental complexity		COM	Interval	0.86
Coordination uncertainty		UNC	Interval	0.88
Organizational agility	Operational agility	ORGAOP	Interval	0.87
Organizational agility	Customer agility	ORGACU	Interval	0.84
Organizational performance	Market-related overall performance	PERF1	Interval	0.82
Organizational performance	Internal overall performance	PERF2	Interval	0.78
Consulting firm size		SIZE	Categorical	

Prior to distribution within the selected sample, a pilot test to ensure the instrument worked as designed and correctly addressed the research was conducted. This was necessary to identify any weaknesses in the design and instrumentation that may render the study invalid (Cooper & Schindler, 2002). The review was conducted by four individuals who have consulting leadership experience. These individuals were asked to review the survey using the same method as participants. In addition, pilot testers were provided opportunities to comment on each question. This testing was important in order to establish content validity and improve questions, format, and scales (Creswell, 2009).

Having an inadequate survey instrument can be detrimental to the study. Although the individuals completed the survey, no comments were suggested for refinement of the survey.

Data Collection

The questions asked within the survey instrument developed by Lu (2006), and modified in the pilot test, were used to collect the responses related to the variables. The questions to be used and the related variables are identified in Appendix.

These questions were transposed to the surveymonkey.com website. An annual surveymonkey.com membership for \$200 was obtained in order to facilitate the study. The annual membership allows for unlimited responses and collection of survey responses using a web link.

The purpose of the study and a link to the self-directed closed ended questionnaire developed on surveymonkey.com was posted within the discussion board of the Consultants Network group. The survey was anonymous. This was an accepted method for communication within the group as the researcher was also a member of the group and should not violate IRB policies. The posting was made on June 15th, 2010 in order to commence the survey. Respondents tend to cooperate at a higher rate when incentives are provided, the topic is interesting, and the time to complete is acceptable (Maronick, 2009). In order to increase the response rate, special attention was placed on creating a marketing message that showcased the benefits of the study and how it can help the participant, the importance of the study, an expected time frame for the length, and a progress indicator at various times during the survey (Maronick, 2009).

Half of survey responses are typically expected to arrive in one day with nearly all arriving within two weeks (Hamilton, 2003). However, based on the suggestion of other experienced researchers, the researcher doubled their expectations and included additional follow up communications as a reminder until the expected number of responses was obtained. A thank you notice was posted within the Consultants Network group discussion board once the survey was closed. The data was then exported from the surveymonkey.com website to an Excel spreadsheet for further transformations.

Once exported to an Excel spreadsheet, the data was loaded into and staged within a Microsoft Access database (MS Access). The MS Access tool was selected due to the researchers experience and the need to create repeatable processes that could be executed during the data collection period. Within the MS Access tool, additional variables were created which represented the variable re-coding as suggested by Lu (2006) as well as the calculation of the overall means for each scale. A query was written to load the data from the MS Access tool into the SPSS statistical package.

Data Analysis

Table 2 displays a summary of the relationships between the initial research questions, the hypotheses that were tested, and the data techniques used.

Table 2

Summary of Research Questions, Hypothesis, and Statistical tests

Research questions	Hypotheses	Statistical test
1: What relationships exist among the independent variables (operational agility and customer agility) and the dependent variables (market-related overall performance and internal overall performance) within the consulting industry?	<p>1₀: No relationship exists between operational agility and internal overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.</p> <p>2₀: No relationship exists between operational agility and market-related overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.</p> <p>3₀: No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.</p> <p>4₀: No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.</p>	Pearson correlation (bivariate and partial) and Multiple regression

Table 2 continued

Summary of Research Questions, Hypothesis, and Statistical tests

Research questions	Hypotheses	Statistical test
2. How do certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry?	<p>1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.</p> <p>2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.</p> <p>3_a: Customer agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.</p> <p>4_a: Customer agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.</p>	Multiple regression
3. Do any significant differences in the relations among the independent and dependent variables exist across consulting firms of different sizes (small, medium, large)?	<p>5₀: No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.</p> <p>5_a: A difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.</p>	MANOVA

The tool of choice for data analysis was the IBM SPSS Statistics 19 package. First, a description of the final sample and the number of members who did and did not complete the survey was developed (Creswell, 2009). Next, descriptive statistics for all variables were computed on the overall sample as well as on consulting firm size sub-groups. Reliability checks for the internal consistency of the scales using Cronbach's alpha statistic were performed. Any questions that did not meet the correlational criteria within the scale to develop a satisfactory Cronbach's alpha were removed, and a new mean for the scale was recalculated. Finally, correlational analysis was performed on the data. A Pearson correlation coefficient was used to quantify the strength of the relationship between two variables when testing the null hypotheses (Norusis, 2006). However, the relationship was not as simple as expected. In some cases, partial correlation was used to indicate whether some relationships were hidden by the strength of other relations (Norusis, 2006). Due to the complexity and the interaction of the hidden relationships, multiple regression was also used to perform multivariate analysis. Regression analysis is used to predict an outcome based on a joint association between multiple independent variables (Swanson & Holton, 2005). Therefore, multiple regression was primarily utilized to test the interaction of the five independent variables for the alternate hypotheses tests. Using these prediction techniques does not imply a causal relationship.

When comparing more than two means, tools within the flavor of analysis of variance (ANOVA) are used (Swanson & Holton, 2005). In this case, MANOVA was the appropriate analytic choice to find out whether there were significant differences in two

dependent variables across two or more groups formed by one or more categorical independent variables (Swanson & Holton, 2005).

A significance level of less than .05 was used to reject null hypotheses. This level of significance is the most common level used in research (Cooper & Schindler, 2002).

Limitations of Methodology

Due to the post-positivist nature of the study, it is important to recognize the limitations and delimitations of the methodology. Although surveys maximize generalizability, they are low in terms of realism of context and precision of measurement (Scandura & Williams, 2000). Cluster sampling may also lower generalizability and can create sample errors because not all members of the population are measured (Couper, 2000). Because the study was of a cross-sectional design, the two assumptions for testing sustainability, causality and dynamics, were hard to demonstrate (Armstrong & Shimizu, 2007, p. 969).

With regard to the Internet-survey design, participation was limited to consultants who accessed the online group during the period when the survey was open. In addition, issues concerning sample control exist. Assuring that the appropriate individuals responded and that multiple responses were not received from the same respondent was difficult to achieve, especially in the case of an anonymous survey (Maronick, 2009). Internet surveys are still relatively new, so some limitations pertaining to their use may not have been identified as yet (Maronick, 2009). In addition, well-designed Internet surveys may be lost in the mass of other data-gathering activities being conducted online (Couper, 2000). Unlike other surveying techniques, the user experience was uncontrolled

and may have been different for different users, based on the technology they used to access the survey (Couper, 2000).

Ethical Considerations

As the study is anonymous, no risks were perceived to directly impact the participants. Organizational attribute information was collected within the study. However, no information specifically naming either the organization or the individual conducting the survey was collected. Internet Protocol (IP) addresses of participants were also not captured. In order to start the anonymous survey, participants were required to click a link acknowledging comprehension of consent. This consent was not stored as it was obtained electronically.

The data being collected was not sensitive and posed a minimal risk. Complete destruction of the records by surveymonkey.com could not be guaranteed. However, surveymonkey.com agreed to not utilize data for its own purposes. The researcher planned to store the data for a period of 8 years after which all data files would be deleted.

CHAPTER 4. RESULTS

The primary purpose of the study was to look within the black box and explore organizational agility as a dynamic capability for sustaining a competitive advantage. In addition, a secondary purpose of this study was to identify simple yet practical activities that can be used by practicing managers to create a sustainable advantage. This chapter presents an analysis of the data collected to meet the purposes identified above.

Description of the Sample

As identified in Chapter 3, the population for this study was represented by all consultants. The study used a cluster sampling procedure to select participants. Initially, the cluster group was the Consultants Network group on the LinkedIn.com website. However, the researcher encountered numerous problems in obtaining responses from the group. First, while analyzing the data as they were being collected, it appeared that the majority of respondents were members of small consulting firms. Second, although the group consisted of over 135,000 members, many of those members were not active participants. Third, with the sheer number of announcements and discussions posted, it was difficult for members to view the researcher's invitation to the survey. Fourth, within 2 weeks of the survey launch, Linked-In.com changed its user interface to place a higher focus on announcements and members who encouraged long-threaded discussions. The researcher's request did not fit within this category. Fifth, other researchers used the same

strategy, making it difficult to find potential participants who wanted to participate in yet another survey.

To address the issues above, the researcher expanded the number of cluster groups to be polled within the LinkedIn.com website. In addition, to enhance visibility of the researcher's invitation, the researcher increased participation by posting at least twice a day within the areas relevant to research with a small marketing message about taking the survey at the end of each post. This participation helped to develop a relationship with other members, causing them to want to participate in the survey (Cooper & Schindler, 2002). In addition, the researcher used previously known Linked-In contacts who did not work in the researcher's current organization to help level the distribution of responses across the various consulting firm sizes.

This activity increased the sampling frame to a large unknown number. It can be difficult to determine the sampling frame size for Internet-based surveys, especially when multiple groups are polled and there is an overlap among subscribers (Zhang, 2000). Therefore, the researcher revisited the definition of the sample. Figure 2 shows the process used to define the sample to be used as management consultants who were members of Linked-In and who visited the survey.managementbridge.com website during the period of June 15th through August 29th, 2010.

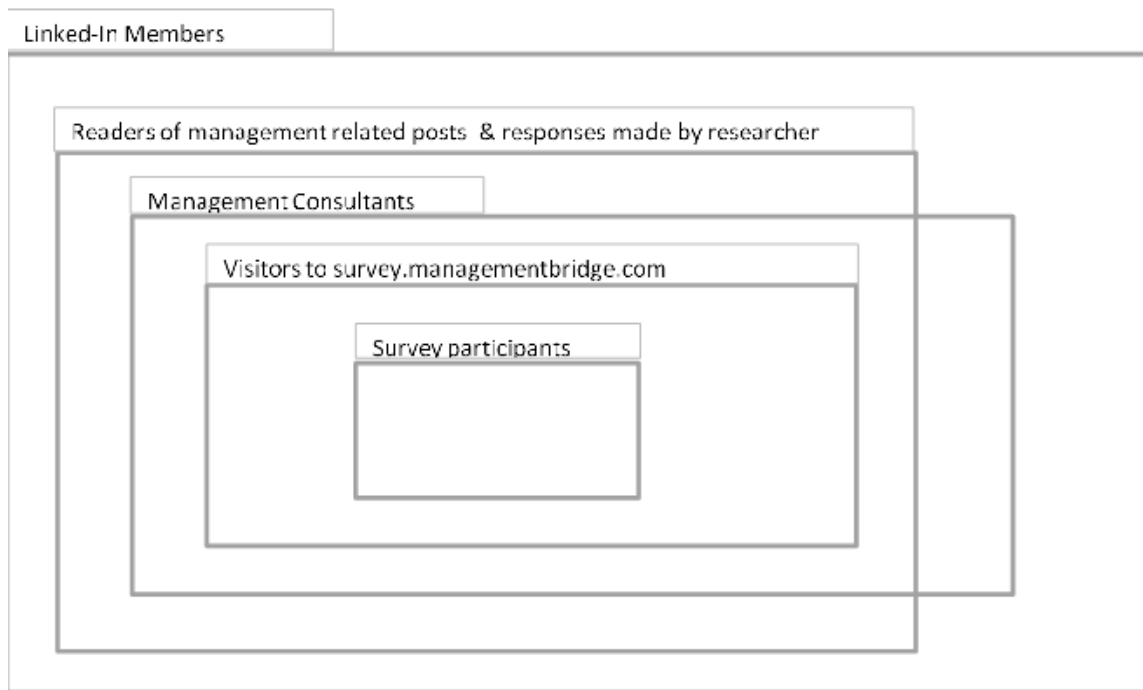


Figure 2. Sample definition process.

Response and Participation Rate

During the timeframe of the study, 112 potential participants visited the website hosting the survey. Only 32 participated in the survey, giving an adjusted response rate of 29%. Low response rates are typically a substantial problem for many survey researchers (Roth & BeVier, 1998). One of the most challenging aspects of the survey method is how to conduct studies efficiently and effectively while maintaining validity (Zhang, 2000). Survey research conducted in public newsgroups and websites typically has relatively low response rates (Zhang, 2000). In many cases, researchers reported only the number of responses instead of the response rate (Zhang, 2000). Including pilot participants, 36 individuals participated in the study, of which 29 fully completed the survey. The impact of the number of responses on the validity of the survey results will be discussed in the following section.

Power and Effect Size Analysis

In Chapter 3, the researcher used general rule of thumb calculations in order to calculate the required sample size. However, researchers should also consider the expected effect size, power requirements, and level of accuracy desired (Swanson & Holton, 2005). Statistical power is the probability that a test will correctly reject a null hypothesis (Sawyer & Ball, 1981). Effect size describes the strength of the relationship among two or more variables in a population (Sawyer & Ball, 1981). Although power is commonly identified in research, the effect size should be the first factor considered in the initial research design (Sawyer & Ball, 1981).

A researcher needs to make estimates about the effective size so that the statistical power is satisfactory, given the particular set of objectives and constraints of the research problem (Sawyer & Ball, 1981). The researcher decided to use a large effect size. An important consideration when deciding to use a large effect size was the practical application of the results in addition to the costs outweighing the benefits when choosing a smaller effect size. In keeping with the secondary purpose of the study, to identify simple yet practical steps to creating a sustainable advantage, identification of the activities with the greatest impact would more likely help practitioners than a long list of activities representative of small effects.

However, a research design also requires adequate power to detect an anticipated effect size (Sawyer & Ball, 1981). A power of .8 is deemed acceptable when conducting meaningful statistical analysis (Newton & Rudestam, 1999). An a priori power analysis was conducted to determine the number of participants required to detect a large effect size with power greater than .8. The power analysis was conducted with the statistical

software G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009). Table 3 displays the suggested sample size required for each test.

Table 3

Sample Sizes Needed for Specific Statistical Tests

Required power	Test	Large Cohen effect size equivalent ^a	Recommended sample size
0.8	Two-tailed bivariate Pearson correlation	0.50	26
0.8	Two-tailed linear multiple regression with five predictors	0.35	25
0.8	MANOVA with three groups and two response variables	0.40	18

^a Following Sawyer and Ball (1981).

Reliability Test Results

Because the instrument was previously used in a different context for a different purpose, reliability tests to validate internal consistency were performed. Similar to the results of the original checks performed by Lu (2006), questions 10 and 11 in the complexity scale were removed.

In addition, the researcher had to remove question 5 from analysis. Question 5 showed a weak correlation with the other questions within the scale. On review, the language may have been a little confusing for consultants because the term *production/service technology* is not commonly used in the consulting world.

Table 4

Item-Total Statistics for COM Scale

COM	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
6	21.5833	27.907	.471	.525	.509
7	21.5556	27.111	.519	.738	.489
8	22.0556	27.597	.381	.436	.541
9	21.6111	27.102	.458	.442	.509
10	22.8056	29.990	.196	.353	.628
11	22.7500	34.364	.077	.377	.654

Table 5

Item-Total Statistics for DYN Scale

DYN	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
1	18.1111	25.759	.679	.713	.725
2	18.7500	24.936	.827	.763	.675
3	18.4444	24.140	.846	.814	.665
4	18.4722	29.456	.597	.616	.755
5	18.0000	39.200	.042	.127	.897

The Cronbach's alpha score for the UNC scale was not above .7. The researcher decided to continue the analysis given a Cronbach's alpha score of .67. The original wording for questions 13 and 15 was used. However, the researcher noticed inconsistencies in responses during the data collection activities. In addition, one participant e-mailed the researcher to mention that, although he understood the rationale

for the negative coding, he thought that it may cause confusion for others and hamper data analysis activities. Table 6 displays a summary of the final Cronbach's alpha scores for each scale in comparison to the original results received by Lu (2006). Because performance was measured using one question, calculation of the Cronbach's alpha was not applicable for that variable.

Table 6

Cronbach's Alpha Scores for Variables

Variable	Abbreviation	Cronbach's alpha	
		Original	Current
Environmental dynamism ^a	DYN	0.87	0.90
Environmental complexity	COM	0.86	0.78
Coordination uncertainty	UNC	0.88	0.67
Operational agility	ORGAOP	0.87	0.88
Customer agility	ORGACU	0.84	0.73
Market-related overall performance	PERFM	0.82	NA
Internal overall performance	PERFI	0.78	NA
Consulting firm size	SIZE	NA	NA

^a Cronbach's alpha without the removal of one question was .798. However, this question was weakly correlated with the other questions.

Given the research purposes and the length of the questionnaire, the researcher sought to understand only one piece of demographic information: the size of the consulting firm. Within the sample, 30.6% represented small consulting firms, 11.1% represented medium-sized consulting firms, and 28.9% represented large consulting firms. Information regarding the impact of firm size will be discussed in a later section.

As represented in Table 7, for the most part, the means of all variables were representative of just above average. The variables PERFM and ORGACU were highly skewed to the right of the mean. The variables SIZE, COM, UNC, and ORGAOP were moderately skewed to the right of the mean. The DYN variable was approximately symmetric.

Table 7

Descriptive Statistics of Variables

Variable	N	Minimum	Maximum	M	SD	Skewness		Kurtosis	
						Statistic	SE	Statistic	SE
PERFI	29	1.00	7.00	4.6200	1.63500	-.494	.434	-0.522	.845
PERFM	29	1.00	7.00	4.9300	1.71000	-.760	.434	-0.283	.845
SIZE	29	1.00	3.00	2.1000	0.93900	-.217	.434	-1.907	.845
DYN	36	1.75	7.00	4.5000	1.56525	.002	.393	-1.228	.768
COM	36	1.75	7.00	4.7708	1.34878	-.354	.393	-0.617	.768
UNC	34	2.00	6.75	4.5882	1.20586	-.358	.403	-0.330	.788
ORGACU	29	1.20	6.40	4.3724	1.28255	-.557	.434	0.048	.845
ORGAOP	29	2.12	7.00	4.6509	1.30392	-.248	.434	-0.392	.845
Valid N (listwise)	29								

A scatter plot graph of the key independent and dependent variables showed a largely linear relationship across the variables with positive slopes. No additional activities were performed on the outliers.

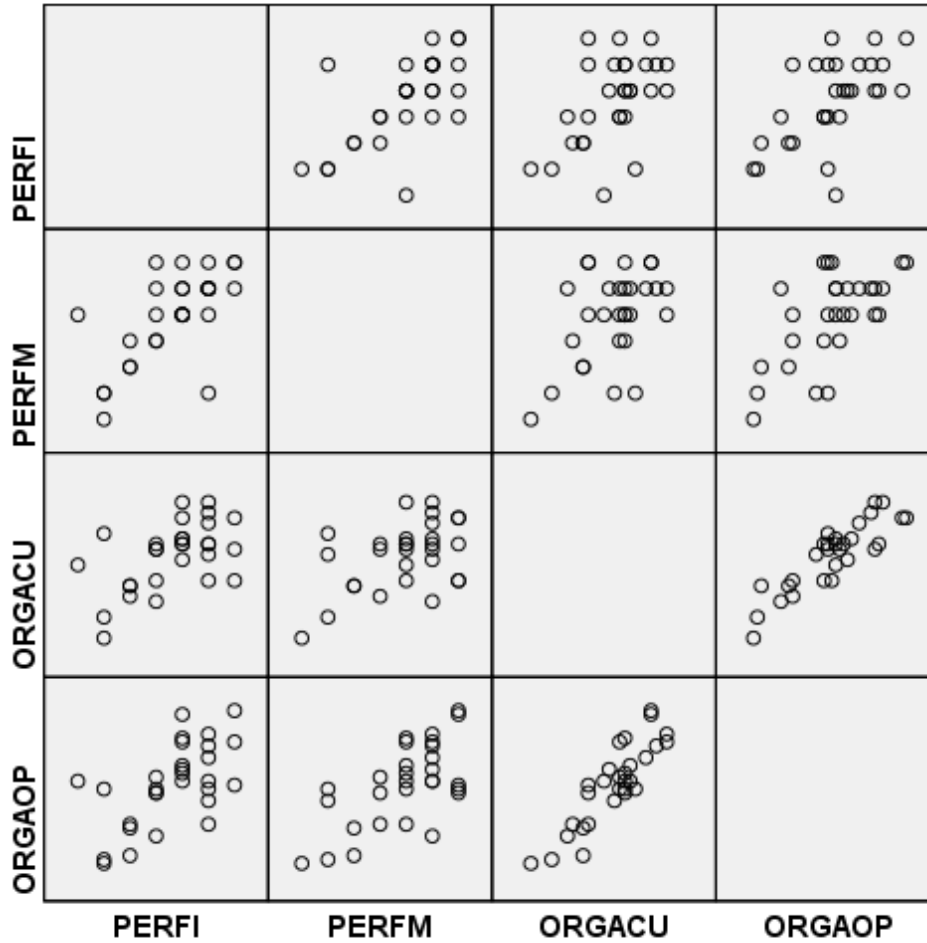


Figure 3. Matrix scatterplot of independent and dependent variables

Q-Q plots were also created for all variables with the exception of SIZE. All observations were distributed closely around the straight line for the Normal Q-Q Plot model. All observations were clustered around the horizontal band with no identifiable pattern for the detrended normal Q-Q plot model. Based on the results obtained, the assumptions for normal distribution and linear relationships were met (Norusis, 2006).

Research Question 1

The first research question sought to understand whether relationships exist among the independent variables (operational agility and customer agility) and the

dependent variables (market-related overall performance and internal overall performance) within the consulting industry. The following null hypotheses were developed in order to answer the question.

Hypothesis 1₀: No relationship exists between operational agility and internal overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 2₀: No relationship exists between operational agility and market-related overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 3₀: No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 4₀: No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Table 8 displays a summary of the results of the two-tailed bivariate Pearson correlation analysis performed. All of the correlations appeared to be stronger than those obtained by Lu (2006). Because there was a strong correlation between ORGAOP and ORGACU, a partial correlation was performed to re-examine the relationship between ORGACU and PERFM while holding ORGAOP constant. The results of the partial correlation showed a nonsignificant correlation of -.229 with a *p* value of .242 between ORGACU and PERFM. The results of the partial correlation also showed a

nonsignificant correlation of .015 with a p value of .940 between ORGACU and PERFI. To confirm this relationship, additional tests were performed.

Table 8

Results of Pearson Correlation Analysis

Relationship	Lu (2006)	Current
Between ORGACU and ORGAOP	.7417**	.879**
Between ORGACU and PERFI	.4141**	.537**
Between ORGACU and PERFM	.4293**	.484**
Between ORGAOP and PERFI	.4524**	.604**
Between ORGAOP and PERFM	.4595**	.646**
Between PERFM and PERFI	.6244**	.655**

Note. * $p < .05$, ** $p < .01$; All other unmarked (without asterisks) correlation values are not significant.

A two-tailed step-wise regression using PERFI as the dependent variable was performed across all other independent variables with the exception of SIZE. An R -square of .365 was obtained, indicating that 36.5% of the variability in PERFI can be explained by the model. An R of .604 indicates a moderate relationship between the ORGAOP and PERFI. Because the results of the ANOVA performed on the model reflected an F of 15.487 and a significance value of .001, the R -square and R values are considered significant. The smaller the sample size, the greater the magnitude of chance fluctuations that may produce an artificially inflated R -square value (Newton & Rudestam, 1999). An adjusted R -square accommodates for this artificial inflation. The adjusted R -square provided by the model was .341.

A two-tailed step-wise regression using PERFM as the dependent variable was also performed across all other variables with the exception of SIZE. An R -square of .417 was obtained, indicating that 41.7% of the variability in PERFM can be explained by ORGAOP. No other variables were entered into the model. An R of .646 indicates a moderate relationship between the ORGAOP and PERFM. Because the results of the ANOVA performed on the model reflected an F of 19.295 and a significance value of less than .001, the R -square and R values are considered significant. The adjusted R -square provided by the model was .395.

Because of these results, Hypothesis 1₀ and Hypothesis 2₀ can be rejected. Hypothesis 3₀ and Hypothesis 4₀ cannot be rejected. Therefore, analysis of Hypothesis 3_a and Hypothesis 4_a were not conducted in subsequent tests.

Research Question 2

The second research question sought to understand whether certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry. Given the results from Question 1, the following alternative hypotheses were utilized to address Question 2:

Hypothesis 1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

In order to examine the existence of an interaction in a multiple regression, a variable must be created that represents that interaction, and its statistical significance should be examined (Newton & Rudestam, 1999). First, the independent variables were centered to address concerns with multicollinearity (Aiken & West, 1991). Next, the centered variables were entered into the regression equation below, where Y was either PERFI or PERFM, X_1 was either ORGACU or ORGAOP, and X_2 was represented by DYN, COM, and UNC.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_1X_2 + e$$

Table 9 displays the significance of the new interacting variable within the regressed model by dependent variable. No values were significant within the regression.

Table 9

Moderating Role of Interacting Variables on Dependent Variables

Interacting variable	Internal Performance (PERFI)	Market Performance (PERFM)
ORGAOP * DYN	0.490	0.667
ORGAOP * COM	0.649	0.775
ORGAOP * UNC	0.673	0.476
ORGACU * DYN	0.317	0.187
ORGACU * COM	0.484	0.754
ORGACU * UNC	0.868	0.641

Based on the results of the moderated multiple regression tests, the accepted alternate hypothesis can be rewritten as follows:

Hypothesis 1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Research Question 3

The third research question sought to understand whether any significant differences in the relations among the independent and dependent variables exist across consulting firms of different sizes (small, medium, large). The following null and alternative hypothesis were developed in order to answer the question

Hypothesis 5₀: No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Hypothesis 5_a: A difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

The independent variable, SIZE, was representative of three different groups so was of a categorical data type. The dependent variables, PERFI and PERFM, were correlated and continuous. A multivariate analysis of variance (MANOVA) model assumes one or more categorical independent variables and two or more continuous dependent variables that are correlated (Newton & Rudestam, 1999; Swanson & Holton, 2005).

Size did not significantly affect PERM ($F = .589, p = .564$) nor PERFI ($F = 2.542, p = .103$). Further, the Wilks Lambda multivariate test of overall differences among groups was not statistically significant ($F = 1.186, p = 0.333$). Therefore, the null hypothesis could not be rejected. A consulting firm's size did not affect the performance within this sample.

A separate test was performed using SIZE as the independent variable and ORGACU and ORGAOP as the dependent variables. Size did not significantly affect ORGACU ($F = .107, p = .873$) nor ORGAOP ($F = .041, p = .956$). Moreover, the Wilks Lambda multivariate test of overall differences among groups was not statistically significant ($F = 0.081, p = 0.988$). Therefore, the null hypothesis could not be rejected. A consulting firm's size did not impact organizational agility practices within this sample.

Exploratory Analysis

As noted in Chapter 3, quantitative research can be used on an exploratory basis to discover relationships, interpretations, and characteristics (Swanson & Holton, 2005). Given the results obtained while investigating Research Question 2, the researcher sought to understand how exactly the DYN, COM, and UNC variables fit within the conceptual framework. To answer the question, the researcher performed a two-tailed multiple regression using ORGACU and ORGAOP as dependent variables and DYN, COM, and UNC as independent variables. Although not exactly perfect, the scatter plot graph confirmed some linear relationships between the variables. As identified previously, Q-Q plots for all variables other than SIZE were distributed closely around the straight line for the normal Q-Q Plot model. All observations were clustered around the horizontal band, with no identifiable pattern for the detrended normal Q-Q Plot model.

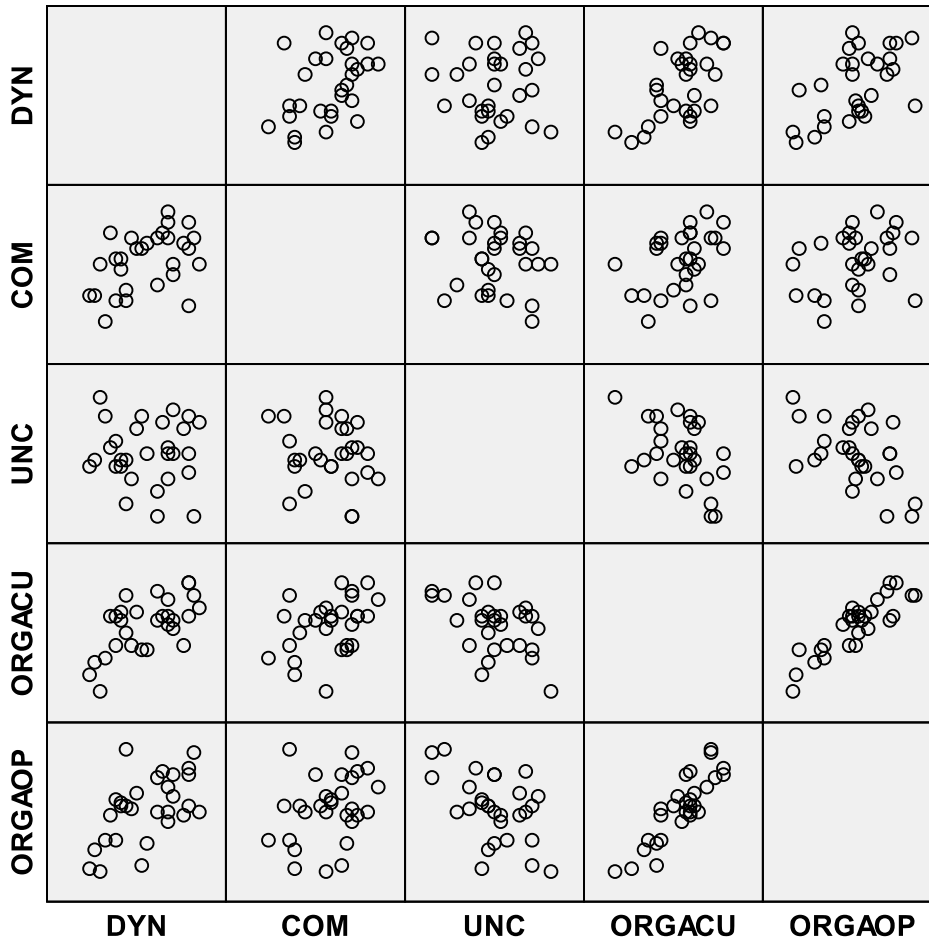


Figure 4. Matrix scatterplot between contextual and agility variables

A two-tailed step-wise regression using ORGACU as the dependent variable was performed using DYN, COM, and UNC as independent variables. An R -square of .599 was obtained, indicating that 59.9% of the variability in ORGACU can be explained by the model. Variables DYN and UNC were entered into the model. An R of .74 indicates a strong relationship between the ORGACU and the independent variables DYN and UNC. Because the results of the ANOVA performed on the model reflected an F of 19.438 and a significant value of less than .001, the R -square and R values are considered significant. The adjusted R -square provided by the model was .568. Within the model, DYN reflected a Beta value of .491 with a significant value of less than .001, UNC reflected a Beta value

of -.476 with a significant value of .001, and COM reflected a Beta value of .074 with a nonsignificant value of .607.

A two-tailed step-wise regression using ORGAOP as the dependent variable was also performed using DYN, COM, and UNC as independent variables. An *R*-square of .551 was obtained, indicating that 55.1% of the variability in ORGAOP can be explained by the model. Variables DYN and UNC were entered into the model. An *R* of .742 indicates a strong relationship between the ORGAOP and the independent variables DYN and UNC. Because the results of the ANOVA performed on the model reflected an *F* of 15.935 and a significant value of less than .001, the *R*-square and *R* values are considered significant. The adjusted *R*-square provided by the model was .516. Within the model, DYN reflected a Beta value of .449 with a significant value of less than .001, UNC reflected a Beta value of -.509 with a significant value of .001, and COM reflected a Beta value of -.017 with a nonsignificant value of .912.

Given the results of analysis to this point, further analysis was performed to determine whether ORGACU moderated the relationship between the DYN and UNC independent variables and the ORGAOP dependent variable. In order to support ORGACU mediating the relationship between DYN, UNC, and ORGAOP, the following must hold: (a) DYN and UNC must be related to ORGAOP; (b) ORGAOP must be related to ORGACU; (c) DYN and UNC must be related to ORGAOP while controlling for ORGACU; and (d) the relationship between DYN, UNC, and ORGAOP must be reduced or eliminated upon the inclusion of ORGACU (Baron & Kenny, 1986). The first two steps have already been validated. The third step (c) was tested using a two-tailed partial correlation using DYN and UNC as the independent variables and ORGAOP as

the dependent variable while controlling for ORGACU. The results of the partial correlation showed a nonsignificant correlation of .043 with a p value of .827 for the DYN variable and a nonsignificant correlation of -.190 with a p value of .333 for the COM variable. Therefore, ORGACU mediating the relationship between UNC, DYN, and ORGAOP was not supported. In a separate validation test, ORGAOP mediating the relationship between UNC, DYN, and ORGACU was not supported.

Reconciliation with New Research

During the course of data collection activities, work was published that hypothesized competitive advantage as a mediator of the organizational capability to performance relationship (Newbert, 2008). Although not initially a research question, the researcher used market-related overall performance as a proxy for competitive advantage and overall internal performance as a proxy for performance to test this relationship. Further analysis of ORGACU was not performed because the findings did not show a direct relationship between ORGACU and either PERFM or PERFMI.

In order to support PERFM mediating the relationship between ORGAOP and PERFI, (a) ORGAOP must be related to PERFM, (b) PERFM must be related to PERFI, (c) ORGAOP must be related to PERFI while controlling for PERFM, and (d) the relationship between ORGAOP and PERFI must be reduced or eliminated upon the inclusion of PERFM (Baron & Kenny, 1986).

Based on previous results, a relationship between ORGAOP and PERFM and a relationship between PERFM and PERFI have been identified. A two-tailed partial correlation was performed to test the relationship between ORGAOP and PERFI while controlling for PERFM. The results of the partial correlation showed a nonsignificant

correlation of .314 with a p value of .104. Therefore, PERFM mediating the relationship between ORGAOP and PERFI was not supported.

In addition, a two-tailed partial correlation was performed to test the relationship between ORGAOP and PERFM while controlling for PERFI. The results of the partial correlation showed a significant correlation of .415 with a p value of .028. Therefore, another step was taken to identify whether the relationship between ORGAOP and PERFM was reduced or eliminated upon the inclusion of PERFM. Upon the inclusion of PERFM, a significant correlation of .646 with a p value less than .01 was obtained. Therefore, PERFI mediating the relationship between ORGAOP and PERFM was not supported.

Summary

The first three chapters of this dissertation discussed the theoretical background of the research topic, methodology, and the data analysis process. This chapter discussed the results obtained from the descriptive statistics, correlation analysis, multiple regressions, and multivariate ANOVA procedures conducted to test the research hypotheses. Additional tests were performed to identify how the DYN, UNC, and COM variables fit within the conceptual model. Recent research regarding the mediating role of competitive advantage in the organizational capability-performance relationship was also tested.

Table 10 displays the results of the hypothesis tests. The implication of the findings of the study, as well as the recommendations for future research will be discussed in more detail in Chapter 5.

Table 10

Results of Hypothesis Testing

Research questions	Hypotheses	Result
1. What relationships exist among the independent variables (operational agility and customer agility) and the dependent variables (market-related overall performance and internal overall performance) within the consulting industry?	1 ₀ : No relationship exists between operational agility and internal overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.	Rejected
	2 ₀ : No relationship exists between operational agility and market-related overall performance under the conditions of environmental dynamism, environmental complexity, and coordination uncertainty.	Rejected
	3 ₀ : No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.	Could not be rejected
	4 ₀ : No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.	Could not be rejected

Table 10 continued

Results of Hypothesis Testing

Research questions	Hypotheses	Result
2. How do certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry?	1 _a : Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.	Accepted
	2 _a : Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.	Accepted
	3 _a : Customer agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.	Could not be accepted; null hypothesis not rejected
	4 _a : Customer agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.	Could not be accepted; null hypothesis not rejected
3. Do any significant differences in the relations among the independent and dependent variables exist across consulting firms of different sizes (small, medium, large)?	5 ₀ : No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.	Could not be rejected
	5 _a : A difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.	Could not be accepted; null hypothesis not rejected

Table 10 continued

Results of Hypothesis Testing

Research questions	Hypotheses	Result
4. What is the impact of environmental dynamism, environmental complexity, and coordination uncertainty within the consulting industry?	δ_0 : Environmental dynamism, environmental complexity, and coordination uncertainty do not significantly affect operational and customer agility activities within the consulting industry.	Rejected
	δ_a : Environmental dynamism and coordination uncertainty are significantly related to operational and customer agility activities within the consulting industry.	Accepted
	δ_b : Environmental complexity is not significantly related to operational and customer agility activities within the consulting industry.	Accepted
5. Does competitive advantage mediate the relationship between organizational capability and performance?	γ_0 : Market-related overall performance does not mediate the relationship between operational agility and internal overall performance.	Could not be rejected
	γ_a : Market-related overall performance mediates the relationship between operational agility and internal overall performance.	Could not be accepted; null hypothesis not rejected
	γ_b : Internal overall performance does not mediate the relationship between operational agility and market-related performance.	Could not be rejected
	γ_c : Internal overall performance mediates the relationship between operational agility and market-related performance.	Could not be accepted; null hypothesis not rejected

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

Research in strategic management has sought, from its early beginnings, to answer the fundamental question of how firms achieve sustainable competitive advantage (Herrmann, 2005). The RBV and its extensions indicate that firms' resources drive value creation, leading to a competitive advantage (Sirmon et al., 2007). However, the RBV and its extensions still leave a black box when it comes to explaining how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003).

Within a parallel realm of work, agility addresses new ways of running companies in order to overcome the challenges of the 21st century (Gunasekaran, 1999). Agility is a comprehensive response to the challenges faced by organizations dominated by change and uncertainty (Goldman et al., 1994), yet little empirical research has been done on the agile organization (Sherehiy et al., 2007).

The primary purpose of this survey study was to look within the black box and explore organizational agility as a dynamic capability for sustaining a competitive advantage in consulting firms. The study investigated the relationship between organizational agility and overall organizational performance in consulting firms as agility and performance relate to the moderating variables of environmental dynamism, environmental complexity, and coordination uncertainty. In addition, a secondary purpose of this study was the identification of simple yet practical activities that can be used by practicing managers to create a sustainable advantage. Should the study show

that certain actions are highly related to performance, it will help bridge the gap between academic research and meaningful practice. The findings of the study will be discussed in the section below.

Overview of the Significant Findings

Five research questions were developed in order to guide the researcher:

Research Question 1: What relationships exist among the independent variables (operational agility and customer agility) and the dependent variables (market-related overall performance and internal overall performance) within the consulting industry?

Research Question 2: How do certain conditions (environmental dynamism, environmental complexity, and coordination uncertainty) modify the relationships among the dependent and independent variables within the consulting industry?

Research Question 3: Do any significant differences in the relations among the independent and dependent variables exist in consulting firms of different sizes (small, medium, large)?

Research Question 4: What is the impact of environmental dynamism, environmental complexity, and coordination uncertainty within the consulting industry?

Research Question 5: Does competitive advantage mediate the relationship between organizational capability and performance?

The data were analyzed within the context of these five research questions. Based on the analysis, the following hypotheses were validated and will be discussed in subsequent paragraphs.

Hypothesis 1_a: Operational agility is positively related to internal overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 2_a: Operational agility is positively related to market-related overall performance under conditions of high environmental dynamism, high environmental complexity, or high coordination uncertainty.

Hypothesis 3₀: No relationship exists between customer agility and market-related overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 4₀: No relationship exists between customer agility and internal overall performance under conditions of environmental dynamism, environmental complexity, and coordination uncertainty.

Hypothesis 5₀: No difference in the relations among the independent and dependent variables exists according to the size (small, medium, or large) of consulting firms.

Hypothesis 6_a: Environmental dynamism and coordination uncertainty are significantly related to operational and customer agility activities within the consulting industry.

Hypothesis 6_b: Environmental complexity is not significantly related to operational and customer agility activities within the consulting industry.

Hypothesis 7₀: Market-related overall performance does not mediate the relationship between operational agility and internal overall performance.

Hypothesis δ_0 : Internal overall performance does not mediate the relationship between operational agility and market-related performance.

First, a strong positive correlation between operational agility activities and both market-related and internal overall performance was identified. Considering the initial hypothesis, this result was expected. Consulting firms typically have to adapt to the customer and changing market; therefore, the ability to maintain dynamic capabilities is required. As noted by Greiner and Poulfelt (2005), the future will belong to consulting firms that can sense emerging change and work faster and more flexibly than their competitors.

Second, customer agility was related to market-related and internal overall performance only through the relationship with operational agility. In addition, this relationship was a negative one. Based on the initial hypothesis, this result was not expected. However, Dove (2001) indicated that companies should listen to the voice of the customer but not trust it. Even though a firm may effectively implement a resource-based strategy, it may often not be able to recover the resulting economic value higher than what was required to create it (Newbert, 2008). Over the last few years, the business world has been in a global recession. Earnings reports, for the most part, have been filled with announcements of companies generating profits but missing their sales targets. It is possible that most organizations during this time were focused on cost cutting and efficiency because customers were not purchasing at the same levels as before.

Third, environmental dynamism, environmental complexity, and coordination uncertainty did not moderate the relationship between operational agility and either market-related or internal overall performance. Further investigation showed that

environmental dynamism was positively correlated with both operational agility and customer agility activities. In addition, coordination uncertainty was negatively correlated with both operational agility and customer agility activities. These results are not surprising. Based on previous definitions, environmental dynamism describes the relative rate and unpredictability of change in the environment (Dess & Beard, 1984; Lu, 2006). Coordination uncertainty describes the level of uncertainty due to the interdependence demands among organizational subunits (Lu, 2006). The researcher interprets a lack of a moderating relationship to mean that consulting organizations can use agility practices to improve performance whether they operate in a stable environment or environments where interdependence demands between subunits are low.

The origins of agility described within this research arose from the initial research in the manufacturing industry. Manufacturing is typically a stable industry. In addition, inherent within agile practices is the creation of a culture that supports communication and cooperation across departments, divisions, subsidiaries, affiliates, and companies (Goldman et al., 1994). Instead, the results show that consulting firms are more likely to use agile techniques when environmental dynamism is high or coordination uncertainty is low. Complexity may not have an impact within the consulting model because consultants are usually hired when activities are too complex and risky to be handled internally by the organizations hiring the consultants. Organizations hiring consultants hire them to offer assistance with complex solutions; therefore, complexity is already built into the consulting context.

Fourth, size had no significant impact on performance and agility activities. Some researchers have argued that the RBV and its extensions apply only to large firms with

significant market power (Kraaijenbrink, Spender, & Groen, 2010). Typically, smaller firms are more nimble and, therefore, should exhibit higher degrees of agility. However, the analysis did not provide results supporting such a conclusion.

Fifth, the study addressed another theoretical concept identified in the work related to the RBV in the past few years. Recent work has hypothesized that competitive advantage mediates the relationship between capability and performance (Newbert, 2008; Tuan & Yoshi, 2010). Little evidence exists that there is a relatively simple unidirectional casual relationship when discussing performance of organizations, yet researchers continue to ignore this fact when attempting to predict performance (Lenz, 1981; March & Sutton, 1997). This study confirms the complexities when measuring performance and shows that the identified mediating effect is not present in this sample. The market-related overall performance variable was proposed as a proxy for a sustainable competitive advantage. Based on a prior definition, a competitive advantage is the advantage a firm obtains when it produces greater utility for customers than competitors do (Sirmon et al., 2007). The survey question measuring this variable asked respondents to describe their performance within the last 2-3 years relative to their competitors' performance. As firms are typically rewarded for providing greater utility to their customers than their competitors do, performing better than competitors could be considered equivalent to incurring an advantage over competitors. In addition, the use of subjective measures may be more effective in measuring competitive advantage (Spitzer, 2007). Using market-related overall performance as a proxy for competitive advantage, no mediating effects were found in the relationship between organizational agility and

internal overall performance. Therefore, the hypothesized relationship may not be present in all situations.

Figure 5 displays a revised conceptual framework based on the key significant findings of the study.

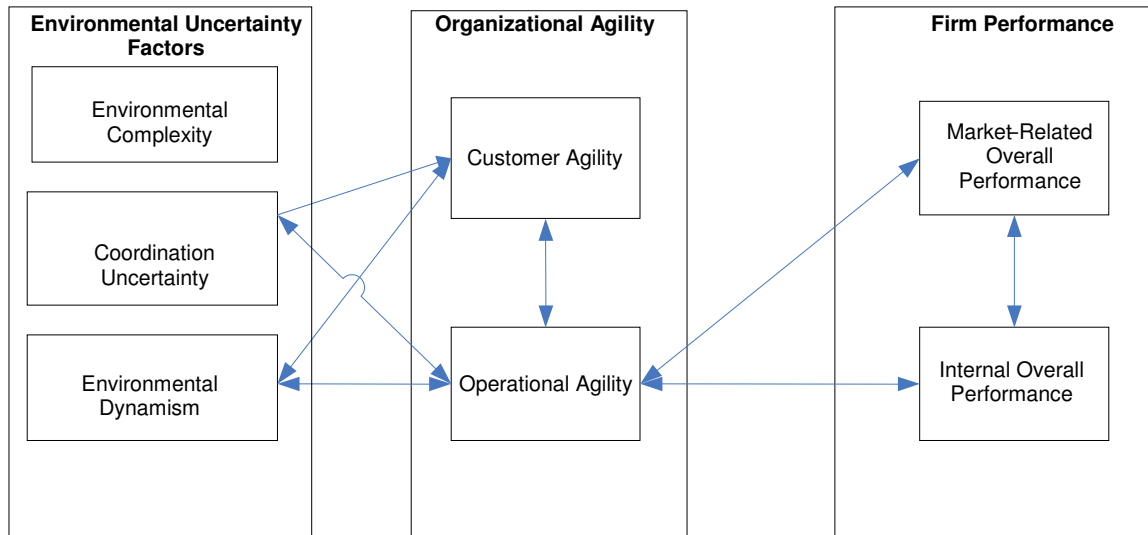


Figure 5. Revised Conceptual Framework

Implications of the Study for Current Theory

The RBV and its extensions leave a black box in terms of explaining how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003). This study fulfilled its purpose and elaborated on the link between the management of resources and the creation of value (Sirmon et al., 2007). It is correct that the RBV community has clung to an inappropriately narrow focus when attempting to develop the RBV into a more viable theory (Kraaijenbrink et al., 2010) As suggested, the researcher moved towards an organizing and dynamic capability approach focused on activities and routines by exploring frameworks in other disciplines that represent a genuinely dynamic framework (Armstrong & Shimizu, 2007; Herrmann, 2005; Kraaijenbrink et al., 2010;

Newbert, 2007). Given the difficulty in explaining how firms use resources and capabilities to create a competitive advantage (Helfat & Peteraf, 2003), agility presents a comprehensive response to the challenges posed by organizations dominated by change and uncertainty (Goldman et al., 1994). Through the use of operational agility as a dynamic capability, not only was a relationship between performance and sustainable competitive advantage identified, but links were made to a large body of empirical research that has often been neglected when discussing the RBV (Eisenhardt & Martin, 2000).

The lack of creating measures that are needed as opposed to using readily available measures has challenged further development of the RBV (Armstrong & Shimizu, 2007). Capabilities and core competencies are not easily quantifiable and accessible (Newbert, 2007). Operational agility, as a tested operationalized measure goes beyond the RBV and supports the fundamental question in the field of strategic management of how firms achieve and sustain a competitive advantage. Operational agility represents a dynamic capability that often has been the subject of empirical research outside of strategic management (Eisenhardt & Martin, 2000).

Unlike other approaches that lack self-reflection concerning the practical usefulness of the findings (Mohrman et al., 2001), operational agility goes beyond simply advising the practitioner to obtain rare and valuable resources that are hard to imitate and substitute and meets the operational validity criterion required of suitable research (Priem & Butler, 2001). The RBV and its extensions are seen as an incomplete theoretical context that lacks the combination of a framework for analysis, efficient methods for field development, and clear explanations for the pragmatic world (Wacker, 1998). Although

operational agility does not provide a step-by-step prescription, it brings the RBV and the dynamic capabilities extension from an abstract level to a more concrete level that practitioners can use as a framework for decision making. It provides valuable information to help a firm identify how to effectively structure the organization, bundle resources, and formulate leveraging strategies to exploit opportunities based on its own business model (Sirmon et al., 2007). In addition, the operationalized operational agility measure may aid in reducing the methodological issues caused by an inability to measure resources adequately (Barney et al., 2001).

Limitations

Although this study could provide significant contributions to both theory and practice, there are a few limitations that should be recognized and that may also provide areas for future research. First, limitations in the generalization of the study should be recognized. Similar to Lu (2006), one of the key limitations of the study is that one should be cautious when generalizing to other populations. This limitation is due not only to the methods used to achieve the final sample but also the industrial context as well. The findings showed that environmental dynamism, environmental complexity, and uncertainty coordination did not impact the relationship between organizational agility and firm performance within consulting firms. In addition, environmental complexity did not have a direct, mediating, nor moderating role within the model. However, another firm operating outside of the consulting industry may experience different interactions. As an example, in an analysis focused largely on manufacturing firms, Lu (2006) found that, of the three contextual variables, only environmental complexity had a significant

impact on organizational agility, and that finding may have been due to a joint effect from another variable not currently studied.

Second, limitations in the sampling method should be recognized. Two problems with web surveys are that not everyone in the target population may be represented in the frame population and constructing an appropriate frame to select a probability sample is inherently difficult (Couper, 2000). In addition, problems related to nonresponsive errors are hard to define (Couper, 2000). This study analyzed the results of less than 30 responses with a large effect size. Although doing so allowed the researcher to work within a defined timeline and budget, larger samples and smaller effect sizes typically increase the accuracy of the results of a study (Newton & Rudestam, 1999). It is possible that meaningful relationships may have existed but were not recognized by the researcher.

Third, limitations in the instrument should be recognized. The instrument is still relatively new and was not previously used in the context for this study. It is possible that there were inherent problems with the scales used for variables that were not recognized in previous studies. The reliability of a scale depends on the population to which it is administered; thus, surveying different populations of subjects may result in different scale properties (Norusis, 2006). Analysis of the results showed many barely acceptable Cronbach's alpha scores. In some cases, the underlying questions were not positively correlated among themselves. These results typically indicate that the items violate the reliability assumption and may not be measuring the same thing (Norusis, 2006). Rather than performing further factor analysis on the scales, the researcher dropped those questions from the analyses in order to achieve more reliable scales..

In addition, the study used perceived values and largely self-reported subjective measures in the survey. It was assumed that the survey respondents were truthful in their responses and could correctly classify not only the performance of their own firms but also the performance of their firms relative to other firms. However, measurement of perceived values and largely subjective measures could have introduced random error and systematic bias, creating relationships that do not really exist (Wall et al., 2004).

Fourth, the limitations of performing a cross-sectional study must be recognized. Because the study was of a cross-sectional design, the two assumptions for testing sustainability were difficult to demonstrate (Armstrong & Shimizu, 2007). At the time of data collection, many firms were experiencing the impact of a global recession. Most companies announcing corporate profits achieved these profits not through increased year-over-year sales but through increased efficiencies and cost cutting. The researcher expected to see a positive relationship between customer agility and firm performance. It is quite possible that this relationship did not exist at the time the research was conducted because of a focus on internal firm performance rather than on customer sales. However, within a longitudinal study, the sustainability of the results could be measured.

Recommendations for Future Research

Based on the findings and limitations identified within the study, a number of possible extensions to this research can be suggested. Primarily, the research should be repeated using a larger sample and lower effect sizes. In addition, the following recommendations for future research are suggested.

Scales should be retested and revalidated, especially in the areas for which the Cronbach's alphas were not strong. Although questions used to measure operational

agility translated to the consulting world without modification, other questions may need to be modified in order to address the variances across industries. Further, the study should be repeated under normal market conditions. This study had the benefit of being conducted in a worst case scenario context. Although the researcher believes that the relationship between organizational agility and firm performance will remain strong, it is possible that other relationships may exist that were hidden due to the extreme environmental context. In addition, the study should be repeated in a different context. It would be advantageous to explore how organizational agility activities affect both internal and market performance in a stable environment. In addition, the relationship among the variables, especially with regard to environmental complexity, may change.

Future researchers should conduct a longitudinal study with respondents who are knowledgeable about both their own firms' performance and their performance versus other firms to determine the effectiveness of the relationship between organizational agility and long-term firm performance. Many academics argue that sustainability cannot be achieved (Kraaijenbrink et al., 2010). Because the goal is to identify activities to achieve a sustainable competitive advantage, a snapshot in time does not provide the relevant information required to test sustainability.

Finally, future researchers should incorporate additional variables to improve the descriptions of both the organizations and the operational context. Only firm size was used for analysis in this study. Additional demographic information as well as contextual variables that may have a relationship with organizational agility and firm performance could be used to provide more detailed findings.

Implications for Professional Practice

A critical challenge identified in the 2009 presidential address to the members of the Academy of Management regarding the future of organization was the value of research. From a business perspective, the shortcomings of the current academic research include (a) the absence of easily measurable outcomes, (b) the absence of clear connections to the customer, (c) failure to recognize individual gain, and (d) scholars who associate with practitioners for the purpose of developing new knowledge often being poorly equipped to explain it to others (Denisi, 2010). In addition, Denisi (2010) recognized that under the business model “1) secrecy is valued, 2) there is an emphasis on results and utility, and 3) leaders need answers—not ambiguity” (p. 195). Managers have complained about academic journals being enamored with jargon and putting too much emphasis on details of measurement and analyses (Denisi, 2010). It is important to recognize that academics and practitioners live in different worlds (Shapiro, Kirkman, & Courtney, 2007). The usefulness of research depends on the degree to which practitioners can interpret and apply research results (Mohrman et al., 2001).

In accordance with the secondary purpose of the study, this section provides simple evidence-based activities linked to performance that can be used by consulting firms. This study meets the challenge of developing scientific knowledge while also contributing to practice (Pettigrew et al., 2001). Evidence that an operational agility may enable a firm to attain a competitive advantage in an industry provides managers operating within that context the incentive and justification to obtain and exploit operational agility capabilities (Newbert, 2008). Identifying the relevant strategies, structures, and capabilities will allow firms to compete effectively and adapt quickly to

the dynamic competitive environment (Barkema et al., 2002). Therefore, six activities that consulting firms may use to achieve a sustainable competitive advantage are as follows:

1. Recognize people as a firm's key asset and keep the various specialists or personnel well trained, motivated, and happy,
2. Confidently fulfill demands for rapid response and special requests from customers whenever such demands arise,
3. Treat market-related changes and apparent chaos as opportunities to capitalize quickly,
4. Develop an ability to scale up or scale down production or service levels quickly to support fluctuations in the market place,
5. Develop an ability to make necessary alternative arrangements and internal adjustments quickly whenever there is a disruption in supply from suppliers, and
6. Focus on both efficiency and effectiveness when meeting the needs of the various stakeholders.

However, even though organizations may make similar interpretations of their environments and initiate similar strategic changes, differences remain in terms of what they are actually able to do and the results they attain (Meyer & Stensaker, 2006).

Conclusion

The specifics of how a firm can achieve and maintain a sustainable competitive advantage have been considered by both strategic management academics and practitioners for many years. This study was focused on going beyond the realms of

strategic management theory and exploring agility principles as a way of obtaining the specifics. A fundamental question in the field of strategic management is how firms achieve and sustain a competitive advantage. The RBV and its dynamic capabilities extensions have assisted in answering this question but are criticized as being defined at too abstract of a level and not offering a prescription for practicing managers. The primary purpose of the present study was to demystify the black box, at least in part, and explore organizational agility as a dynamic capability for sustaining a competitive advantage. In addition, a secondary purpose of the study was to provide applicable knowledge for obtaining and maintaining a sustainable advantage.

The results showed that (a) a strong positive correlation exists between operational agility activities and both market-related and internal overall performance; (b) customer agility was related to market-related and internal overall performance only through the relationship with operational agility; (c) environmental dynamism, environmental complexity, and coordination uncertainty had no interacting effects on the relationship between agility and performance, but environmental dynamism and coordination uncertainty were significantly related to agility; (d) firm size had no significant effect on performance and agility activities; and (e) competitive advantage did not mediate the relationship between organizational agility and performance. Finally, a list of practical activities to sustain a competitive advantage was developed for use by practicing managers.

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APPENDIX. RESEARCH SURVEY QUESTIONS

From *IT capability, uncertainty and organizational performance: Development of measures and empirical examination*, by Dr. Ying Lu, (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3222385). Copyright 2006 by Ying Lu. Adapted with Permission.

Question No.	Question text	Variable measured
Directions: Please answer the following questions for the primary industry that your organization operates in. Consider the recent past (1-2 years) and near to medium term future. Please circle the response that best represents your judgment (1=Strongly Disagree, 7=Strongly Agree).		
1	Organizations in the industries that we operate frequently change their marketing practices to keep up with the market and competitors	DYN
2	Products/service get quickly obsolete in the industry segments participate	DYN
3	Frequent changes in actions of competitors occur in our industry	DYN
4	Consumer demand and tastes change very rapidly in our marketplace	DYN
5	The production/service technology is not subject to very much change and is well established	DYN
6	Our organization competes with a large number of competitors	COM
7	There is a wide variety of competition including some from different industries in the form of substitute products/services	COM
8	Our organization deals with a large number of customers	COM
9	Our organization's customers' needs and requirements are heterogeneous and diverse	COM
10	Our organization does not deal with a large number of suppliers of input resources (raw materials & parts, vendors of equipment/technology, etc.)	COM
11	The suppliers our organization deals with for each category of our input requirements are similar to one another	COM
In considering the compatibility among decisions between individual units within your organization, please circle the response that best represents your judgment on to what extent the following statements about inter-unit relationships are true (1=To No Extent, 7=To a Great Extent)		
12	Individual units constantly experience much difficulty in getting ideas clearly across to each other when communicating with them	UNC
13	Individual units experience no difficulty in getting in touch with each other when communicating with them	UNC
14	Individual units constantly encounter interruptions or delays to normal flows of work, resources, or services from or to each other	UNC
15	Exceptions or problems never arise in sending or receiving work, resources, or services to or from each other	UNC
Relative to your competitors, please indicate on a 1-7 scale (1 = not at all true, 7 = very true) how well your organization performs or is positioned to perform the following activities		
16	Rather than being content with measuring the quality of products/services we continuously monitor customer delight and respond quickly when necessary	
17	We fulfill demands for rapid-response, special requests of our customers whenever such demands arise; our customers have confidence in our ability	ORGAOP

Question No.	Question text	Variable measured
18	We can quickly scale up or scale down our production/service levels to support fluctuations in demand from the market	ORGAOP
19	Whenever there is a disruption in supply from our suppliers we can quickly make necessary alternative arrangements and internal adjustments	ORGAOP
20	Timely and relevant customer/market-focused information is readily made available to all those who need it within our organization	ORGACU
21	We constantly look for ways to reinvent and reengineer our organization to better serve our market place	ORGACU
22	We treat market-related changes and apparent chaos as opportunities to capitalize quickly	ORGAOP
23	We are quick to make and implement appropriate decisions in the face of market/customer changes	ORGACU
24	We have ensured that our products/services are reconfigurable and not inflexible	ORGACU
25	We keep our various specialists/personnel well trained, motivated and happy; our people are a key asset	ORGAOP
26	Relative to our competitors, we can confidently say we are more effective in meeting the needs of our various stakeholders	ORGAOP
27	Relative to our competitors, we can confidently say we are more efficient in meeting the needs of our various stakeholders	ORGAOP
28	Overall, our company is very agile in satisfactorily responding to the needs, changes and challenges of our customers/markets	ORGAOP
29	Overall, our company is very responsive, flexible and effective in making various changes to our products, services, and processes in satisfactorily meeting the needs, changes and challenges of our business context	ORGACU
Please rate the overall performance, on average, your firm has achieved in the last 2-3 years		
30	Overall performance of our firm (1=Poor, 7=Excellent)	PERFI
31	Overall performance of our firm relative to major competitors (1=Much Worse, 7=Much Better)	PERFM
Demographic information		
32	Please indicate the category that best describes the number of employees in your organization (1=fewer than 100, 2=fewer than 500 but more than or equal to 100, 3=more than 500)	SIZE