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Research linking executive succession and competitive advantage has produced inconsistent findings. Definitive empirical evidence is not available to reconcile how executive leadership succession influences competitive advantage and more specifically whether organizational insiders or outsiders perform better. Two significant concerns exist about the methods used to explore the executive succession–organizational performance phenomenon. First, improved study designs are needed allowing for more robust causal inferences to be made about succession's competitive impact. Second, disagreements about competitive advantage's measurement have contributed to inconsistent results. This study suggests design improvements for executive succession–organizational performance studies with an empirical example using a sample of U.S. hospitals. Propensity score matching was used to simulate a randomized control trial with executive succession as the intervention. Stochastic frontier estimation was used to measure organizations' competitive performances before and after executive succession occurred. The results provided empirical evidence from a simulated random sample indicating that change in leadership and specifically outside succession led to increased competitive capabilities. In general, executive leadership changes led to increased competitive capabilities in this study and outsiders were able to close the performance gap faster in the sampled hospitals. Insiders performed no better than the control group creating a relative reduction in gains to the frontier as compared to outsiders.

EXECUTIVE SUCCESSION AND COMPETITIVE ADVANTAGE IN U.S.HOSPITALS: SIMULATING A RANDOMIZED CONTROL TRIAL

By

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First and foremost, this process was only manageable because of the grace and mercy provided to me by my Lord and Savior, Jesus Christ. In the book of Isaiah, 40:31, He tells us “do not fear for I am with you, do not be dismayed, for I am your God. I will strengthen you and help you; I will uphold you with my righteous right hand”. Isaiah 41:10 elaborates further saying, “those who hope in the Lord will renew their strength. They will soar on the wings like eagles; they will run and not grow weary, they will walk and not be faint”. And finally through Philippians 4:13, we know “we can do everything through Him who gives us strength”. These words and the promises within from our Savior provided me a peace and calmness I cannot explain and always sustained me in times of turmoil and doubt.

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

Leadership changes are inevitable events occurring at all organizational levels (Westphal, 2009). However, rarely does such organizational leadership change bear more significance than that of the Chief Executive Officer (CEO) on operational performance and business sustainability (Bower, 2007a). CEO transitions are significant events for both internal and external organizational stakeholders. Organizations' strategic direction and competitive performance are impacted in the near- and long-terms by CEO transitions (Ballinger & Marcel, 2010; Zajac, 1988). As such, CEO succession has given rise to a significant body of management theory literature and to large amounts of empirical research (Karaevli, 2007).

Impending vacancy at the CEO level is a critical point for organizations where focus, motivation and direction are closely evaluated and subject to change (Pointer, 2008). Overall organizational vision and strategy recedes, executive team work patterns and relationships are disrupted, and as key individuals begin to fret about what the future might hold, organizations can fall into a self-preservation mode with few, if any, new performance enhancement initiatives being undertaken (Boyne, James, John, & Petrovsky, 2011b). CEO transitions also reduce efficiency when critical communications between stakeholders, governing bodies, and strategic operational units are lost (Pointer, 2008).

Although an organization's capacity to sustain improved performance over the near- and long-terms is highly dependent on CEO leadership, planning for transition of this top executive role is often deferred for other more immediate operational priorities. According to Bower (2007a), a CEO succession process is lacking in more than 60 percent of all businesses combined. A survey of CEO successions performed by Larcker and Miles (2010) found that the lack of CEO succession planning was attributable to the loss of focus on this invaluable process. The researchers found that the investment in time and energy required by boards of directors and incumbent CEOs was simply inadequate to properly prepare for a transition of this magnitude.

The succession process itself can also be disruptive to organizations if not well planned or implemented (Boyne, James, John, & Petrovsky, 2011a). *Passing the baton* or *handing over the reins* of leadership can be a substantial source of stress for any organization (Behn, Dawley, R., & Yang, 2006). Change at the upper-echelon of an organization without an immediately identifiable successor intensifies this stress and is often viewed as uncertainty and instability within the organization (Garman & Tyler, 2007). Historically, with large companies such as Apple (Ante & McGregor, 2009), IBM (Karaevli, 2007) and Bank of America (Farrell, 2009), succession uncertainty has impacted organizational performance negatively. Conversely, organizations with succession at the core of their operational and strategic planning may be better suited to handle transition stressors. These same organizations are also likely to be viewed more positively and have more public confidence when leadership change occurs (Garman & Tyler, 2007).

The decision to look inside or outside the organization for the next CEO can be the greatest challenge to successful leadership transition (Bower, 2007b). Creating a pool of highly qualified candidates from which a new leader can be chosen is the first and most difficult step in the CEO transition process (Bower, 2007a). With its identified relationship to organizational performance, CEO succession has given rise to a significant body of management theory literature and to large amounts of empirical research (Karaevli, 2007). Karaevli (2007) examined five decades of empirical research from 1954 through 2005 and found mixed results for CEO succession impact on organizational performance. Leadership succession research has not achieved definitive, empirically based evidence as to whether succession events in general, and more specifically inside versus outside succession, affect organizational performance positively or negatively (Karaevli, 2007). Lack of consistency in the literature limits inferences about the succession–performance relationship based on the CEO origin dichotomy of insider versus outsider.

Statement of the Problem

Despite its importance as a research topic, the CEO succession–organizational performance relationship continues to frustrate leading scholars because of the varied and conflicting findings (Finkelstein, Hambrick, & Canella, 2009; Karaevli, 2007; Kesner & Sebora, 1994). Moreover, the lack of robust, longitudinal study designs that link CEO succession to organizational performance in a causal manner has hampered researchers' ability to inform practice with evidence-based models that are linked to theory (Giambatista, Rowe, & Riaz, 2005; Pitcher, Chreim, & Kisfalvi, 2000; Powell, 2002).

There are two commonly employed research design features that make it difficult to draw causal inferences between the CEO succession–competitive performance phenomena (Powell, Lovallo, & Caringal, 2006). The first relates to the way organizations and control groups are selected in executive succession studies. Typically, organizations are selected based on the ease of identifying a leadership change (e.g. professional sports teams' managers and Fortune 500 companies' CEOs) rather than using quasi-experimental sampling designs. In particular, identifying a sample set of organizations *a priori* and then looking for CEO succession events would be a closer approximation of a randomized control trial (RCT). Approximating an RCT is the gold standard for demonstrating the causal effect of an intervention (e.g. executive succession's impact on an organization's competitive performance). Without simulating experimental study designs, it is difficult to draw causal inferences that the results found in the study group(s) would hold true in the general population (external validity) and are not characteristics idiosyncratic to the sample used.

The second issue involves measuring and analyzing the organization-performance construct in a manner that accurately reflects competitive advantage changes among organizations in the marketplace (Mahmood, Zhu, & Zajac, 2011) in general, and as a result of leadership changes in particular (Holcomb, Holmes, & Connelly, 2009). Many studies use organization-specific performance measures as proxies for competitive advantage that do not fully reflect the competitive advantage construct and lack internal validity (Pitcher et al., 2000). Moreover, the analytic methods employed to assess organizations' competitive performance do not reflect *advantages* per se, by identifying

organizations with resource conversion processes that lead to optimal efficiency, and then measuring how far competitors must move to achieve competitive results (Dutta, Narasimhan, & Rajiv, 2005; Mahmood et al., 2011). In other words, most studies look at average rather than superior performance in the statistical algorithms employed. Therefore, a research design which: 1) has a sampling framework that simulates an RCT and 2) estimates the intervention-outcome relationship in a manner consistent with the theoretical descriptions of competitive advantage is needed to improve CEO succession–organizational performance models' ability to yield causal inferences and predictions.

Healthcare as a Setting for Succession–Performance Relationship Research

The U.S. healthcare industry is known for its constant and rapid change (Groves, 2006), making it a prime research arena for study of the CEO succession–organizational performance relationship. The industry epitomizes the essential nature of strong executive leadership during times of transition (McAlearney, 2010). Performance and quality can be directly linked to the stability of leadership at the highest levels of healthcare organizations. Strong healthcare CEOs are crucial to bringing efficiency, quality and value together under one single guiding vision (McAlearney, 2008). According to Weil (2003), responding to the internal or external threats and opportunities inherent in the dynamics of healthcare systems necessitates a CEO who can reorganize and reframe teams around a common goal or strategy.

Almost 20 percent of the gross domestic product (GDP) in the United States is consumed by healthcare spending (Goldfield, 2010). However, Hartzband (2008) asserts that it is a commonly held notion that the healthcare system in America is inefficient and

wasteful. Huerta, Ford, Peterson, and Brigham (2008), relate poor quality across the entire healthcare system to inefficiencies that contribute to above average inflation for the sector when compared to the rest of the economy. For healthcare facilities to remain economically solvent and for patients to receive the high quality services they deserve, healthcare executives must focus on improving health system performance and efficiency within the United States (U.S) (Garber & Skinner, 2008).

According to Hartzband (2008), the overarching goal of improving healthcare in the U.S. is the enhancement of care quality and clinical outcomes. Efficiency and productivity often drive many performance optimization and quality of care initiatives in U.S. hospitals (Rosko & Mutter, 2008). Terms like *pay for performance*, *value based purchasing* and *triple-aim* are now commonplace in today's healthcare environment stressing efficiency and doing more with less (Garber & Skinner, 2008). As the prevalence and scope of such programs increase, so does the interest in the relationship between hospital efficiency and quality (Huerta, Thompson, & Ford, 2011) and the ability to maintain a competitive advantage over time in healthcare.

Maintaining health system efficiency is essential to an organization's ability to provide quality services while remaining competitive in an increasingly compressed healthcare marketplace (McAlearney, 2010). In fact, under the recent pressures of healthcare reform, executives have the added responsibility of making these enhancements while creating value for the communities they serve (Huerta et al., 2011). Value is the product of efficiency and quality relative to comparable peer groups; especially those who are competitors within a shared marketplace (Huerta et al., 2008).

Creating something of high quality and value within any organization depends on the ability of its employees' to apply their collective knowledge and skills effectively (McAlearney, 2008). This orchestration of knowledge and skill across a healthcare organization rests on the individual ultimately responsible for overall performance, the CEO (McAlearney, 2010) and decisions made by this individual can make or break the entire organization (Bower, 2007a). Executive leadership of healthcare organizations is the foundation of strategic planning and vision necessary to provide many of the health system services targeted at quality patient outcomes and efficient care delivery (McAlearney, 2008). CEOs maintain the global responsibility for efficiency and strategic vision in healthcare organizations (Groves, 2007). They are significant community health system leaders and play formative roles in providing for the long-term success or failure of health services provision in their respective communities (McGuire & Kennerly, 2006).

Leaders who find new efficiencies and cost savings create revenue streams to support hospital initiatives that otherwise would not be possible (Scanlon, 2006). Improved performance and efficiency can increase profitability, decrease costs, improve resource utilization, improve market share, and provide for the expansion of care delivery systems (Skinner & Staiger, 2009). Cost control efforts in healthcare have not always contributed to improved quality or increased value for patients and caregivers (Huerta et al., 2011). In this regard, cutting costs to improve efficiency does not always improve quality or value within an organization or service. This is particularly true with

haphazard cost cutting that lacks strategic vision and leadership which can have significant effects over the long run.

Stability and continuity of executive leadership is important because complexities and intricacies of health systems require significant knowledge that can only be gleaned through experience. Change at the CEO level in healthcare organizations occurs at high rates with shorter tenures becoming the norm. Healthcare needs stable leadership due to being constantly influenced by both internal and external turbulence (Garman & Tyler, 2007). Healthcare executives today are challenged more than ever to handle multiple, complex tasks while juggling competing priorities to the provision of efficient, high quality patient care (Stichler, 2006).

Compounding this issue is the 'talent war' that currently entices skilled and highly competent healthcare leaders toward other organizations and industries, making this matter more dynamic for healthcare organizations (Collins & Collins, 2007). Although it has decreased from 18 percent in 2009, CEO turnover for healthcare organizations in 2010 and 2011 remained high at 16 percent (American College of Healthcare Executives [ACHE], 2012); higher than the world's top 2,500 public companies at 12 percent (Favaro, Karlsson, & Neilson, 2010). Additionally, the next decade guarantees to bring a considerable number of senior leaders in healthcare closer to retirement (Garman & Tyler, 2004).

The healthcare industry as a whole has experienced tremendous reductions in its executive leadership pipeline because of the diminutive effects of recent cost constraints on middle management positions and leadership succession programs in hospitals

(Groves, 2006). Lack of adequate research available despite its potential significance and future adaptability to other industries, further supports the need for research of the executive succession–organizational performance relationship within the healthcare industry (Groves, 2006). Given the findings presented above, the U.S. healthcare system is the ideal setting for the study of executive succession–organizational performance relationships. The abundance of executive change, the crucial nature of performance measurement, and the lack of competitive advantage research available make the healthcare industry ripe for this type of research.

Purpose

The purpose of this study was to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational performance relationship that addresses limitations common in the literature to date. First, the threats to demonstrating a causal relationship between succession and performance that arise from natural experiments or convenience sampling strategies are presented in the review of literature. Second, the issue of performance measurement and analysis of competitive advantage was discussed in terms of the Resource-based View (RBV) of the organization (Barney, 1991). Third, an improved research study design that addresses each limitation was explored to address the CEO succession–organizational performance phenomena. In particular, Propensity Score Matching (PSM, Arena, Ferris, & Unlu, 2011; Dehejia & Wahba, 2002) was used to identify a sample that approximates an RCT study design. Stochastic Frontier Estimation (SFE, Dutta *et al.*, 2005; Mahmood *et al.*, 2011) was employed to identify those organizations with relative competitive

advantage positioning and then compare all other's distance from that position. Fourth, a study of insider versus outsider executive succession phenomenon's impact on organizations' competitive performances relative to organizations with no leadership change has been conducted. The insider-outsider succession phenomenon's impact on competitive advantage is a research area with inconsistent findings across numerous studies (Finkelstein & Hambrick, 1996; Karaevli, 2007; Zhang & Rajagopalan, 2010a). Finally, other domains have been identified where the new research design has the potential to increase theory-method congruence and the concomitant strengthening of causal inferences.

Conceptual Framework

Transformational leadership was used conceptually to guide this study and provide a framework for the impact that executive leadership can have on organizational performance. Transformational leadership is well known and widely used within the healthcare community and is incorporated into leadership models developed by the American Organization of Nurse Executives (AONE), the National Center for Healthcare Leadership (NCHL) and the American Nurses Credentialing Center (ANCC) for its Magnet Recognition Program®. Transformational leadership occurs when one or more individuals engage one another for the purpose of improving both leader and follower performance (Baker, 1992). Transformational leaders stimulate followers towards new approaches to old problems and towards a renewed commitment of a shared vision and common goals (Bass & Riggio, 2006). Boga and Ensari (2009) describe how complex

this balance is for the transformational executive and the dynamic role senior leaders play during any change process.

For more than 30 years, transformational leadership has been used by leadership researchers as a construct to characterize one's ability to articulate a shared vision and motivate others towards that vision (Brown & Keeping, 2005). Research clearly demonstrates that transformational leadership is generalizable across organizations (Bass & Avolio, 1990; Bass, 1997), cultures (Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999; Muenjohn & Armstrong, 2007), and populations (Bass, 1997) and is positively correlated with a wide range of organizational performance measures (Brown & Keeping, 2005). For this reason, Spreitzer, Perttula, and Xin (2005), refer to transformational leadership as the new paradigm for understanding leadership.

According to Brown and Keeping (2005), substantial investments have been made to identify relationships between transformational leadership and organizational performance. In fact, leadership style has been directly linked to a leader's influence on the magnitude of organizational change (Boga & Ensari, 2009); however, a significant appreciation for why these relationships exist is yet to be found (Brown & Keeping, 2005). Since its inception by Burns in 1978, transformational leadership has encouraged leaders and followers to achieve new levels of performance and motivation together. Transformational leaders have a unique way of creating enthusiasm around a shared vision and the ability to instill confidence in their followers to achieve collective goals (Baker, 1992).

Transformational healthcare executives have the responsibility to influence the quality and availability of organizational services offered (Boga & Ensari, 2009). Grasping transformational concepts can make healthcare executives well suited for the task by providing greater influence over organizational change and the individuals who provide these services (NCHL, 2005). The CEO role in healthcare affords a unique position to motivate through passion and optimism while rallying the organizational resources to achieve strategic goals and positive patient outcomes. Transformational leadership encourages investment in human capital and intellectual stimulation which contributes to a unified culture which thrives on personal growth and sustainable organizational success (Bass & Avolio, 1994). The transformational organization remains focused on recruiting and retaining the right people for the role and culture; people who are engaged and ready to perform at their highest potential to be the most productive for the organization (Bass & Avolio, 1990).

Transformational leadership guided the conceptualization of CEOs' influence on healthcare organizational performance in this study. Elements of transformational leadership provided insight into how leaders matter and ways executives can motivate followers toward necessary organizational performance improvements. Key transformational leadership components can be used by healthcare executives to motivate and inspire followers towards change that more effectively and efficiently provides quality patient care with more positive outcomes. This change compliments growth of the healthcare sector and promotes a work environment that uses all inputs efficiently, thus achieving optimum organizational performance.

Transformational leadership principles also help to emphasize the essential nature of clear and succinct succession planning for executive leadership positions in healthcare. Efforts by transformational leaders during transition create an environment of stability, openness and effective communication. Transformational leadership principles support organizational transparency and the dissemination of vision and strategy to achieve collective goals. Transparency and unified direction in transformational organizations can also serve to minimize disruptions when an executive leadership transition is imminent. A further examination of transformational leadership and the rationale for its use conceptually to comprehend the impacts individual leaders can have on an organization are discussed in the review of literature.

Specific Aims

The specific aims of this study were to:

1. Examine the effectiveness of using Propensity Score Matching to simulate random sampling in an efficiency study of U.S. hospitals.

    Q1: Can Propensity Score Matching be effectively used to simulate random sampling of hospitals into control and intervention groups?

2. Examine the effectiveness of using cost efficiency production functions and Stochastic Frontier Estimation (SFE) techniques to estimate inefficiency in U.S. hospitals.

    Q2: Can hospital inefficiency in this sample be effectively estimated using cost efficiency and stochastic frontier functions as in Rosko and Mutter (2008)?

3. Describe the differences in efficiency estimates based on change in CEO leadership and CEO succession origin in U.S. hospitals.

Q3: Using the techniques of simulated random sampling and cost efficiency frontier estimates, does a change in CEO leadership and then CEO succession origin create a measurable efficiency difference among the sampled hospitals?

Definitions

This purpose of this study was to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational performance relationship in the sampled organizations and to examine executive succession's impact on organizations' competitive performances with a specific focus on successor origin. The terminology used throughout this study predominately follows that given in Rosko and Mutter (2008). Exceptions to this are defined below. Metrics and variables used in this secondary data analysis, other than those created for the purposes of this study, are defined within the 2005 AHA Annual Survey of Hospitals (American Hospital Association, 2005) hereafter referred to as "AHA Annual Survey".

1. Allocative efficiency: The use of inputs and their optimization based on demand for a product. Allocative efficiency occurs when production is maximized according to consumer preferences. An organization can be technically efficient at producing goods or services no one wants. Allocative and technical efficiency together determine organizations' cost efficiency. Cost efficiency functions were used in this study to determine a competitive advantage frontier of sampled organizations.

2. Cost efficiency: Also known as economic efficiency and is the combination of allocative and technical efficiency which describes the actual costs of production based on market price and technology available. As a result, an organization could be technically and/or allocatively efficient but at a cost to the bottom line that is no longer market competitive. Cost efficiency functions were used in this study to determine a competitive advantage frontier of sampled organizations.

3. Competitive advantage: A strategic advantage which one organization has over another within its competitive industry. Organizations with the ability to generate greater value over its rival entities by offering lower prices or by providing superior products and services are said to have competitive advantage. Competitive advantage can also occur when an organization is perceived by its target consumers as better than other organizations in the marketplace. Competitive advantage helps to ensure survival and prominent market positioning. It is often considered a key determinant of exceptional organizational performance. Frontier analysis techniques were used in this study to operationalize competitive advantage.

4. Dynamic efficiency: The use of new technologies and work practices to improve efficiency over time. Dynamic efficiency focuses on research, development and innovation and has the ability to quickly adapt to changing conditions. Dynamic efficiency is used conceptually to describe efficiencies sustained or lost over time with panel data in this study.

5. Propensity score matching (PSM): The conditional probability of assignment to a treatment or control group given a vector of observable, pre-treatment covariates. The

use of PSM techniques can assist the researcher in correcting for sample selection bias when random sampling is not practical or was not performed in the case of existing data. When relevant differences between any two units are captured pre- treatment and used to assign a sample to particular treatment group, PSM techniques yield an unbiased estimate of the treatment impact. In this study, PSM techniques were utilized to identify a sample that approximates an RCT study design.

6. Resource-based view (RBV): Describes the strategic relationship between key production resources and competitive advantage. The fundamental principle of the RBV is that competitive advantage of an organization is reliant on its application of available resources to organizational processes. Emphasizing strategic choice, this business management tool tasks organizational leadership to maximize returns by identifying, developing and deploying valuable resources. The RBV is used conceptually to aid in the competitive performance determination of sampled organizations.

7. Stochastic frontier estimation (SFE): The estimation procedure used to determine an efficiency frontier for a particular sample. Organizations operating on or near the efficiency frontier are labeled as efficient, and organizations operating beneath their efficiency frontier are labeled as inefficient. Frontier estimates can assume the form of a production frontier measuring technical inefficiency or a cost frontier measuring cost inefficiency. The error terms in the stochastic frontier model take the form of a normal error term representing random variation in the operating environment and a newer, non-negative error term which represents various types of inefficiency. In this study, SFE

techniques were employed to estimate a competitive performance frontier by which to measure all organizations' distance from.

8. Sustained competitive advantage: A competitive advantage that is maintained over an extended period of time. Frontier analysis techniques were used to describe competitive advantage sustained or lost over time with panel data in this study.

9. Technical efficiency: The effectiveness with which an organization maximizes production with a minimum amount of inputs. Technical efficiency relies heavily on the organization's production processes, control systems and management of human and capital resources. Technical and allocative efficiency together determine organizations' cost efficiency. Cost efficiency functions were used in this study to determine a competitive advantage frontier of sampled organizations.

10. Total factor productivity (TFP): The portion of output not explained by the amount of inputs used in production. Growth in TFP represents output growth not accounted for by the growth in inputs.

Assumptions

This study is a secondary analysis of data collected by the AHA Annual Survey and is limited to that sample. Results generated from this study may not be generalizable to hospitals with characteristics that fall outside of the sample utilized. Further, generalizability could be assured through additional research that broadens this sample. Responses received from the participants in that survey were believed to be representative of the sample and accurately reflect the data available within their organization at the time collected. Respondents were also believed to have completed the survey tools

accurately with truthful disclosure to the best of their ability. Additionally, because recall bias cannot be controlled for in secondary analysis, these biases, if they exist, will have entered this dataset to the same extent that they are present in the AHA Annual Survey responses.

Summary

The purpose of this study was to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational performance relationship that addresses limitations common in the literature to date. This improved research study design was employed with a sampling of U.S. hospitals to analyze the CEO succession–organizational performance phenomena. The culmination of this study was a quasi-experimental panel study of insider versus outsider executive successions and their impact on organizations' competitive performances relative to organizations with no leadership change. The concept of transformational leadership was used as a framework to guide this study and to emphasize the influence executive leadership has on organizational performance.

Measurement of the insider-outsider succession's impact on competitive advantage has thus far been scientifically inconclusive across multiple disciplines. Continued failure of researchers to address the lack of empirical evidence and to improve research designs and analytic inferences related to this phenomenon was problematic. Therefore, a study was needed to fill these empirical knowledge gaps. This study adds to the works of Karaevli (2007; 2011) and others by seeking to understand these unique associations in the context of U.S. hospitals. Other domains have also been identified

where the new research design has the potential to increase empirical evidence and strengthen causal inferences.

The next chapter presents a thorough examination of current literature from both the leadership succession and organizational performance domains. Threats to determining a causal relationship between succession and performance are presented in the review. Issues of performance measurement and analysis of competitive advantage which arise from natural experiments or convenience sampling strategies are examined. Chapter three details the quasi-experimental, panel study design and data analysis conducted. The chapter describes methods used to identify a sample that approximates an RCT study design and those used to estimate organizations' competitive positions relative to each other. A study of insider versus outsider executive succession impact on these competitive positions relative to organizations with no leadership change was conducted to further current empirical evidence on the subject.

CHAPTER II

LITERATURE REVIEW

Chapter two examines the theoretical underpinnings of leadership succession and organizational performance literature. The chapter begins with a synopsis of the theoretical views on leadership succession and their historical uses. The chapter continues with a review of current literature related to succession planning and succession origin and then more specifically evaluates research exploring relationships between organizational performance and CEO succession events. Finally, the chapter concludes by describing and detailing organizational performance measurement techniques and their uses in previous works with competitive advantage and the succession–performance relationship.

A wide body of literatures describes leadership succession including pre-succession planning and the circumstances leading up to the succession event, as well as post-succession performance of both the candidate selected and the organization where the succession event occurred (Giambatista et al., 2005). Multiple disciplines have studied leadership succession over the last several decades including athletics, business, education, medicine, nursing, psychology and sociology. In fact, much of the literature agrees on the importance of leadership succession planning at all levels and in all industries; however, a comprehensive theoretical or conceptual framework for successfully implementing leadership succession and for evaluating the organizational

performance impact remains elusive. This review helped to identify any relevant gaps in the literature related to executive succession and organizational performance.

Before beginning this review, leadership succession was distinguished from similar terms used interchangeably in the literature. Searches of several commonly available online sources revealed separate distinct meanings and definitions for the following: career development, career planning, leadership development, mentoring, succession, succession planning, and talent management. Despite frequent examples of their use interchangeably by authors in both the business and healthcare domains (Carriere, Muise, Cummings, & Newburn-Cook, 2009), it is important to understand that a distinction between leadership succession and these other terms does exist and their differences were not confused in this study. Previous conceptual confusions such as these have created incongruence when comparing and synthesizing the leadership succession literature (Carriere et al., 2009).

Current Theoretical Views on Leadership Succession

Several theories and constructs have been used in the past half century to guide leadership succession research such as: Agency Theory (Zhang, 2005), Strategic Contingency Theory (Boyne et al., 2011a, 2011b; Westphal, 2009), Social Network Theory (Cao, Maruping, & Takeuchi, 2006; Phan & Lee, 1995), Human Capital Theory (Phan & Lee, 1995; Zhang, 2005), Resource Dependence Theory (Pfeffer & Salancik, 1979), Organizational Learning Theory (Feng & Jeng, 2006; Rowe, Cannella, Rankin, & Gorman, 2005; Zhang & Rajagopalan, 2004) and Upper Echelon Theory (Hambrick & Mason, 1984; Karaevli, 2007). Despite their previous usage, none of these theories or

constructs clearly stands out as a comprehensive guide in the complex relationship between executive succession and organizational performance (Carriere et al., 2009).

Appendix A summarizes the theories and constructs recently used in the succession–performance literature and their implications for future research. While not an all-inclusive list, these and other leadership theories have important implications for the executive succession–organizational performance phenomenon and may offer promise for emerging research. The aim of this study was to build upon existing theoretical works and fill several knowledge gaps in the succession–performance literature. The balance of this section summarizes findings from several comprehensive reviews of the leadership succession literature.

At the time of their review, much of the leadership succession research uncovered by Giambatista et al. (2005) was lacking a strong theoretical foundation. Their work encouraged scholars to view future empirical succession research through alternative theoretical lenses in hopes of building upon existing succession theory. Although Giambatista et al. (2005) were less optimistic than others about a predominant leadership succession theory, they cited opportunities which exist for researchers to overcome this serious theoretical weakness and better assimilate succession knowledge.

Giambatista et al. (2005) specifically evaluated progress made by researchers from 1994 to 2004 relative to consequences of and precursors to executive succession. This work built upon the previous 1994 review by Kesner and Sebora who summarized rapid growth in the leadership succession field and attempted to develop guidance for future succession scholarship. In both reviews, the authors highlighted the fragmented

(Giambatista et al., 2005) and often “chaotic” (Kesner & Sebora, 1994, p. 327) bodies of work that exist in the leadership succession literature. The dissonance is primarily a result of the widely diverse disciplines studying the phenomenon. The differing approaches do provide a means to enrich current theoretical understandings. However, much of the succession research in the current literature remains largely atheoretical or only provides a perfunctory review of the three well-known succession constructs described in the next section (Giambatista et al., 2005).

According to Giambatista et al. (2005), the leadership succession–organizational performance literature has moved forward substantially since Kesner and Sebora (1994) although significant opportunities still exist in theoretical underpinnings and methodological rigor. The interest in studying leadership succession in healthcare is much like that summarized by Giambatista et al. (2005) and has led to this study’s focus. First, leadership succession is a critical, and at times traumatic, event that affects stakeholders at every level of the organization. Second, succession is the opportunity for scholars to study the quintessential leadership question of whether or not leadership matters. Finally, according to Giambatista et al. (2005), leadership succession is ideal for study since the events surrounding succession are clearly defined and the effects are rather apparent throughout the process.

Giambatista et al. (2005) identified and stressed the need for experimental and quasi-experimental designs to establish and test causality in the succession–performance relationship. They also called for researchers to design longitudinal studies that address issues of time and performance over the long term rather than simple, short-term pre- and

post-succession performance comparisons. Citing the challenges with establishing causality, Giambatista et al. (2005) suggested further exploration and qualitative study of the leadership succession phenomenon which would complement the existing quantitative analyses of large samples available today.

One of the most comprehensive reviews of the succession–performance literature conducted across multiple industries, was performed by Karaevli in 2007. Karaevli (2007) examined five decades of empirical research from 1954 through 2005 and found that no previous research had identified and tested a complete theoretical framework of the leadership succession–organizational performance relationship. This work was an attempt to overcome previous inconsistent findings in the literature and to provide new empirical findings never realized before in the succession–performance field. Guided by the Upper Echelon Theory of Hambrick and Mason (1984), Karaevli (2007) aimed to develop and test a detailed theoretical framework that would allow for more accurate predictions of leadership succession effects on organizational performance. No studies to date have successfully produced a theoretical model of the pre- and post- succession factors of CEO transition and even more specifically as they relate to CEO succession origin. Karaevli (2007) contended that these theoretical conceptualizations were essential to establishing predictions of organizational performance associations based on CEO origins.

Another extensive review conducted by Garman and Glawe (2004) of succession literature over a ten year period from 1993 to 2003 had similar findings. The authors also concluded that a single theoretical model has yet to dominate the leadership succession

arena despite the broad and far-reaching research available within the literature. Lewis and Heckman (2006) identified succession practices in their review that remained quite fluid and unguided by concepts or theory, a conclusion similar to the 2004 and 2007 reviews by Garman and Glawe and by Karaevli respectively.

Individual Succession Impact and Transformational Leadership

Although a significant area of research interest in strategic leadership for some time (Rowe et al., 2005), the impact of leader succession on organizational performance has yielded a history of inconsistent findings and conflicting theories (McKee & Driscoll, 2008). A significant factor contributing to the absence of a guiding framework for leadership succession is the ongoing debate over a single individuals' impact on overall organizational performance. According to Rowe et al. (2005), leadership succession research provides two contrary perspectives that continue to confound the underlying premise of leadership succession's impact.

The first of these two perspectives implies that a single, high-level executive leadership succession *does affect* an organization's performance either positively or negatively and leaders do matter (Rowe et al., 2005). The second approach conversely suggests that the same high-level executive succession *does not affect* an organization's performance, meaning that leaders do not matter (Rowe et al., 2005). In other words, it is the leadership changes and/or some other unique characteristics of the organization that affects performance.

The early debate over leadership impact on organizational performance and the pursuit of an explanatory effect framework for such impact coined these three terms:

vicious-circle (Grusky, 1960), common-sense (Grusky, 1963) and ritual scapegoating (Gamson & Scotch, 1964). These paradigms originated from the interpretation of succession events in baseball and the underlying premises presented above. Grusky (1960, 1961) is lauded by many for his pioneering work on the conceptual understanding of the impact on organizational performance provided by an individual's leadership ability (Rowe et al., 2005). He contended that leadership succession was significant to organizations because of its universality and the need for all organizations to effectively manage it as well as its relationship to the stability achieved within when handled successfully.

Vicious-Circle

The vicious-circle concept introduced by Grusky in 1960 characterized succession as disruptive because of the changes throughout the organization to relationships, tradition, policies and practices. He proposed through this theory that while initial decline in performance leads to succession, the disruptive nature of succession leads to further decline and the perceived need for further succession. This early work by Grusky (1960) did acknowledge a positive side of the disruptive and destabilizing forces to the status quo; however, this vicious-circle and the subsequent conflict ultimately resulted in a reduced cohesiveness and organizational ineffectiveness.

Common-Sense

To further his work and to support the positive effects of succession, Grusky (1963) later introduced the common-sense concept to explain the influence leadership change can have on performance improvement. In this theory, he suggested poor

organizational performance and decreased efficiency leads to succession but a good leader can turn this around and improve subsequent performance. According to Giambatista et al. (2005), this explanation of succession and leadership change recognizes the performance gains realized from choosing the right successor, replacing a failing incumbent and capitalizing on a successor's new outlook and enthusiasm. Both of Grusky's theories help to support the notion that leaders *do affect* organizational performance and the choice of successor does matter (Rowe et al., 2005).

Ritual Scapegoating

The contrary is represented by the third concept of ritual scapegoating submitted by Gamson and Scotch (1964) which argues that leaders do not affect organizational performance and therefore do not matter because succession occurs merely to express a known need for change and to symbolize change is imminent. Gamson and Scotch (1964) do argue with Grusky (1960) that poor performance precedes succession but that leadership replacement is sacrificial in nature and a means to appease stakeholders with minimal true expectations of the chosen successor to improve performance (Giambatista et al., 2005).

Giambatista et al. (2005) questioned the quality of these three early theories and their applicability in today's research. They insisted that these concepts, although fundamental to our understanding of leader succession impact, fail to answer the when (sustainability) and the why (causality) of the succession-performance relationship. Giambatista et al. (2005) stressed the need to move beyond these three traditional theories and expand on our empirical knowledge of leader succession and its organizational

performance impacts. According to them, the questions posed by the three theories already have answers, and attempts to prove one of the theories superior to the others is a futile quest not needed in future leadership succession research. The ability of future empirical research to demonstrate a sustained, causal relationship between individual leaders and their organizational performance over time will prove more worthwhile (Giambatista et al., 2005).

The findings provided by Rowe et al. (2005) support the thinking that leaders do affect organizational decisions impacting performance and leaders chosen do matter significantly. Bertrand and Schoar (2003) also examined this leadership succession dilemma in depth and found similar results of leadership influence across a range of organizational factors. Their findings indicated that senior executives alone did have influence over policy, strategy, and other performance measures and that this influence was persistent over time. Giambatista et al. (2005) found that much of the strategic management theory and research maintains the assumption that leaders' actions do matter to the performance outcomes of their organizations. They, too, encourage longitudinal designs by scholars to better support these assumptions in future studies.

Transformational Leadership

Differing perspectives on leadership impact (Boyne et al., 2011a) such as those presented above make the development of a succinct framework for leadership succession and organizational performance complex. In light of this known controversy and available analysis of the two different perspectives above, this study was guided by an existing conceptual framework that is most closely aligned with the former, that

leaders *do* affect followers and therefore organizational outcomes. As outlined in the first chapter, this study was framed conceptually using transformational leadership to highlight the significance of motivation, stimulation, engagement and encouragement among leader and follower to promote organizational performance.

Transformational leadership is characterized by a leader's ability to influence others and motivate them collectively towards a common goal (Colbert, Kristof-Brown, Bradley, & Barrick, 2008). Transformational leadership expands on the common sense approach of Grusky (1963) by highlighting the change that has occurred for the better in both leader and follower, not just the change in the organization's performance. In direct contrast to transformational leadership, the latter perspective that leaders *do not* matter implies that a leader's abilities and relationships with individuals carry little significance in the strategic course of an organization and its ability to perform optimally. Although not professed by some as the ostensible leadership style (Jennings, Disch, & Senn, 2008), transformational leadership does have merit as evidenced by its support described in the previous chapter and provides a solid framework of leadership influence to guide this research.

Transformational leadership was first introduced in 1978 in a book entitled *Leadership* written by J. M. Burns. In his book, Burns (1978) initially characterized transformational leadership by the impact of change on a follower's behavior. The experience allows growth in the follower as their needs are met and new needs, beliefs, and values begin to emerge. Growth and development as a result of the process enables

followers to become leaders. According to Burns (1978), leaders also grow as a result of the transformation process.

Bass (1985) applied Burns' (1978) concepts to create a formal organizational management model of transformational leadership. In his book, *Leadership Performance beyond Expectations,* Bass (1985) suggests that leaders using this model transform the entire culture of their organization. This occurs through the engagement of followers and by raising awareness of significant issues threatening the organization's vision and values. Engaged followers can include subordinates, clients, or colleagues who assist the leader in conducting mutually satisfying ambitions. An organization employing transformational strategies is focused on the evolution of employees and improving their performance over time rather than a transactional approach to an end result or an expected return (Bono & Judge, 2004).

Bass (1985) compared a transformational culture to that of one merely transactional and found transactional organization to be predominantly focused on short-term initiatives to improve performance and the motivation of individuals through personal gain. As suggested, a transformational culture does not rely on an exchange of commodities or a formal reward or incentive program (Bass, 1985). A transformational leadership culture surpasses incentivizing followers for desired performance but rather develops and inspires them to rise above their own interests for a higher shared purpose or goal (Bass & Avolio, 1994). The reward or incentive in transformational leadership is the individual growth and development of the follower during the change process (Bass & Avolio, 1990).

From Theory to Practice - Succession Planning in Healthcare

According to McAlearney (2010), leadership succession and development practices vary widely across healthcare organizations and there is little guiding evidence that validates program content or evaluates program effectiveness. He also insists that these practices are essential to maintaining a strong and capable health system leadership team with the skills and knowledge necessary to affect organizational performance (McAlearney, 2010). A recent review of these practices by Silzer and Church (2009) indicated that today's leadership teams and their organizations have significant pressure to define and identify potential internal and external talent as well as ensuring that practical and effective measures are in place to attract and retain them both.

Well-known authors in the field of leadership succession suggest modeling the achievements made by the business sector to develop frameworks that guide succession planning best-practices (Rothwell, 2002a). According to Carriere et al. (2009), further research efforts are needed in healthcare to build a framework that provides consistency and optimal efficiency for healthcare organizations and satisfaction for both employees and patients. The authors insist that a uniform theoretical framework for healthcare organizations to guide successful succession planning and implementation will ensure effective leadership transitions that support both the objectives of the organization and individual employees (Carriere et al., 2009). The absence of a succinct healthcare succession framework based in evidence and best practices and the lack of concept clarity result in succession practices that are inconsistent and ineffective.

Succession planning is a structured process necessary to identify and prepare individuals to assume vacancies which occur within an organization (Carriere et al., 2009). It is an organized, well-planned strategy that ensures qualified candidates are matched with appropriate roles suited for their level of knowledge, skills and abilities (Bonczek & Woodard, 2006). According to McAlearney (2010), succession planning should be uniquely tailored in such a way to support the strategic vision and mission objectives of the organization. Numerous sources in the literature have long recognized succession planning as an essential business strategy providing excellent returns on an organization's investment (Bolton & Roy, 2004; Bonczek & Woodard, 2006; Bower, 2007b; Carriere et al., 2009; Evans, 2008; Larcker & Miles, 2010; Wolf, Bradle & Nelson, 2005).

With a recent and rapid ascent to the forefront of healthcare strategic initiatives, succession planning is paramount today due to challenges in the industry such as: increased market competition, workforce supply and demand issues, and less than optimal reimbursements (Carriere et al., 2009). These same challenges have simultaneously diverted much attention and focus away from succession planning and towards daily operational goals. According to Evans (2008), hospitals and health systems have failed to prepare future executives to fill top-level vacancies. He contends that hospitals lack focus in the preparation, training and tracking of future leaders with the potential to succeed (Evans, 2008).

Selecting a new CEO is critical to an organization's performance and strategic direction (Karaevli, 2007). However, as previously discussed, the practice of well

developed succession planning has yet to receive adequate attention in healthcare organizations (Thompson, 2008). When compared to other industries or sectors, U.S. hospitals have a less-than-flattering record on their evaluation and preparation of potential top executives and their ability to cultivate employees with leadership potential (Garman & Tyler, 2007). In a 2004 study, a mere 17 percent of U.S. hospitals had identified their next CEO compared to 60 percent in the business sector (Garman & Tyler, 2004). Furthermore, ACHE (2012) reports that two of every five corporate CEOs new to their role fail in the first 18 months.

Further study of the literature reveals what Sinnott (2008) describes as "the healthcare crisis nobody talks about" in his article by the same name. The 'crisis' he and Garman and Tyler (2004) describe is that over half of healthcare organizations surveyed admitted to having no succession plan at all to replace their top executive. Put into context by Garman and Tyler (2004), this trend among U.S. hospitals is 20 percent higher than that of other industries. Recent works from organizations such as the ACHE (Garman & Tyler, 2007), The Governance Institute (Gordon & Shields, 2012) and The National Center for Healthcare Leadership (NCHL, 2005) also illustrate executive succession planning deficiencies in healthcare. They estimate no more than 20 to 25 percent of hospitals currently have an *active* CEO succession plan in place should the need arise. Bonczek and Woodard (2006) assert that this lack of preparation for leadership succession puts care philosophies, strategic initiatives and workforce development in jeopardy for the future of many healthcare organizations. Weil (2006) identified in his report that when a successor to the top job was identified, succession

planning was three times as likely to be routinely conducted for other key positions within the hospital.

The healthcare industry is known for constant and rapid change, highlighting the need for strong executive leadership (McAlearney, 2010) and the fertile ground the industry provides when studying talent management and succession processes (Groves, 2006). The industry has experienced extensive cuts at the middle-management level in order to control costs and these cuts have decreased what was once a valuable pool of candidates with a wealth of workforce experiences to pull from (Groves, 2006). Corporate longevity relies heavily on an effective succession program according to Collins and Collins (2007) and yet succession planning still has not taken priority over operations as an important strategic initiative for most hospitals (Garman & Tyler, 2004). Collins and Collins (2007) argue that the shortage of proven healthcare leaders means succession planning is more than just prudent but rather it is necessary for the survival of most healthcare organizations. However, according to Garman and Tyler (2007), 38 percent of America's hospital CEOs believed their organizations approaches to succession planning remain ineffective.

Organizational Management of Leadership Succession

Operational succession programs, when in place, can allow for seamless leadership turnover (Bonczek & Woodard, 2006). However, many organizations struggle in the management of this crucial organizational event despite its importance to lasting success and prosperity (Bower, 2007a). According to Rothwell (2010a), implementation challenges are responsible for long-term failure in approximately 70 percent of all

succession planning efforts. Larcker and Miles (2010) suggest that succession programs today provide a false sense of security for most companies and are not nearly adequate. Results of their survey of 140 CEOs and board members indicated that critical lapses exist at some of the largest public and private corporations in their succession planning programs (Larcker & Miles, 2010). Their results revealed that almost 40 percent of CEO respondents indicated that they were without any qualified internal candidates. These succession planning lapses, Larcker and Miles (2010) contend, are serious threats to corporate health and longevity and can have ruinous effects on companies who are not prepared.

Bower (2007a) indicates that organizations who poorly manage succession and the individuals who may be potential candidates for the top job are likely to do so because the organizations are simply poorly managed altogether. Lack of succession planning may be indicative of other, more serious problems within organizations like poor strategic development or poor resource utilization which further contribute to perceptions of instability and uncertainty for the future (Bower, 2007a). A tunnel vision focus on day-to-day operational needs poses a severe threat to long-term organizational health. Organizations without a truly operational succession plan can be left vulnerable, placing them at grave risk for devaluation in the marketplace, regulatory liabilities or damage to their public appeal (Bower, 2007b).

Ready and Conger (2007) found that 97 percent of organizations surveyed reported having a formalized leadership succession and development program. However, just three percent of these same organizations reported being satisfied with their available

leadership talent should the need arise to replace their CEO. Therefore, the effectiveness of such a program to produce highly qualified and prepared leadership talent was not believed to be adequate even though a formalized program did exist (Ready & Conger, 2007). Collins and Collins (2007) insist that most organizations still have limited knowledge of where to begin in the development of an effective succession planning program notwithstanding its crucial value to long-term success of an organization. Garman and Tyler (2007) found that newness of their CEOs was most often mentioned as a barrier to actively practicing succession planning while its lack of usefulness was least often mentioned. According to Bower (2007a), best practice organizations began the process with the new CEO within the first year of their installment.

According to Groves (2007), many organizations confuse replacement planning with effective, strategic succession planning. Replacement planning is a concept frequently identified in the literature and describes a narrow focus on the identification of a second in command or back-up plan for an executive leadership position (Groves, 2007). This process of merely filling a vacancy with any available internal candidate when the vacancy is imminent or has recently occurred can have serious consequences for any organization (Rothwell, 2010a). A reactive or aloof approach that is not well thought out nor thoroughly explored for alternative options should never be a substitute for the proactive, thoughtful replacement of a leadership position (Groves, 2007).

Experts contend that long-term, comprehensive planning allows for better alignment of leadership competencies and organizational strategy than vacancy-by-vacancy, replacement-type planning ever will (Rothwell, 2010b). Groves (2007)

highlights the need for a pipeline of talent that results from comprehensive external assessment and internal development practices across the organization and recognizes organizations such as Bank of America, Colgate-Palmolive, Dow Chemical, Eli Lilly and Sonoco Products for their long-term approach to succession planning, avoiding near-sighted replacement planning throughout their organizations. These organizations, according to Groves (2007) have focused on developing the role of leadership in their respective organizations rather than simply developing individual leaders, ending any reliance they may have had on replacement planning for existing leaders.

CEO Succession and Turnover

Leadership succession can be an intense, anxiety producing time for many employees when familiar organizational cultures, standards and philosophies are vulnerable to change and previous practices or policies are at risk (Bonczek & Woodard, 2006). For most organizations, whether expected or unexpected, CEO vacancy heightens anxiety and presents a challenging time in an organization's history (Pointer, 2008). Purposeful CEO succession planning facilitates smooth leadership turnover and diminishes disruption in organizational performance and employee well-being (Bonczek & Woodard, 2006). Succession planning for the top job should not be disruptive to the organization, its employees or the current CEO (Pointer, 2008). Bass (1985), with his decades earlier work in transformational leadership, understood this concept and asserted that organizations engaging in proper leadership succession planning which included clear communication of expectations for all parties involved, could avoid the disruptive consequences of leadership turnover.

Providing strong executive leadership has no shortcuts (Lucier, Schuyt, & Tse, 2005) and the development of an effective CEO succession plan is vital to corporate stability and longevity (Collins & Collins, 2007). The process of CEO succession alone is not overly challenging and no particular step in the process is any more difficult than the other (Larcker & Miles, 2010). The absence of a plan or the lack of a systematic, easy to understand process is what results in CEO succession failure and unnecessary CEO turnover (Groves, 2007). Costs of this failure, both direct and indirect, can be astonishing and significantly impact any organization (Sinnott, 2008).

Direct costs and fees to an organization associated with replacing a CEO can include things like severance payouts, recruitment expenses and salary increases for the successor. According to Sinnott (2008), the direct cost alone for turnover can debt an organization nearly two to three times the incumbent CEO's salary. Indirect costs of CEO turnover often refer to productivity losses as a result of organizational slowdown during transition or periods of uncertainty. These costs, although much more difficult to estimate, are often considered greater than the direct costs of turnover and their impacts are often felt for many years (Zhang & Rajagopalan, 2004). Strategic development and planning for new services is most significantly impacted during CEO turnover (Sinnott, 2008). New initiatives are often postponed or terminated upon CEO departure and if reinstituted, are likely to get a new strategic direction with any successor (Lucier et al., 2005). The toll is also felt when employees are pulled from other areas or other operational duties to modify, dismantle or develop new strategic initiatives after turnover has occurred (Sinnott, 2008).

In many cases, other senior leaders follow the CEO out of the organization (Sinnott, 2008). Chief Financial Officers (CFOs), Chief Operating Officers (COOs) and other vice-presidents are likely to leave within a year after the new CEO arrives (Shen & Cannella, 2002), which further adds to direct and indirect turnover costs (Sinnott, 2008). This phenomenon was also identified by Khaliq, Walston and Thompson (2006) when hospital CEOs they surveyed reported high percentages of senior executives leaving the organization within one year of the departure of their predecessor.

The problem of CEO turnover is nothing new for corporate America given the *quick fix* or *turnaround agent* mentality of the recent past (Zhang & Rajagopalan, 2010a). When Fortune 500 companies begin to falter or lose money, the incumbent CEO is often moved out and replaced by a star performer (Davis & Nosal, 2009). While this is the way other U.S. industries have gone, it is dangerous territory for healthcare in light of the dire situation of the current healthcare leadership pipeline discussed in previous sections (Sinnott, 2008). With a shortage of qualified executive leaders in healthcare and the current struggle for leadership talent across multiple industries, excess CEO turnover and poor succession planning has the potential to be very disastrous (Collins & Collins, 2007).

Healthcare CEO turnover data is a good indicator that CEO succession has failed at many healthcare organizations (Khaliq et al., 2006). Although it has decreased from 18 percent in 2009, CEO turnover for healthcare organizations in 2010 and 2011 has remained high at 16 percent (ACHE, 2012), which is higher than that of the world's top 2,500 publicly traded companies at 12 percent (Favaro, Karlsson, & Neilson, 2010).

Healthcare CEO turnover percentages have hovered around 14 to 16 percent since 2002 and based on results from an ACHE survey of free-standing hospitals, only 20 percent have plans for this executive leadership succession (Garman & Tyler, 2007). Only 41 percent of hospitals studied by ACHE in 2005 had had one CEO for the previous five year period; 22 percent had had three or four over the same time period (Khaliq et al., 2006). These data support a renewed focus on succession planning practice and research in healthcare.

According to Evans (2008), healthcare CEO turnover has gained significant interest from researchers as of late because of the anticipated impact it has on American hospitals if trends such as those described above continue. This is especially true in the uncertain and increasingly competitive environment which has evolved in our current health system (Evans, 2008). Further study of hospital CEO succession effect expands our current knowledge of the phenomenon and associated trends and helps to inform all stakeholders including: boards of directors, CEOs, executive search organizations, individual candidates themselves and even programs whose focus is preparing potential candidates academically (Khaliq et al., 2006).

CEO Tenure

According to Karaevli (2007), organization and industry tenure of senior executive leaders provides the primary basis for organizational strategic initiatives and relates executive tenure and organization performance using Upper Echelon Theory. For most organizations, a reasonably long tenure is necessary for a CEO to have an organizational impact and to influence strategic change (Bower, 2007a). However,

there is a balance between what Bower (2007a) advocates is a reasonably long tenure to acclimate the new leader and what Karaevli (2007) suggests is the socialization that promotes the status quo.

The socialization processes that Karaevli (2007) identifies as coming from inside the organization have a tendency to lead overly long-tenured executives to a narrowed perspective and a reduced capacity for processing new or different information. He adds that this long organizational tenure also limits executives' ability to make needed change within an organization because of their social relationships and developing reliance on the status quo (Karaevli, 2007). Lengthy industry tenure also supports an executive's dependence on the status quo since many organizations within the same industry are homogeneous making the consideration of alternative strategy or logic difficult for long industry tenured executives (Karaevli, 2007). According to Karaevli (2007), a CEO's choice of strategy and logic is significantly influenced by his or her organizational and industry specific tenure suggesting an executive tenure effect on organizational performance.

Bower (2007a) suggests that the process of developing influential people to succeed an incumbent CEO often takes more than a decade. Current literature indicates that succession planning and leadership development processes in most organizations are not adequate to accomplish this task (Cohn, Khurana, & Reeves, 2005) while the average CEO tenure continues to decline across many industries (Lucier et al., 2005). CEO tenure in the 1980s was nine and a half years on average compared to just over seven in the late 2000s (Bower, 2007a) which might suggest to leadership succession researchers

that the management of and planning for CEO succession across many industries is deteriorating.

Khaliq et al. (2006) report even more troubling figures for CEO tenure in U.S. hospitals. According to their work prepared for the ACHE, average tenure for a hospital CEO is just over five and a half years for the same time period, with a median of only three and a half years. Bower (2007a) insists that the CEO role is not as comfortable as it once was. There has been a considerable increase in the level of responsibility and accountability to multiple stakeholders for the CEO and Bower (2007a) contends that it has become extremely challenging, round-the-clock sort of work with very limited downtime. Another interesting facet discovered by Khaliq et al. (2006) was that hospital CEO tenure remained relatively the same regardless if their employment ended voluntarily or involuntarily, presenting healthcare industry leaders and researchers with a serious dilemma when considering the employment life-cycle of hospital CEOs (Khaliq et al., 2006).

Further research is needed with healthcare executives to determine what factors contribute to this dilemma and if communication of expectations and timeframes to achieve them are reasonable and realistic for the industry (Sinnott, 2008). Healthcare executives and boards should recognize that CEOs are being motivated to leave at the three to five year mark of their organizational tenure (Khaliq et al., 2006). Sinnott (2008) suggests hospitals should increase their focus on work/life balance and their awareness of the imbalances that have the tendency to arise with leaders. He contends if this problem is not ameliorated and an acceptable work/life balance among hospital CEOs is not

maintained, the industry is destined for repeated premature turnover at the executive level (Sinnott, 2008).

CEO Succession Origin

Bower (2007a) indicates in his book that the decision to look inside or outside the organization for the next CEO can be the greatest challenge to successful leadership transition. Commonly held beliefs in the organizational management literature are that outsiders are more often selected to succeed when an organization is performing poorly and change is needed, while insiders are chosen when continuity and stability are the desired outcomes (Zhang & Rajagopalan, 2010a). Some propose it plausible that a suggestive effect accompanies inside versus outside succession which may have a more pronounced affect on organizational performance than any specific characteristics of the individual successor (Bower, 2007b; Karaevli, 2007; Zhang & Rajagopalan, 2010a).

Intellectual and human capital may be one of the greatest commodities an organization can possess and competitively retaining it can be crucial to the long-term success of an organization (Collins & Collins, 2007). Creating a pool of highly qualified candidates from which a new leader can be chosen must be an inherent part of effective succession planning programs (Karaevli & Hall, 2003). However, most organizations are still lacking in this area and are left with a false sense of security with their existing programs as discussed previously. One report concluded that the trend to go outside of the organization for leadership talent has risen across many industries because historically, succession planning has not been a priority for most organizations (Lucier et al., 2005). Grooming and mentoring young executives in preparation for potential

succession to the top job continues to be neglected, especially in healthcare (Bonczek & Woodard, 2006). More and more organizations are not prepared and thus are looking outside for their next leader because they have nowhere else to look for qualified candidates (Bower, 2007a).

As with any succession, how organizations manage the development of insiders is related to how they have managed their company and determines the quality of the successor who is eventually chosen (Bower 2007a). According to Bonczek and Woodard (2006), retaining high performers internally allows the organization to cultivate existing knowledge and expertise while maintaining perspective with regards to the corporate climate and culture. Collins (2001) insists that retaining internal talent should provide a huge advantage to the organization through the credibility and fluency retained at all levels of the organization. Sinnott (2008) agrees suggesting that internal successions are not as costly, consume less time and energy and are overall more efficient for the organization. For these reasons, it is strongly recommended each organization establish their own internal leadership bank for further talent development of potential candidates within the organization (Karaevli & Hall, 2003).

Internal leadership succession focuses on exposing high potentials to new areas and to new roles which stretches their abilities and provides them visibility with senior executive leaders, board members and others throughout the organization (Groves, 2007). Cultivation and training can provide the most effective internal executive candidates and Collins and Collins (2007) submit that it makes practical business sense to have leadership candidates focus on activities that are hands-on and geared toward the

organization's strategic initiatives. According to Rothwell (2010a), these developmental activities promote leadership competencies within the individual and better position the organization strategically at the same time. Experiences like these force leaders out of their functional silos where they are most comfortable and into the strategic arena where they learn skills necessary for senior level executive positions (Groves, 2007). If the internal candidate is selected, both parties have benefited and are better than before the process began. This mutual growth is representative of exemplary succession planning programs (Rothwell, 2010a).

Outsiderness, according to Karaevli (2007) is the experience and wisdom gained from a CEO's previous roles in other organizations and industries. The appeal for organizations of an outside successor is often believed to be a new set of skills, knowledge and perspective needed to effectively implement and manage change within the organization (Karaevli, 2007). Outsiders are often seen as more capable of making strategic changes therefore increasing the likelihood they are chosen to lead poor performing organizations. There is limited empirical evidence that supports these *change agent* theories as the sole rationale for the selection of an outside successor (Zhang & Rajagopalan, 2010a) however; the practice is very common in many industries (Bonczek & Woodard, 2006). Both the upper echelon and resource dependence theories support the notion that hiring a CEO from outside the organization and the industry is advantageous (Karaevli, 2007).

Repeated recruitment attempts of organization or industry outsiders as saviors is commonplace in the business and industrial sectors but can lead to talented internal

candidates being overlooked (Collins & Collins, 2007). The increasing trend to seek out outside saviors, according to Lucier et al. (2005), has been identified as the corporate revolving door (Clarke, 2008). The assumption of outside CEOs new to an organization is that immediate, massive changes are expected in a relatively brief period of time, which can have resulting negative organizational effects that ultimately lead to their untimely departure (Zhang & Rajagopalan, 2010a).

Karaevli (2007) presents studies which suggest board pressures for drastic changes often place new CEOs recruited from outside at risk for making mistakes and inappropriate strategic actions. Zhang and Rajagopalan (2004) also stress that the anticipated need for change and initiated strategies from outsiders do not always improve organizational-performance after succession has occurred. The changes made, rather than being real transformations, can be more indicative of quick fixes, of questionable quality that lack true staying power (Karaevli, 2007). Without sufficient personal networks and a deep understanding of the organizational culture and climate, outside executives can often fail in their transition to a new role if not acclimated appropriately (Collins & Collins, 2007). Although selected for their outside knowledge and perspective, outsiders' strategic change may hurt rather than transform an organization if a working knowledge of internal operations and key stakeholders is not achieved (Karaevli, 2007).

A 2004 survey of freestanding hospitals in the U.S. conducted by ACHE (Garman & Tyler, 2004) produced interesting results related to succession origin considerations in hospital CEO decisions. More than half (56%) of the hospitals surveyed who had

identified a CEO successor indicated they had only considered candidates from within the organization for the position (Garman & Tyler, 2004). Thirteen percent indicated that only candidates from outside the organization were considered while the remaining 31 percent indicated considering both insiders and outsiders as candidates for the position (Garman & Tyler, 2004). Not surprisingly, those organizations indicating that they had considered inside candidates for the top job rated the quality of their succession programs higher than organizations who had only considered outsiders (Garman and Tyler 2004).

Khaliq et al. (2006) found in their study of hospital CEO turnover, that new hospital CEOs were most often promoted from inside their own health systems. These findings further highlight the significance of succession planning reform for potential CEOs in U.S. hospitals. This, combined with the cost saving middle-management cuts within hospitals described by Groves (2007), stresses the heightened need for hospital succession programs to fill a valuable leadership development role which these operational positions once filled. With insiders chosen over half of the time to succeed as CEOs, the importance of succession planning and leadership development research in U.S. hospitals is clear (Khaliq et al., 2006).

The replacement method has traditionally been used by hospitals in the past to fill leadership vacancies when succession planning was not well developed or thought through (Collins & Collins, 2007). As discussed above, this method should not take the place of a comprehensive succession planning program for hospital CEOs and may even result in some ill-prepared internal candidates failing at the top job. According to Groves (2007), resisting the heir apparent approach or the temptation to focus undue attention on

likely internal successors or direct reports is paramount to avoiding the replacement mentality we have become accustomed to in healthcare. His work indicates that best practice organizations avoid this silo and focus their succession planning efforts on identifying and developing multiple potential executive leaders for a range of internal positions (Groves, 2007). Collins and Collins (2007) agree that leadership candidates for future executive roles should not only be considered from within the ranks of management but also from outside the mainstream leadership track of the organization.

CEO Succession Origin and Organizational Performance

Conflicting theories and inconsistent empirical findings related to the impact of leader succession on organizational performance has plagued the leadership succession research literature for many years (McKee & Driscoll, 2008). This has contributed to mixed findings in prior succession–performance relationship research as it relates to CEO succession origin as well (Karaevli, 2007). This study culminated in an empirical test of insider versus outsider executive succession impact on competitive performances of U.S. hospitals relative to those with no leadership change.

Karaevli's (2007) research of top executive successions spanned five decades of empirical research from 1954 through 2005. Unfortunately, this review of 50 years of literature provided no definitive insight into the existence of associations between succession origin and organizational performance. Karaevli (2007) found that these inconsistent findings over time led scholars away from whether executive succession influences organizations positively or negatively and on to the succession context itself and what specific circumstances of the succession event affect performance. A scholarly

consensus has yet to be reached on the association, if any, between organizational performance and specific events surrounding CEO succession, particularly inside or outside successions (Karaevli, 2007). Although identified as an important element of the succession context, CEO origin has been beleaguered with mixed results when associated with organizational performance (Karaevli, 2007).

According to Karaevli (2007), the present day dichotomy of succession origin and the concepts of insider versus outsider contribute significantly to a lack of understanding and agreement on the effect leadership succession has on organizational performance. Karaevli's works (2003; 2007) strived to improve succession origin constructs and the binary conceptualization of leadership succession origin in previous research. Karaevli (2007) attempted to reconcile inconsistent findings on organizational performance consequences of new CEO origin and develop a framework that illustrates the dynamic that exists between the construct of inside versus outside CEO succession and organizational performance. Although outside of the scope of this study, Karaevli (2007) suggests a new concept of CEO *outsiderness* in which succession origin is measured on a continuum rather than as a binary, dichotomous indicator. For ease of conceptualization and use with existing data, CEO origin in this study remains a binary variable as is commonplace in previous leadership succession research (Karaevli, 2007).

In recent literature, poor pre-succession performance of an organization has received the most attention as a contributing factor to selecting an outsider to succeed as CEO (Zhang & Rajagopalan, 2010b). However, definitive empirical knowledge of the post-succession impact on these same organizations as a result of this outside

succession is far more limited (Boyne et al., 2011a). Outside successors who, under poor performance conditions, can initiate significant strategic change and fundamentally alter performance standards are more prone to deliver improvements in organization performance (Karaevli, 2007). Again, some of the effects realized as a result of CEO succession may be merely suggestive, signaling an organization's intent to redirect, reorganize, or rejuvenate.

As discussed previously, any CEO succession is disruptive to an organization and has great potential to affect performance. Rapid, strategic changes initiated after CEO successions, although commonly seen as necessary for organizational turnaround, often fail to produce the positive organizational performance expected (Karaevli, 2007). Zhang and Rajagopalan (2010b) wanted to understand this and theorized in their research that the potential of strategic change to affect performance is the difference between the change's disruptive effect and the adaptive ability of the organization to overcome it. Strategic change at low impact levels positively affects overall organizational performance if the adaptive effect dominates whereas the opposite is true if high levels of strategic change allow the disruptive effect to take over (Zhang & Rajagopalan, 2010b). Results such as these provided by Zhang and Rajagopalan (2010b) suggest that a balance exists between the amount of strategic change undertaken and the competitive advantage an organization is able to create and maintain.

Zhang and Rajagopalan (2010b) found that CEOs succeeding from within enjoy greater human capital backing and organization specific knowledge that helps to shield the organization from disruptive effects which may result from increased levels of

strategic change. CEO insiders maintain a connectedness to the organization and tend to better understand the internal resources and environment in which to carry out its vision and mission. However, this connectedness can constrain the insider to change only what builds on past performance and existing organizational capabilities rather than dramatic strategic change that may be needed. Thus, Zhang and Rajagopalan (2010b) indicate changes from insider CEOs tend to be safer while benefiting organizations in a steadier, incremental way. Small, incremental changes, usually seen by insiders, are less disruptive but are also not as likely to produce the improvements necessary in poor performing organizations and may reinforce the status quo, further exacerbating performance decline (Karaevli, 2007).

Outside successors tend to make more significant and more rapid changes initially which ultimately amplifies the associated organizational disturbance (Zhang & Rajagopalan, 2010b). Outsiders also have a limited understanding of existing resource capabilities and constraints within the organization, which make choosing effective and appropriate strategic change more difficult (Shen & Cannella, 2002). These issues contribute to more pronounced disruptive effects under outside CEO leadership necessitating a greater adaptive response on behalf of the organization (Zhang & Rajagopalan, 2010b). In contrast, outsiders succeeding in poor performing organizations may, in some instances, have less resistance than insiders implementing change because radical change is expected as a result of performance decline and may be supported by critical stakeholders. Outside successors are also not emotionally constrained by the status quo and corporate culture when considering significant strategic change. For these

reasons, change under outside CEO leadership can be more adaptive in nature than that of insiders under certain circumstances (Zhang & Rajagopalan, 2010b). Zhang and Rajagopalan (2010b) conclude their research with the consensus that outside CEOs intensify the effects of strategic change over that of the insider, regardless of whether those effects are positive or negative.

Lucier et al. (2005) also examined CEO succession origin and organizational performance and first introduced time into the complex succession-performance relationship. This research found that outside CEOs positively impacted organizations early on in their tenure and typically this improved performance waned as time passed. Insiders on the other hand, were found to have relatively steady performance regardless of the passage of time. These findings agree with those of Zhang and Rajagopalan (2010b) in that increasing CEO tenure heightens performance disadvantage experienced by outsiders. CEOs tend to excel at rapid, strategic turnaround needed by poor performing organizations but are not always able to deliver long-term, sustained performance (Lucier et al., 2005), further confirming the revolving door phenomena discussed above. This study included the variable of time through panel analysis as discussed in the methods section below.

Measuring Organizational Performance and Competitive Advantage

Previous studies utilize a variety of outcomes measured before and/or after a succession event combined with longitudinal research designs which treat the succession phenomenon as a ‘natural experiment’ and make statistical inferences about the executive succession–organizational performance relationship (Kesner & Sebora, 1994).

As a first step, researchers identify a sample of organizations that experienced an executive succession event (the 'naturally' occurring part of the experiment) and conjointly analyze those organizations with others that did not have a change or experienced some other form of leadership transition. Executive succession analyzed in this fashion relies on variables classified into three domains: antecedents, succession event types and consequences. Depending on the study's purpose, measures drawn from two of the domains are the variables of interest (e.g., dependent and independent variables) and the third domain's measures are used as controls. The analytic algorithm most often used is linear regression.

For example, the study by Ballinger and Marcel (2010) compared Fortune 500 organizations that experienced executive succession events with and without an interim leader being used and its impact on organizational survival. As part of their study, the organizations' financial performance prior to the events was controlled for (an antecedent) while organizational survival served as the dependent variable (the consequence) and the succession event was an independent variable. Survival analysis, a form of linear regression relying on correlations (Miller & Tsang, 2011), was then used to assess the relationship between the succession event and the organization's longevity. Their study found using an interim CEO was associated with a lower likelihood of organizational survival.

Next, they explored a sub-sample of the dataset where an organization insider, usually the board chair, served as the interim CEO. When the interim CEO was also the board chair, the impact on the organization's survival was moderated in a positive fashion

compared to the use of an outside interim. Their use of a sub-sample in the research design is a common feature in research because it implies that the magnitude of the effect of the intervention differs when the form of the intervention varies (Fredrickson, Hambrick, & Baumrin, 1988; Porter, 1991). However, drawing causal inferences from such research designs is difficult when changing the sampling frames or model specifications alters the results in non-generalizable ways, as was the case in the study described above. Therefore, improvements to sampling designs in CEO succession–organizational performance research makes both the theoretic and empirical relationships easier to explore.

There are many definitions of organizational performance as it relates to competitive advantage in the business and strategy literature. The resource-based view (RBV) is a widely accepted framework asserting that organizations secure and transform inputs into outputs to gain and sustain a competitive advantage relative to its competitors (Barney, 1991; Rumelt, Schendel, & Teece, 1994; Wernerfelt, 1984). Resources themselves do not create output or productivity (Grant, 1991) however, the coordination and management of their usage in the transformation process is important to producing results (Hooley & Greenley, 2005).

Poor performance compared to others within the same industry is an indicator that current operations are ineffective and stimulates adaptation to better align internal and external inputs to improve production outputs Karaevli (2007). According to the RBV of organizational performance, an organization reaches a sustainable competitive advantage by managing its unique resources so that inputs are converted to outputs in such a way

that is not easily imitated by competitors. These resources transformations ultimately create a competitive barrier for the organization and cannot easily be recreated, imitated or acquired through purchase or acquisition.

The 'transformation' criterion has become a focus of management researchers because it is the organization's *capabilities* which executives can influence most in the near term (Augier & Teece, 2009; Helfat, 2011; Teece, Pisano, & Shuen, 1997). In particular, *dynamic capabilities* are an area that new executives are often charged with managing (Agarwal & Helfat, 2009). The dynamic capabilities charge requires reconfiguring capacity used in the input-output transformation process through such mechanisms as workflow redesign (Pavlou & El Sawy, 2011). For theoretical and methodological congruence, it is necessary for an analytic algorithm to measure an organization's capabilities for input-to-output transformation and to relate that measure to competitive market positioning.

To explore organizations' competitive market positions, researchers typically measure resources and capabilities and then correlate these variables with a specific performance measure (Ray, Barney, & Muhanna, 2004). Organizations performing above average are said to have a *competitive advantage*, and those doing so over extended periods of time demonstrate a *sustained competitive advantage*. While these approaches have been widely used, they do have limitations. One shortcoming of this view is that it relies on highly aggregated organizational performance measures such as stock price as a proxy for competitive advantage (e.g., Tobin's Q; Hasan, Kobeissi, &

Wang, 2011). Using a single performance variable may or may not capture the competitive advantages which specific resources and capabilities give an organization.

One solution to address this limitation is to measure organizations' capacity for transforming resource inputs into outputs and use that index as the dependent variable (Ray et al., 2004). However, measuring organizations' resource transformation capabilities is not sufficient to link the objective analysis to the latent concept of competitive advantage. It is also necessary to compare its capability level to other organizations in the marketplace. Thus, an additional element of the RBV which must be measured is the transformation process *relative* to the competitors' performances in employing their capabilities. The relative aspect of firm-to-firm comparisons has not been as rigorously studied. Until recently, most research designs relied on some form of regression that measured an organization's distance from a line that defines average performance on a set of variables (Rosko & Mutter, 2008).

While being above average may qualify as being competitive, an analysis that identifies organizations that are superlative, or 'pushing the envelope' at transforming inputs into outputs, would be more consistent with the theoretical description of dynamic capabilities. Moreover, relative performances of organizations should be measured as the distance to the frontier where competitive advantage emerges, versus the linear average where relative mediocrity dwells (Kumbhakar & Lovell, 2000). Therefore, a statistical algorithm is necessary that 'envelopes' the data and identifies organizations which demonstrate distinct and sustainable performance thus, residing along a competitive advantage frontier.

Stochastic Frontier Estimation

As discussed above, organizations can fail to optimize production functions and lose efficiency and thus their competitive advantage. To overcome the shortcomings of previous inefficiency measures, frontier techniques have been developed. Frontier methods establish best practice as it relates to production efficiency and measure the distance between actual performance and this best practice frontier. A production frontier characterizes the minimum necessary combinations of inputs to produce the maximum output (Constantin, Martin, & Rivera, 2009). Organizations are considered efficient if they operate above the frontier and inefficient when they fall under. According to Rosko and Mutter (2008), frontier inefficiency estimation should be undertaken for several very important reasons: to establish a best practice target, to inform industry leaders and policy makers of that target and then to encourage changes in both towards its achievement.

SFE is the preferred parametric approach that emerges as a theoretical and practical framework for defining and estimating production frontiers (Rosko & Mutter, 2008). SFE uses more theoretically sound estimates than previous frontier methods as it allows for deviations from the frontier rather than attributing random variations or changes in input productions to inefficiency. SFE calculates a theoretical frontier providing a more objective determination of best practice which more closely resembles that which occurs randomly in the natural world (Constantin et al., 2009).

Nonparametric approaches, such as Corrected Ordinary Least Squares (COLS) and Data Envelopment Analysis (DEA) assume a deterministic frontier based on actual

performance that does not allow for natural deviations from the frontier. These deviations or residuals might include random shocks, statistical noise or measurement errors (Rosko & Mutter, 2008). Since nonparametric models lack a stochastic component, concerns exist among econometricians that their use has the potential to overestimate inefficiency through random errors or statistical noise (Jacobs, Smith, & Street, 2006).

In stochastic production frontier models, it is recognized that labor or capital performance variations which affect production are beyond the control of the organization (Constantin et al., 2009). Therefore, when using this method, variations in technical efficiency can be separated from labor or capital performance impacts on production. In the presence of inefficiencies, SFE models better differentiate an organization's technical inefficiency from random factors affecting production outside of their control (Constantin et al., 2009).

Stochastic frontier techniques were developed independently and simultaneously by both Aigner, Lovell, and Schmidt (1977) and Meeusen and van den Broeck (1977) during the same time period. Since that time, there have been considerable contributions to extend and apply the model (Kumbhakar & Lovell, 2000). Reviews of these works are provided in Baten, Kamil, and Haque (2009), Battese and Coelli (1995), Constantin et al. (2009), Cooper, Seiford and Tone (2007), Lita and Stamule (2011) and (Zhu, 2009). SFE methodologies are used extensively in the economics (Del Gatto, Di Liberto, & Petraglia, 2011) literature and have recently informed the strategic management field, thus strengthening the ties between those domains. In particular, the trans-log specification of

the SFE, using the costs of capital and labor as inputs to produce services, models closely to economics' perspective for assessing relative competitive advantages among organizations. Frontier analyses, particularly SFE, have become the standard for assessing productivity and efficiency in the econometrics literature (Del Gatto et al., 2011).

Wagstaff (1989) published the first healthcare SFE by examining efficiency in 49 Spanish hospitals. The first study of U.S. hospitals using SFE followed in 1994 by Zuckerman, Hadley and Iezzoni (1994). Rosko and Mutter (2011) provided a thorough review of the 27 U.S. hospital SFEs performed since then and the lessons learned. The gap which remains in the literature is a theoretical model of inefficiency in healthcare using stochastic frontier production functions to explain the phenomena in terms leaders and strategist can understand. Rigorous work is not available that quantitatively studies healthcare efficiency levels using SFE with the purpose of identifying contributory variables and making recommendations for improvement.

In addition to those mentioned above, the major advantage to the use of SFE, especially in healthcare efficiency studies is that it allows for cost-oriented efficiency research rather than simply that of technical or production efficiency as is the focus of DEA (Rosko & Mutter, 2008). Cost efficiency stems from the combination of both allocative and technical efficiency and describes the actual costs of production based on market price and technology available. Technical efficiency is what the organization does with a given amount of inputs to maximize production. This relates with the organization's production processes, control systems and management of human

resources. Allocative efficiency on the other hand, relates to the use of inputs and their optimization based on demand for a product. As a result, an organization could be technically or allocatively efficient but at a cost to the bottom line that is no longer market competitive. This supports establishing a measure of cost efficiency and the use of SFE in the competitive differentiation of hospital efficiency.

Complete specification fit of the SFE model in hospital studies has been difficult due to their multiproduct nature and production complexities detailed earlier. However, consensus has been reached among the national hospital studies reviewed by Rosko and Mutter (2008) as to the cost function variables used for the price of capital and labor. These variables were obtained from similar national databases such as the AHA Annual Survey and the Medicare Cost Reports in 11 out of 19 studies as well (Rosko & Mutter, 2008). Outputs representative of inpatient and outpatient services provided are recognized as essential in all hospital SFE studies.

Also common is the use of case-mix descriptor variables and some measure of quality according to Rosko and Mutter (2008). Concern exists that if these dimensions are not controlled for erroneous assumptions of efficiency may result due to decreased quality or a less resource intensive case mix. As SFE models with these added descriptors become more specified and begin to explain more of the previously unexplained errors, average inefficiency estimates of hospitals are likely to decrease (Jacobs et al., 2006). For this reason, the use of product descriptor variables and other methods of case-mix grouping are needed when estimating hospital inefficiency in the absence of randomized controlled trials (Rosko & Mutter, 2011).

Estimating Cost Efficiency

Cost has historically been used as an indirect measure of inefficiency in many hospital studies (Rosko & Mutter, 2008). The assumption being that decreasing costs meant improved efficiency. However, cost containment may have been attributed to reduction in the quality and quantity of services and this assumption may be faulty. Therefore, a more responsive measure of hospital inefficiencies was needed to alleviate the reliance on such assumptions and to better evaluate competitive advantage (Rosko & Mutter, 2008).

As an alternative, cost efficiency has been estimated using a variety of cost production functions in previous hospital inefficiency studies. The Cobb-Douglas, transcendental logarithmic (trans-log), Leontief, and constant elasticity of substitution (CES) production functions have all been used in conjunction with SFE to determine a cost frontier (Rosko & Mutter, 2008). As described above, the cost frontier is then used to determine inefficiency for each entity based on its performance variation. According to Rosko and Mutter (2008), the trans-log and Cobb-Douglas cost production functions are the two most popular models used to estimate cost efficiency in hospital studies.

In most applications, Cobb-Douglas is used to represent the production relationship of inputs, commonly labor and capital, versus output measured by production units or value produced. In general, a production function requires both factor inputs to produce the output and increasing either of the inputs results in a related output increase. The Cobb-Douglas production function in its simplest form can be represented in

Formula One:

(1) $Y=AL^aK^b$

where Y stands for output, A for total factor productivity, L for labor, and K for capital. Labor is typically represented by full-time equivalents or man-hours. Capital is the investment in equipment or supplies utilized to produce output. Total factor productivity represents the portion of output not explained by inputs used. Growth in TFP represents output growth not accounted for by an increase in inputs.

The Cobb-Douglas was later generalized to the trans-log production function by adding squared and interaction terms for all the variables. With its desirably more flexible form, the trans-log function is used extensively in the micro and macroeconomic fields when describing how outputs relate to levels of input (Constantin, Martin, & Rivera, 2009). However, this flexibility is gained at the expense of degrees of freedom while the more structured Cobb-Douglas avoids the cross-product and squared terms of the trans-log and saves degrees of freedom (Rosko & Mutter, 2008). Overall, the trans-log production function is statistically more favorable and preferred analytically over the Cobb-Douglas for obtaining cost functions (Baten et al., 2009; Rosko & Mutter, 2008).

To illustrate a cost production function in terms of a healthcare example, capital could be represented in terms of hospital beds and labor in terms of nursing hours. A large purchase of new hospital beds would incur a significant capital expense but has the potential to improve efficiencies and aid nursing staff in providing better patient service. New beds can reduce position related complications of hospitalization, improve patient

comfort and reduce work related injuries for staff. This outlay in capital may create a reduced need for nursing hours or result in improved care outcomes thus returning the scale to constant post capital investment and potentially increasing returns over the long-term. On the other hand, no capital investment and an increase in labor or nursing hours may have the same effect on service and quality, maintaining or increasing returns with regards to output.

The appropriateness of using cost production function models in the manufacturing sector where labor and capital directly produce a tangible product is intuitively appealing. The uses of these resources are causal in the production outputs. Some consideration is necessary when applying these models to the service sector. The causal relationship between output and resource allocation is not as objectively clear. Production of output in service industries such as healthcare requires delivering services in response to demand. Although increases in labor or capital might be necessary due to increases in demand, their ability to generate future demand for service is unclear.

Recognizing this complexity, however, resource allocation between labor and capital is a crucial management decision in the service sector. Successful leaders in the service sector remain responsive to demand for services and balance production with available resources. Optimum resource allocation within the constraints of industry standards have traditionally manifested in more efficient operational strategy and improved performance (Rosko & Mutter, 2011). In this case, the cost production function models would provide results in service industries such as healthcare that are analogous with those in manufacturing.

Summary

This chapter has examined the theoretic leadership succession and organizational performance literature and identified relevant gaps related to the executive succession–organizational performance relationship. Several theories and constructs have been used in the past half century to guide leadership succession and organizational performance research but none clearly stands out as a comprehensive guide in the complex relationship between executive succession and organizational performance. Conflicting theories and inconsistent empirical findings related to the impact of leader succession on organizational performance continue to plague the leadership succession research literature.

Karaevli (2007) found these inconsistent findings over time have led scholars away from the most important question of whether executive succession influences organizations positively or negatively. Unfortunately, most researchers have moved on to the succession context itself and what specific circumstances of the succession event affect performance. Citing the challenges with establishing causality, Giambatista et al. (2005) identified and stressed the need for quasi-experimental designs to establish and test causality in the succession–performance relationship. They also called for researchers to design longitudinal studies to address issues of time and performance over the long-term rather than short-term, pre- and post-succession performance comparisons. No studies to date have conducted or simulated a randomized controlled trial to attempt to establish causality in the succession–performance relationship.

Available theories and concepts fail to answer the when (sustainability) and the why (causality) of the succession–performance relationship and Giambatista et al. (2005) stressed the need to expand on our empirical knowledge of leader succession and its organizational performance impacts. The empirical research to demonstrate a sustained, causal relationship between individual leaders and organizational performance is a worthwhile endeavor (Giambatista et al., 2005). The aims of this study are to answer the call for empirical evidence to link executive succession to organizational performance in a causal manner and to build upon existing theoretical works, filling several knowledge gaps in the succession–performance literature.

CHAPTER III

METHOD

The following chapter details the quasi-experimental, panel study design conducted and the specific methods used for data analysis within each specific aim. The purposes of this study were to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational performance relationship that addresses limitations identified in the previous chapter. Particularly, PSM was used to identify a sample which approximates an RCT study design and SFE was employed to estimate organizations' competitive positions relative to each other. A study of insider versus outsider executive succession impact on these competitive positions relative to organizations with no leadership change was conducted and is described in the following paragraphs.

Secondary data were utilized in this study to analyze the associations in the sampled organizations. Secondary analysis of existing data allowed for quick and efficient answers to research questions not originally studied (Gliner, Morgan, & Leech, 2009). To answer a different question, an investigator, with the primary investigator's permission, can add several measurements to an existing study and create an ancillary study (Hulley, Cummings, Browner, Grady, & Newman, 2007). After simulating a random sampling procedure, analysis followed the dominant functional specification in the literature based on the work of Rosko and Mutter (2008) and formalized cost

efficiency in the production function of a stochastic frontier for panel data. Cost efficiency functions were modeled and compared to determine if a difference existed in hospital efficiency based on leadership change and CEO succession origin.

Research Approach and Study Design

This quasi-experimental study of existing data employed a panel analysis of repeated cross-sectional observations occurring within a relatively short time series. The AHA Annual Survey provided data collected annually from a single point in time to describe characteristics of operations and leadership among member hospitals. Aggregating several years of data, as with the creation of panel data utilized in this study, provided a more robust, longitudinal representation of phenomena which may be occurring. The combination of time series with cross-sections enhanced the quality and quantity of data in ways which would not be possible using only one of these two dimensions alone (Gujarati, 2003).

An experimental design is the most widely-recognized approach suited to determine causality (Gliner et al., 2009) and secondary data analysis does not lend itself to experimental designs. Previously collected data do not allow for manipulation of predictor or independent variables and the dependent variables have already been affected. The research design perhaps most desirable when studying executive succession is the time-series, treatment-control design where characteristics are evenly distributed across groups. Campbell and Stanley (1973, p. 57) described this structure as, “an excellent quasi-experimental design, perhaps the best of the more feasible designs.” In fact, they singled out this design for studies of executive change because it met all the

standards for internal validity that such interventions are most concerned with meeting. The primary threat to the external validity of this design was that sample selection bias effects could account for changes in the variable of interest (Caliendo & Kopeinig, 2008). Using PSM to select samples in observational studies or natural experiments corrected for this threat (Bai, 2011).

Dehejia and Wahba (2002) provide an overview for exploring causal inferences in non-experimental situations, such as those surrounding CEO succession events. To substitute for the absence of experimental control units, data can be obtained for a set of potential comparison units. Organizations do not need to be drawn from the same industry (i.e., population) as the treated units, but the same set of pre-treatment (e.g., pre-succession) covariates needs to be measurable. Drawing a control group from the same population would be better still.

PSM pairs treatment and control units (e.g., organizations) which are similar in their observable characteristics in order to achieve covariate balance in studies with binary treatments or interventions. When the relevant differences between any two organizations are captured in the observable covariates, matching can yield an unbiased estimate of leadership changes' impacts on organizations' performances by comparing the treatment and control groups' changes in efficiency over time as if they originated from a random sample drawn from a single population. Appendix B describes the PSM method used for matching organizations using the nearest neighbor algorithm.

When the organizational-performance measurement and PSM are done prior to the intervention (i.e., before the CEO succession event), and are drawn from a known

population of organizations (e.g., a single industry), two inferences can be made. The first is the determination of a causal effect arising from the executive succession intervention on organizations' competitive performance *ceteris paribus*. Second, by knowing the treatment and control groups were in effect randomly assigned using the PSM simulation; comparing them along the selection dimensions to the broader population is feasible. Therefore, inferences and forecasts about how such interventions would impact the overall population can be made. The main challenge remaining in the research design is selecting appropriate strategy for measuring organization-performance relative to other organizations, over time, as it relates to CEO succession. This is discussed below with the use of Stochastic Frontier Estimation.

Setting

This study used existing data to examine the succession performance relationship effects described in the previous section. The AHA Annual Survey for fiscal years (FYs) 2003 through 2007, inclusive, provided the panel data for this study. The process for formulating the panel data is described in the Procedures Section. Over 6,000 AHA member organizations across the country were surveyed each year during the five-year study period. The AHA (2008) reports an average of 85 percent response rate to its survey each year.

Sample

Random sampling is an ideal instrument to determine causality. This study simulated a random sampling of the target population which, for this study, was all organizations in the U.S. providing acute care hospital services. An accessible

population of this target were organizations who were members of the AHA. From this accessible population, those organizations within the secondary dataset who responded to the 2003 through 2007 AHA Annual Surveys were chosen as the selected study sample to create the necessary panel data. The actual sample studied resulted from the PSM simulation process described in the Procedures Section.

According to Gliner et al. (2009), representativeness of a sample is more critical than its size. Their assertion is that non-representative samples can be very large and still produce results which are misleading. A PSM simulation (described in the Procedures Section) was used to simulate a random sampling of participants from the existing dataset. Inclusion criteria consisted of: (a) AHA member organizations within the existing dataset who (b) responded to the 2003 through 2007 AHA Annual Surveys and (c) provided general, short-term acute care hospitalization during the entire study period with (d) more than 25 inpatient beds. Exclusion criteria consisted of: (a) federally-owned or other hospitals not accessible by the general public, such as prison hospitals, (b) specialty, rehabilitation or very small hospitals ($\leq$25 beds) which serve as infirmaries, clinics, or non-acute care facilities, (c) organizations responding with incomplete survey data for which imputation did not occur, and (d) organizations for which clear CEO leadership demographics as defined in the study's Procedures Section were not available. Excluding non-member organizations and those with incomplete or missing data as well as restricting the sample to general, short-term care hospitals with more than 25 inpatient beds provided consistency with previous studies and maintained more homogenous outputs (Rosko & Mutter, 2008).

Human Subjects Protection

Prior to examining the dataset for this study, an Institutional Review Board (IRB) Determination Form from The University of North Carolina at Greensboro (UNCG) was completed and submitted for review. The UNCG IRB determined this study was "not human subjects' research by federal definition" and further documentation or approvals were not necessary to proceed with the study. Variables or data elements related to specific individuals, such as the CEOs in this study, are publically available and were aggregated at the organizational level in the broadest of classifications (e.g., succession origin, geographic region, etc.). Information at the individual level is not reported and it would likely be impossible to link the study data to any specific hospital leader. Other than the source of succession (inside vs. outside), the research questions do not revolve around individual characteristics but rather the organizational efficiencies as a result of said characteristics. Confidentiality was maintained by only using individual CEO data such as name, employer and location to code the individuals' immediately previous work history as inside or outside of the organization. After the coding for all sample organizations was complete, matching CEO specific data was destroyed and no longer available to the PI. Specific individuals and their associated background data are not analyzed as only the origin of their succession, and no other identifying information is the focus of this analysis.

Procedures

This study employed a quasi-experimental research design using panel analysis of existing data to address each of the three specific aims outlined in Chapter One. A

detailed data analysis plan for each specific aim follows, describing the necessary analyses performed. All analyses were considered statistically significant at an alpha of <0.05 unless otherwise indicated.

Data Analyses Plan

Determining the type of statistical analysis required for secondary data is heavily dependent on the research question, the primary hypothesis and the variables needed to test the hypothesis (Gliner et al., 2009). The ultimate goal of the statistical analysis in this study was to apply SFE techniques to estimate efficiency deviations from a best practice frontier and to determine if any significant differences were created in organizational performance post-succession due to changes in CEO leadership or CEO succession strategy utilized within the study sample.

The most prudent and commonly used forms of the PSM and SFE algorithms were employed. The data analysis for this study had three steps aligned with the study's three specific aims. First, PSM was used for creating sampling frames to compare organizations which have experienced CEO succession, versus those that have not, in a manner simulating an RCT. Second, a longitudinal SFE of organizations' relative performance levels over a five-year time frame was executed. The time frame bracketed the executive succession intervention with two-year windows before and after the event year, for a total of five years. Lastly, the effects of changes in organization leadership, with the successor being drawn from either inside or outside of the organization, were compared to organizations that had no change in CEO.

Initial preparation of the existing dataset was necessary prior to addressing any of the specific aims. The first step in preparing the existing dataset for analysis was to identify executive succession events. The AHA Annual Survey includes the name of the current CEO. The 2004 and 2005 FYs were compared to identify any changes in the CEO position for the 6,349 hospitals reporting that period. Next, the 2004 *AHA Guide*, which contains the names of all the C-level officers, was used to determine if the new CEO originated from inside or outside of the hospital. Secondarily, searches of the ACHE and the American Organization of Nurse Executives (AONE) membership databases using first and last name were utilized to identify succession origin if an unknown change occurred.

According to Gliner et al. (2009), calculating descriptive statistics early on to explore the data and describe key features of a sample can assist the researcher in evaluating assumptions for each statistical method. Descriptive statistics were initially calculated to explore and describe the main features of the study sample. These statistics included the means and standard deviations for both the study population and the actual PSM sample providing information about the sample's tendency, distribution, and variability. Descriptive statistics also identified the frequency at which inside and outside succession strategies were pursued in sampled hospitals. Organizations with missing data were excluded from this study per the exclusion criteria. Once the exclusion criteria had been used to refine the dataset and excluded organizations had been removed, the initial data analysis of this study began. Data analyses for each specific aim and research question are outlined below.

Instruments

The instrument used to collect panel data for this study was the AHA Annual Survey of Hospitals (American Hospital Association, 2005). The AHA's Annual Survey has been soliciting voluntary responses from member organizations since 1946 (American Hospital Association, 2008). Every fall, participants are asked to complete the survey online or by mail to compile this most widely used healthcare data resource (Mullner & Chung, 2002). The comprehensive survey is an invaluable resource assembling the most reliable healthcare database on the market (American Hospital Association, 2008), collecting authoritative financial, utilization, personnel and services data for U.S. hospitals. The AHA reports an extraordinarily high overall response rate of 85 percent to the survey each year and for those hospitals not responding in a given year, statistical models were used to estimate a number of key variables (American Hospital Association, 2008).

Data is requested from the organization's most recently completed fiscal year to ensure accuracy and to consistently compare 12 month periods. Data is collected from more than 6,000 US hospitals and health systems related to each organization's structure and leadership, their resource utilization, facilities and services offered, revenue and expenses, and their strategic planning efforts (Burke, Yu, Au, & Menachemi, 2009). The availability of such a rich source of healthcare data enables multiple research opportunities and allows for forecasting and prediction into the future (Mullner & Chung, 2002). Historical archives facilitate multiple years of data for comparison and longitudinal study especially around hospital operations and healthcare service trends.

Data Analyses for Specific Aims

Specific Aim #1

Examine the effectiveness of using Propensity Score Matching to simulate random sampling in an efficiency study of U.S. hospitals.

> Q1: Can Propensity Score Matching be effectively used in this study to simulate random sampling of hospitals into control and intervention groups?

The first specific aim assured the appropriate sampling frame for this study and addressed the absence of an experimental control group which, when combined with the intervention group, would simulate random selection from a common population. To identify the control group, this study looked to FY2003 to identify a group of hospitals who had pre-intervention characteristics comparable to hospitals which experienced a CEO succession in FY2005. By looking backward in time to find the control group, this study simulated the RCT design of assigning subjects to a study arm (i.e., either intervention or control) before administering the intervention. Therefore, the intervention's effect can be measured over time and causal inferences are strengthened. PSM was employed to identify the control group.

Propensity score matching.

Propensity score matching is a quasi-experimental technique used to aid in the estimation of an intervention's impact. It allows treatment group outcomes to be compared to those of a control group constructed through matching of pre-treatment propensity scores. Propensity score matching creates 'balancing scores,' which

determine the comparison units that best match treatment units when random assignment is not feasible (Rosenbaum & Rubin, 1983). The propensity score is a conditional probability of assignment to a particular group given a vector of observed covariates. When the score is sufficiently comparable across subjects, unbiased estimates of the treatment or intervention's effects can be made (see Appendix B for a description of the standard PSM methodology). Testing the 'balancing hypothesis' assesses the effectiveness of the PSM process. The hypothesis states that the covariates used in the classification do not vary significantly from one another, either individually or collectively. This can be tested using a variety of tests for statistically significant differences among covariates as described in Dehejia and Wahba (2002).

In this study, if hospitals can be effectively matched on observable characteristics in a time period prior to the CEO succession event, then an unbiased estimate of the subsequent impact the event has on performance (e.g., the treatment effect) can be made as if the organizations were randomly assigned. According to Luellen, Shadish and Clark (2005), a crucial step in designing a quasi-experiment using propensity scores is identifying relevant, observable covariates from which to derive scores from, specifically those expected to affect outcomes and treatment selection. The selection of observable characteristics for matching hospitals is explicitly addressed in the AHA Annual Survey when missing data is imputed. Those variables are: 1) Total facility admissions, 2) Adjusted admissions, 3) Total births (excluding fetal deaths), 4) Total facility inpatient days, 5) Full time equivalent personnel, 6) Total surgical operations, 7) Total outpatient visits, and 8) Adjusted patient days (American Hospital Association, 2008). These

variables account for both variations in the scale and scope of operations typically used to group hospitals for research comparisons and regulatory purposes.

Descriptive statistics of the PSM variables in this study were calculated and are summarized in Table 1(Appendix D). In addition to these variables, a measurement of the hospital's cost efficiency in FY2003 (see SFE discussion below) was calculated and included in the PSM to ensure the hospitals had comparable input-to-output conversion capabilities prior to the executive succession event. In doing so, organizations were matched not only on their structural similarities, but also on their dynamic capability comparability prior to the executive succession event (Grimes, Ren, & Stevens, 2011). Therefore, the average effect of treatment on the treated (ATT) approach to PSM was employed (Becker & Ichino, 2002).

The PSM algorithm uses the matching *with* replacement option meaning that control group organizations could be matched to more than one organization in the CEO succession group. In order to increase statistical precision in subsequent steps, a three-to-one (3-to-1) matching was employed. Because matching was done *with* replacement, the actual control group size was not exactly three times that of the treatment group. Rather, each treatment organization had three (3) control unit organizations which closely approximated their condition prior to CEO succession with some controls being matched to more than one treatment organization. Lastly, the nearest neighbor method was used to match organizations who experienced a CEO succession to those in the control group. Based on this sampling of organizations from the general population of hospitals, the

comparison of their relative competitive performance levels before and after the CEO succession event were estimated.

Specific Aim #2

Examine the effectiveness of using cost efficiency production functions and SFE techniques to estimate inefficiency in U.S. hospitals.

Q2: Can hospital inefficiency in this study sample be effectively estimated using cost efficiency and stochastic frontier functions as in Rosko and Mutter (2008)?

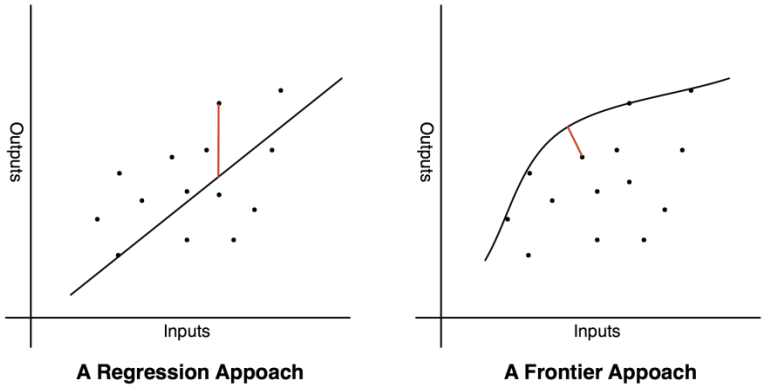
This specific aim estimated inefficiency of U.S. hospitals using stochastic frontier techniques and cost production function models. This aim also demonstrated the robustness of efficiency estimates using these techniques with respect to the sample population.

Stochastic frontier estimation.

For the purposes of this study, it was necessary to measure an organization's capabilities for input-to-output transformation and to relate that measure to competitive market positioning. SFE using stochastic frontier techniques addressed both the multiple input-to-output transformation measurement issue and the comparative performance challenge described earlier. Appendix C provides the technical description of the SFE model used in this research. Figure 1 illustrates the basic difference between regression and frontier estimation approaches. In both illustrations, the data points are identical and inputs are used to create outputs. The regression identifies the function that *represents the average (mean) efficiency* relationship between inputs and outputs such that the net

deviations (illustrated in red) of the observations form the line of best fit (the regression line) and the *slope* represents the average efficiency among variables.

Figure 1. Linear Regression and SFE Approaches to Measuring Performance



Frontier estimation measures organizations' relative capabilities with respect to transformational efficiency. The result of frontier estimation is an *index* for each organization which describes the transformational efficiency of inputs to outputs that varies from zero to 1, with 1 *representing the frontier of maximum efficiency*. The average of this *index* across all organizations is then an overarching measure of relative transformational efficiency. Frontier estimation's approach to comparing organizations' performances is more closely aligned to RBV than linear regression because it begins by identifying organizations with a competitive advantage. Frontier estimation measures organizations' relative capabilities with respect to transformational efficiency and inquires how organizations achieve the best output with the minimal demand on inputs.

Frontier estimation gets its name because it seeks to identify the 'frontier,' 'leading edge,' or 'edge of the envelope' on which the most productive and efficient organizations balance inputs and outputs. This frontier reflects the most efficient

transformation of inputs to output as experienced by the organizations analyzed. In frontier estimation, the residuals are the distance of each observation from the frontier and represents slack, or the degree to which an organization falls short of maximum efficiency. It also shows the opportunity that an organization has to either increase outputs with the same level of resource inputs, or produce the same outputs while decreasing inputs. Put another way, regression analysis identifies the line that *best represents* the relationship among variables; whereas frontier estimation identifies the line that *represents the best* relationship among variables. The SFE views the market from competitively advantaged organizations' perspectives based on their dynamic capability to transform resources. It then measures everyone else's capabilities, and how far they must progress to reach the competitive advantage frontier.

The use of stochastic frontier techniques to assess hospitals' performances has been an active area in the healthcare literature since the mid-1990's (Rosko, Chilingerian, Zinn, & Aaronson, 1995) and multiple literature reviews synthesizing those studies' findings have been published (Hollingsworth, 2003; Hussey et al., 2009; McGlynn, 2008; Rosko & Mutter, 2008; Rosko & Mutter, 2011). As most of the research has arisen from the economics' perspective, it has tended to study the relationship between hospital inefficiencies and policy/environmental influences (Furukawa, Raghu, & Shao, 2010). Using frontier estimation to measure hospital inefficiency has raised some concerns because of the assumptions necessary to conduct an appropriate analysis (Rosko & Mutter, 2008). These assumptions are based on a more

simplistic cost-production structure which may ignore the more complex and costly healthcare delivery in U.S. hospitals today.

However, in the studies they reviewed, Rosko and Mutter (2008) found stochastic frontier techniques to be fairly robust when measuring U.S. hospitals' cost inefficiency with many model variations having correlation coefficients greater than 0.95. Jacobs et al. (2006) also notes that as specificity has increased with SFE models and new explanatory variables have been introduced, previously unexplained inefficiency attributed to random error is now being captured and dissected with stochastic techniques. This study follows previous hospital applications of SFE in the literature and focuses on cost inefficiencies. Similarly, hospital-level cost efficiency functions were estimated using the standard approach and variables detailed in Rosko and Mutter (2008) and described below to establish an inefficiency frontier.

Cost efficiency functions.

This study employed the trans-log cost function used most frequently in previous hospital cost inefficiency studies for the flexibility and other dimensions provided. The Cobb-Douglas eliminates squared and cross-product terms of the trans-log function to save degrees of freedom but sacrifices flexibility (Rosko & Mutter, 2008). In their work with panel data of tea industries, Baten et al. (2009) rejected Cobb-Douglas in favor of the trans-log to estimate cost efficiency. Further review of the literature and empirical analyses by Rosko and Mutter (2011) suggests that neither inefficiency ranking nor the estimates of mean or relative inefficiency are significantly impacted by the cost function utilized.

Theory as well as previous studies utilizing similar cost functions, applied to comparable national databases provided guidance in this study to determine variables for the trans-log cost function. Specification of input, output and other descriptor variables used in a cost function model can be a formidable task for researchers given the multiproduct nature of hospitals. Rosko and Mutter (2008) did find consistency definitions and common variable use among 11 national hospital studies with the AHA Annual Survey as their data source. Cost function variables used in previous studies have been similar and typically consisted of labor and capital costs as the input price variables and outpatient procedures, cases treated or inpatient days as the output of production (Rosko & Mutter, 2008). Definitions and descriptive statistics for the hospital cost function variables and the correlates of efficiency variables are provided in Tables 2 and 3 (Appendix D). These variables are described in more detail below.

This study used input price variables of capital and labor in the cost function in a similar manner to those hospital cost-inefficiency studies described by Rosko and Mutter (2008). Depreciation and interest expense (DEPEXP) divided by the total number of hospital beds (BDTOT) represented the *price of capital (PK)* as is the case in all but one of the national studies reviewed. Also in following with past practices, the *price of labor (PL)* was calculated by dividing the sum of employee benefits and other payroll expenses (PAYTOT) by the total number of full-time equivalents (FTE).

Output variables used in cost function models of previous hospital inefficiency studies have been less consistent, again representing the multiproduct nature of hospitals. However, some version of patients treated (admissions, cases, procedures,

discharges, etc.) had been used in the studies Rosko and Mutter (2008) reviewed. Due to the ease of conceptualization and its availability in the existing data set, this study used inpatient adjusted admissions (ADJADM) as the output variable for the cost function model. As recommended by Rosko and Mutter (2008), this study used outpatient visits (VTOT) as an additional measure of output, recognizing the need to include both inpatient and outpatient productivity as has been done with other previous hospital inefficiency studies.

In addition to the input and output variables described above, product descriptor variables were also included in cost efficiency functions of this study. Each hospital inefficiency study reviewed by Rosko and Mutter (2008) included some form of product descriptor variable(s) to represent the case mix and services provided by sample hospitals. Consistent with these studies, two new product descriptor variables representing hospital case-mix were created including: OPDSURG, representing the ratio of outpatient surgeries (SUROPOP) to total outpatient visits (VTOT) and a binary variable, HITECH6, representing technology intensive facilities as determined by the availability of at least six out of the eight high-technology services (NICHOS, ICLABHOS, ADTCHOS, TRAUMHOS, ESWLHOS, MRIHOS, PTONHOS, ATRANHOS) as described in Rosko and Mutter (2008).

Consistent with previous works in the literature, quality in this study was represented by the sample hospital's teaching status. Teaching status of hospitals was the most common structural measure of quality and resource availability in previous SFE studies according to Rosko and Mutter (2008) and they cite general consensus that

patient care quality in teaching facilities tends to be higher than in that of non-teaching hospitals. Two new binary variables were created to striate major and minor teaching hospitals. COTH represented a member of the Council of Teaching Hospitals (MAPP8), or major teaching hospital and MNTEACH represented minor teaching hospitals which are non-COTH members but have at least one FTE of medical resident (FTER). Rosko and Mutter (2008) recommended the inclusion of quality and case-mix descriptors in the hospital cost function. Their review of previous hospital inefficiency studies revealed inefficiency estimates were significantly impacted when these variables were omitted while their inclusion had minimal affect. Rosko and Mutter (2008) support capturing the multidimensional nature of hospital services and quality over a simplified cost production function that assumes uniformity among organizations.

Specific Aim #3

Describe the differences in efficiency estimates based on change in CEO leadership and CEO succession origin in U.S. hospitals.

> Q3: Using the above techniques of simulated random sampling and cost efficiency frontier estimates, does a change in CEO leadership and then CEO succession origin create a measurable efficiency difference among the sampled hospitals?

This specific aim used panel data derived from the cost efficiency estimates and SFE procedures described to assess for any measurable difference in hospital efficiency after change in CEO leadership and then based on selected CEO succession origin. Previous hospital studies have used cross-sectional designs to examine hospital

efficiency in terms of organizational or environmental factors such as health system membership, ownership or tax status, and inpatient bed size. Following the trend of more recent studies which have emphasized panel designs (Rosko & Mutter, 2008), this study also used this panel approach for the potential advantages provided over cross-sectional approaches alone.

First, panel designs can increase degrees of freedom without the need to increase sample size. This was beneficial to this study which was limited to a relatively small sample of hospitals which experienced a CEO leadership change in the year being analyzed. Additionally, panel approaches capture time-invariant effects of all phenomena under study which might otherwise go unmeasured in relatively short or intermediate time-series designs (Rosko & Mutter, 2008). Panel designs can also avert some of the strong distributional assumptions required when using cross-sectional designs.

Panel analysis.

With repeated observations of enough cross-sections, panel analysis permits the researcher to study the dynamics of change within relatively short time series. The combination of time series with cross-sections can enhance the quality and quantity of data in ways which would be impossible using only one of these two dimensions (Gujarati, 2003). A longitudinal regression model for hospital competitive performance was developed to examine the effect of CEO succession on organizations' dynamic processes. The effects of changes in organizational leadership, with the successor being drawn from either inside or outside of the organization, were compared to organizations who had no change in CEO. SFE methods described were used to calculate the change

in organizations' year-to-year efficiency compared to the market. This change in efficiency was used as the dependent variable in this regression analysis.

The Hausman test was used to indicate the appropriate regression model to create. The null hypothesis of the Hausman test is that the fixed and random effects models provide similar coefficients. The alternative hypothesis is that the fixed effects estimation is appropriate and the random effects estimation is not and in this case, differences between the two models coefficients would be expected. The fixed-effects model controls for all time-invariant differences between the subjects, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. Substantively, fixed-effects models are designed to study the causes of changes within an organization. A time-invariant characteristic cannot cause such a change, because it is constant for each person.

Using the cost efficiency estimates derived from the SFE procedure above as the dependent variable (DV), a five-year panel analysis of hospitals was performed. The CEO succession events studied all took place in the third year of the analysis. Therefore, *Insiders* and *Outsiders* were dummy coded with years 2003 and 2004 being equal to zero (0) and the remaining years equal to one (1). The coefficients of the *Insider* and *Outsider* variables are interpreted as intercept adjustments for their linear estimates. A *Time* variable was included and scaled one through five to assess the general secular trend with respect to organizations' cost effectiveness. The interpretation of the *Time* variable's coefficient is that it is the slope of the control group's linear trend. Interaction terms for *Time* and the two variables of interest were created (*Insider slope* and *Outsider*

slope). As the labels indicate, the interpretation of the interaction terms is that they are rates of change and are used to assess if *Insiders* and/or *Outsiders* as an intervention impact a organizations' *Cost Efficiency* after they take over, which is the question being explored in this specific aim. The results of the empirical analysis follow in the next chapter.

Limitations

There are limitations when performing secondary analysis of existing data as is the case with this study. The main disadvantage of using secondary data analysis is that the researcher has limited, if any, control over the sampling and quality of data collected. Existing data also has the potential to be inaccurate, incomplete or not suited to answer the research question (Hulley et al., 2007). This study was a secondary analysis of existing data collected by the AHA Annual Survey and was limited to that study's original sample of respondents. With this in mind, AHA member organizations may be significantly different from non-member organizations. Responses received from participants in the original dataset were believed to be representative of the sample and accurately reflect the data available within their organization at the time collected. Respondents were also believed to have completed the survey tools accurately with truthful disclosure to the best of their ability.

A quasi-experimental study design tested the feasibility of using PSM techniques to simulate a randomized sampling from the existing dataset. Known limitations do exist when using these PSM techniques with existing data. PSM does not allow for matching of unmeasured contextual variables and assumes that all relevant covariates

have been measured (Dehejia & Wahba, 2002). Biases may remain hidden that affect treatment estimates if this is not the case. PSM also requires substantial overlap of the propensity scores between groups of matched variables to prevent a regressive effect toward the mean (Dehejia & Wahba, 2002). Matching with replacement in this study design helps to correct for this effect. Finally, the value of comparison or control groups may deteriorate over time and this bias effect is substantially more significant in the medium- to long-terms (>3-5 years). The use of panel data measuring the intervention effect after two years of comparison data helped to limit this impact to the current study.

Several other limitations to this quasi-experimental study design are also acknowledged. The cross-sectional nature of the chosen dataset isolates organizational data to one point in time. An approach of this nature has the tendency to misrepresent the dynamic concept of CEO succession and the many influencing factors. Use of panel analysis over a five-year period of time, as with this study, helped to provide a more robust representation of the phenomena occurring. In addition, participants from different regions of the country may vary considerably although the use of PSM and the nearest-neighbor approach helps to mediate this effect. This secondary analysis and the dataset chosen may limit external validity and generalizability but the sampling technique chosen minimizes these limitations within the sample more so than other techniques would have.

Summary

A quasi-experimental study using panel analysis to combine cross-sectional and time series designs was conducted to describe competitive position deviations in U.S.

hospitals due to changes in CEO leadership and CEO succession strategy utilized relative to organizations with no leadership change. The AHA Annual Survey was used as the data source in this secondary analysis. Propensity Score Matching was utilized to simulate random sampling two years prior to the year the succession event occurred. A longitudinal SFE of organizational performance levels over a five-year time frame was executed to determine competitive positioning relative to an efficiency frontier. This study followed previous hospital applications of SFE in the literature and hospital-level cost efficiency functions were estimated using the standard approach and variables detailed in Rosko and Mutter (2008). The effects of changes in organizational leadership, with the successor being drawn from either inside or outside of the organization, were compared to organizations who had no change in CEO. The empirical analysis of executive succession in U.S. hospitals using this design follows in the next chapter.

The application of PSM and SFE in a sampling design and analytic framework to explore the impact of executive succession on organizational performance satisfies many shortcomings identified thus far in the literature. PSM provides for greater causal support and strengthens inferences that can be made relative to the impact executive succession has on organizational performance. SFE aligns competitive advantage measurement with that of other organizations in the marketplace. A theoretical model that allows for causal inferences about the succession–performance phenomena in terms leaders and strategists can understand was needed. Rigorous work was not available that quantitatively studies organizational inefficiency levels using PSM and SFE with the

purpose of strengthening causal inferences of the executive succession–organizational performance relationship and that makes methodological recommendations for improvement. Therefore, this study was necessary to fill these gaps in knowledge.

CHAPTER IV

RESULTS

Introduction

The intent of the results reported here are to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational performance relationship that addresses limitations common in the literature to date. An improved research study design which addresses each limitation was used to analyze the executive succession–organizational performance phenomena. This chapter follows the specific aims and research questions outlined in the introductory chapter. First, PSM was successfully used to simulate a random sample of U.S. hospitals into control and intervention groups based on executive leadership change. Next, hospital inefficiency in the simulated, randomized sample was estimated using cost efficiency and stochastic frontier techniques. Finally, the improved research design using the techniques of random sampling and cost efficiency frontier estimates resulted in a quasi-experimental panel study of insider versus outsider executive successions and their impact on organizations' competitive performances relative to organizations with no leadership change.

Study Demographics

Although there were more than 6,000 organizations reporting data each year for the AHA Annual Survey during the five year study period, incomplete data and other

exclusion criteria reduced the main sample to 3,941 per year. Of these, 734 hospitals (18.6%) had a leadership change at the level of CEO from the 2004 to 2005 survey years. Although slightly higher than the national average of 16 percent reported by ACHE (2012) in 2010 and 2011, this is consistent with historical patterns reported previously. This succession event was the intervention studied and these organizations became the intervention group with which a control group was matched using PSM to simulate an RCT.

To indicate whether an inside or outside succession had occurred, the 2003 and 2004 AHA Annual Survey data as well as professional membership directories from ACHE and AONE were used to match background demographics of the newly selected CEOs in the 734 organizations experiencing a CEO leadership change. Among the 734 hospitals which had a CEO succession event occur, 622 (84.7%) drew executive leadership from outside the organization while 112 (15.3%) drew from within. Outsiders were chosen almost six to one in the sampled hospitals to succeed as the CEO between the 2004 and 2005 survey periods.

Results for Specific Aims

Results for each specific aim and research question are outlined below.

Specific Aim #1

Examine the effectiveness of using Propensity Score Matching to simulate random sampling in an efficiency study of U.S. hospitals.

Q1: Can Propensity Score Matching be effectively used in this study to simulate random sampling of hospitals into control and intervention groups?

The purpose of the first specific aim was to assure the appropriate sampling frame for the study and to produce an experimental control group to compare with a known intervention group, simulating random selection from a common population. PSM was successfully employed, as described in the previous chapter, to identify this experimental control group and simulate a random sampling design. The results of the PSM follow in the next section.

As discussed in the previous chapter, PSM allows intervention group outcomes to be compared to those of a control group constructed through matching of pre-intervention propensity scores. To identify a control group, this study examined 2003 survey data for hospitals most closely resembling the pre-succession characteristics of CEO succession hospitals in 2005. Looking backward in time for these characteristics to identify a control group, allowed for a close approximation of an RCT which would have assigned organizations to an intervention or control group prior to any intervention. This matching using pre-intervention characteristics allowed the executive succession impact on organizational performance to be isolated and assessed more accurately thus improving the causal inferences that could have been made using other methods.

The PSM approach (Appendix B) utilized in this study applied eight covariates to create balancing propensity scores which were then used to simulate a random assignment. The means and standard deviations of the AHA estimation procedure

variables used in the PSM for both the population and the sample organizations along with their collective correlations are presented in Table 1 (Appendix D). An additional variable was added (efficiency measure) to compare hospitals' input-to-output conversion capabilities prior to the executive succession event and included in the PSM.

The effectiveness of the PSM process and the covariates utilized was tested using a 'balancing hypothesis' assessment. The PSM's covariance balancing results are reported in Table 4 (Appendix D). The first criterion of the balancing hypothesis is met because none of the individual covariates is a significant discriminator among organizations. The second criterion is also met because the Pseudo-R squared after matching is close to zero and insignificant. That is, the covariates have no explanatory power for predicting CEO succession between the matched samples (Pseudo R^2 = 0.0021; $p > 0.673$). Therefore, through this matching the CEO succession event would appear to have been assigned randomly and an unbiased estimate of the post-event impact on organizational performance can be made.

Using 3-to-1 nearest neighbor matching, the PSM process simulated a random sample of 1,640 hospitals for the next two specific aims. Because matching was performed with replacement, the control group created is not exactly three times the intervention group. In this study, each CEO succession organization had three control organizations that approximated conditions prior to the succession event with some controls being matched to more than one intervention organization.

Specific Aim #2

Examine the effectiveness of using cost efficiency production functions and SFE techniques to estimate inefficiency in U.S. hospitals.

Q2: Can hospital inefficiency in this study sample be effectively estimated using cost efficiency and stochastic frontier functions as in Rosko and Mutter (2008)?

The purpose of this specific aim was to estimate inefficiency of U.S. hospitals using stochastic frontier techniques and cost production function models and to demonstrate the robustness of efficiency estimates using these techniques with respect to the sample population.

Stochastic frontier techniques and cost production function models were successfully used in this sample population of U.S. hospitals to measure their capabilities for input-to-output transformation and competitive market positioning. A longitudinal SFE of relative performance levels over a five-year time frame was executed to bracket the executive succession intervention with two years before and after the event occurred. Appendix C provides the full technical description of the SFE model used in this research. The frontier created in this study reflects the most cost-efficient transformation of inputs to output in the sampled organizations. Radial distances from each observation to the frontier were calculated to represent an organization's inefficiency in transforming resources and the progression needed to reach the competitive advantage frontier. The results of the frontier estimation procedure provided an index of transformational efficiency for each organization to determine their ability to maximize the conversion of inputs into outputs.

Three hypothesis tests were discussed in the previous chapter to determine a suitable SFE model to be used in this analysis and these results are summarized in Table 7 (Appendix D). The first was to test the cost-efficiency functions of the Cobb-Douglas versus the trans-log. Likelihood ratio tests rejected the Cobb-Douglas over the trans-log function for this SFE. Next, the utility of using SFE over OLS regression was tested where the test statistic revealed the need to reject the null hypothesis and that SFE is superior to OLS in this analysis. Finally, the probability distribution of the efficiency component of the SFE is tested. In this case, the truncated model fails to converge and therefore the null hypothesis of normality for the underlying distribution is rejected.

Definitions and descriptive statistics for the hospital cost function variables and the correlates of efficiency variables are provided in Tables 2 and 3 (Appendix D). The input price variables of capital and labor were used in the cost functions of this study in a similar manner to those described by Rosko and Mutter (2008). Depreciation and interest expense (DEPEXP) divided by the total number of hospital beds (BDTOT) represented the *price of capital* for the sampled organizations while the sum of employee benefits and other payroll expenses (PAYTOT) divided by the total number of full-time equivalents (FTE) represented the *price of labor*. Inpatient adjusted admissions (ADJADM) was used as the output variable for the cost function model due to its ease of conceptualization and its availability in the existing data set. Outpatient visits (VTOT) were also used as an additional measure of output, recognizing the need to include both inpatient and outpatient productivity as has been done with other previous hospital inefficiency studies.

Table 5 (Appendix D) details the means, standard deviations and correlations of the variables used in this longitudinal SFE of U.S. hospitals and Table 6 (Appendix D) follows with the resulting model statistics and coefficients. SFE decomposes residuals from the regression model into two parts to extend the analysis. These two parts helped to decipher within the sampled population what is random statistical error and what is non-random inefficiency. The relationship between organizational inefficiency and the variable of interest is represented by the coefficients. In other words, coefficients convey a distance from the frontier and a positive coefficient indicates an increased relative inefficiency. For example, the Natural log of normalized price of capital (β = 0.211) can be interpreted as: a hospital's distance to the competitive advantage frontier increases as its capital expenditures increase meaning increased inefficiency is associated with higher capital spending. The trans-log functions used to estimate cost efficiency in the SFE perform consistent with the notion of economies of scale and a resource-based view of production. The positive Natural log of patient days and the negative Natural log of adjusted admissions illustrate this point well. Utilizing less days than peers to provide equivalent care would be considered more efficient.

Specific Aim #3

Describe the differences in efficiency estimates based on change in CEO leadership and CEO succession origin in U.S. hospitals.

Q3: Using the techniques of simulated random sampling and cost efficiency frontier estimates, does a change in CEO leadership and then CEO

succession origin create a measurable efficiency difference among the sampled hospitals?

The purpose of this specific aim was to use panel data derived from the cost efficiency estimates and SFE procedure to assess measurable differences in hospital efficiency based on change in CEO leadership or CEO succession origin. Following the trend of recent studies which emphasized panel designs (Rosko & Mutter, 2008); this study used a panel approach for the advantages it provided. This was beneficial in this study which is limited to a relatively small sample of hospitals who had experienced a CEO leadership change in the year analyzed. Panel approaches also captured time-invariant effects under study that might have otherwise gone unmeasured. Using panel designs in this study also averted the strong distributional assumptions that would have been required if cross-sectional designs had been used. Based on this sampling of organizations from the general population of U.S. hospitals, the comparison of their relative competitive performance levels before and after the CEO succession event was estimated.

Using the cost efficiency estimates derived from the SFE procedure above as the dependent variable (DV), a five-year panel analysis of hospitals was performed. The CEO succession events studied all took place in the third year of the analysis. Therefore, the *Insiders* and *Outsiders* were dummy coded with years 2003 and 2004 being equal to zero (0) and the remaining years equal to one (1). The coefficients of the *Insider* and *Outsider* variables are interpreted as intercept adjustments for their linear estimates. A *Time* variable was included and scaled one through five to assess the general secular

trend with respect to organizations' cost effectiveness. The *Time* variable's coefficient is the slope of the control group's linear trend and represents efficiency improvements over time. Interaction terms for *Time* and the two variables of interest were created (*Insider slope* and *Outsider slope*). These interaction terms were interpreted as the rates of change and were used to assess if *Insiders* and/or *Outsiders* impacted an organizations' *Cost Efficiency* after taking over, which is the question being explored in this specific aim. The results of the empirical analysis follow.

Longitudinal regression was used to examine the effect of CEO succession on organizations' dynamic processes. The effects of changes in organizational leadership, with the successor being drawn from either inside or outside of the organization, were compared to organizations who had no change in CEO. A longitudinal regression model for hospital competitive performance was developed. The SFE methods described above were used to calculate the change in organizations' year-to-year efficiency compared to the market. This change in efficiency was used as the dependent variable in this regression analysis.

The Hausman test was used to indicate the appropriate regression model to create. The null hypothesis of the Hausman test is that the fixed and random effects models provide similar coefficients. The alternative hypothesis is that the fixed effects estimation is appropriate and the random effects estimation is not and in this case, differences between the two models coefficients would be expected. Test results failed to reject the null hypothesis at the 5 percent level ($p = 0.0834$) indicating that either the fixed or random effects model were appropriate. In fact, both models returned similar

results for this study as indicated by the coefficients displayed in Table 8 (Appendix D). The fixed- effects model was chosen due to its ability to control for all time-invariant differences between the subjects. In other words, the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. This makes fixed-effects models better suited to study the causes of change within an organization.

Initially, the panel analysis was used to measure global performance and efficiency changes over time of all sampled hospitals. Using the *Time* variable alone, an assessment of the general trend in competitive performance among hospitals within this sample was made. Hospitals in this sample demonstrated a significant positive trend indicating that collectively, they were moving the competitive advantage frontier outward, pushing the dynamic capabilities envelope. In other words, the gap to the efficiency frontier is closing for most hospitals.

Next, using only the 734 hospitals experiencing executive change (the intervention), more specific performance assessments relative to the frontier are made. Looking back with PSM, hospitals that changed CEOs had decreased efficiencies in 2003 compared to those with no change. In the year prior to the intervention year studied, hospitals that experienced executive succession had decreased efficiencies as their baseline compared to that of the control group (-0.361; p=0.018). Furthermore, change in CEO within sampled organizations also negatively affected organizational performance. All sampled hospitals with either inside or outside succession experienced a statistically significant (p=0.05) negative jolt to their efficiency in FY2005.

The coefficients for both *Insiders* and *Outsiders* also demonstrate this phenomenon at a statistically significant level. They are both positive and significant indicating that both origins of CEO succession *increased* the hospitals' distance from the competitive advantage frontier compared to the control group where no succession occurred. The results clearly demonstrate a negative jolt to performance where organizations were less competitive post leadership change (Table 9, Appendix D). In other words, the change event itself caused hospitals to move away from the frontier and have an inefficiency increase relative to those with no change.

Table 10 (Appendix D) summarizes the efficiency estimates over time for those hospitals experiencing executive leadership change. These results suggest that CEO succession may take longer than one year to effect strategic changes. Although in the year immediately following the succession event performance declined as above, by the year 2007, all organizations experiencing executive leadership change were performing better and demonstrated less inefficiency than in the periods before the change. In other words, in 2007 their performance was closer to the frontier than it had been in the year the change occurred or in 2003 when baseline measurements were made. The overall indication is that change in leadership ultimately improved performance in the hospitals sampled despite any negative or disruptive effects of the initial change. The intercept of *Time* with *Change* also validates this by indicating the general trend of efficiency in sampled hospitals experiencing executive change is improving and that most hospitals are closing the gap on the frontier (Table 11, Appendix D).

When executive change occurred, outsiders were chosen almost six to one in the sampled hospitals to succeed as the CEO between the 2004 and 2005 survey periods. In the years following the succession event, competitive advantage was assessed using the outsider and insider slope coefficients. The negative coefficient indicates that organizations were closing the efficiency gap in the years following executive change. The interaction of *Outsiders* and *Time* in the form of an *outsiders slope* was significant ($p = 0.009$) and negative. The insignificant results ($p = 0.152$) for the *Insider* and *Time* interaction, *insider slope* indicate that these organizations had a rate of change in their dynamic capabilities that did not differ from the control group over the period studied. In other words, hospitals that experienced an outsider CEO succession event were able to close the gap to the competitive advantage frontier faster than comparable firms in either the control group or hospitals that used an insider. Organizations that had a lower competitive performance level to start the study period responded more to an outsider CEO succession event.

CHAPTER V

DISCUSSION

This study makes four contributions to the management and healthcare literatures. First, it combines two statistical techniques that are relatively new to the fields – PSM and SFE. Coupled together, the ability to make stronger causal inferences using PSM and to demonstrate changes in organizations' relative competitive advantages by using SFE overcomes two major limitations identified in the literature. In addition, the PSM and SFE methodologies are used extensively in sociology (An, 2006) and economics (Del Gatto et al., 2011) literatures, respectively; thus this study strengthens the ties of management and healthcare to those domains. In particular, the trans-log specification of the SFE, using the costs of capital and labor as inputs to produce services, hews closely to economics' perspective for assessing relative competitive advantages among organizations, furthering the hospital SFE works of Rosko and Mutter (2008; 2011). Third, findings from this study add to the comprehension of the executive succession – competitive advantage phenomenon laying the foundation for future research. Finally, the paper updates Karaevli's (2007) literature review of the executive succession–organization performance research literature.

Summary of the Study

The purpose of this study was to describe and demonstrate an improved sampling design and analytic strategy for exploring the executive succession–organizational

performance relationship that addresses limitations common in the literature to date. An improved research study design was employed with a sampling of U.S. hospitals to analyze the CEO succession–organizational performance phenomena. The study culminated in a quasi-experimental panel study of insider versus outsider executive successions and their impact on organizations' competitive performances relative to organizations with no leadership change. The concept of transformational leadership was successfully used as a framework to guide this study and emphasized the influence executive leadership has on organizational performance.

Overview of the Problem

Despite its importance as a research topic, the executive succession–organizational performance relationship continues to frustrate leading scholars because of the varied and conflicting findings (Finkelstein et al., 2009; Karaevli, 2007; Kesner & Sebora, 1994). Moreover, the lack of robust, longitudinal study designs which link executive succession to organizational performance in a causal manner has hampered researchers' ability to inform practice with evidence-based models that are linked to theory (Giambatista et al., 2005; Pitcher et al., 2000; Powell, 2002).

Major Findings

This research provides an empirical examination of CEO selection, specifically the dichotomy of CEO succession origin, and its implications for organizational performance. Adding to the existing science of the executive succession–organizational performance relationship, this study provides new insights into how this relationship specifically impacts U.S. hospitals over time. Methodological enhancements were also

realized, providing an improved empirical model for future research. PSM was successfully used to simulate RCT and assign organizations to intervention and control groups based on matching pre-succession characteristics. Frontier estimation techniques provided a powerful direct measurement tool for relative inefficiency in U.S. hospitals. Evidence from this study further substantiates the use of PSM and SFE in future healthcare research scenarios. This study also supports current theoretical knowledge by validating an existing conceptual model for use in future leadership succession studies. Transformational leadership provided a succinct conceptual roadmap in this study for the influence leaders can have on individual followers and thus organizational performance.

Generalized to the greater population, the overall results of this research indicate healthcare organizations are improving efficiency and pushing the market performance frontier. Hospitals in this sample demonstrated a significant positive trend indicating that collectively, they are moving the competitive advantage frontier up and outward. Thus it may be inferred that they are pushing the dynamic capabilities envelope. The trans-log cost efficiency functions of the SFE perform as expected, highlighted the importance of economies of scale and resource-based care delivery necessary to remain competitive in today's current healthcare environment.

The pre- and post-succession measurement using a panel design was also a significant strength of this study. Empirical evidence is provided to support results found in the literature indicating prior poor performance is associated with leadership change in hospitals. In the year prior to the intervention year studied, hospitals that experienced executive succession had decreased efficiencies compared to that of the control group,

indicating that poor performance led to leadership change in the sampled hospitals. Further supporting the literature, organizations that chose an outsider had significantly lower pre-succession performance than those choosing an insider.

Studying executive succession and organizational performance relationship constructs' in cause and effect terms is challenging because over time one can cause the other and vice versa. In general, executive leadership changes led to increased competitive capabilities in this study over the years studied. Results suggest CEO succession may take longer than one year to affect strategic changes. Although in the year immediately following the succession event performance declined, by the year 2007, all organizations experiencing executive leadership change were performing better and demonstrated less inefficiency than in the periods before the change. In other words, in 2007 performance was closer to the frontier than it had been in the year the change occurred or in 2003 when baseline measurements were made. The overall indication is that change in leadership ultimately improves performance in hospitals.

Empirical findings from this study are consistent with the literature in that leadership change is disruptive to organizations. Both inside and outside succession led to a negative jolt or shock to efficiency in sampled hospitals. The results of the SFE clearly demonstrated that change in the CEO negatively affected organizational performance in the year following the change. All sampled hospitals with inside or outside succession moved away from the frontier and experienced an increase in inefficiency relative to hospitals with no change. However, placing unsuccessful organizations under new management can make a positive difference to long-term

performance which may outweigh any short-term disruption to structures and processes. The negative impacts of executive leadership change empirically demonstrated may, at times, be clearly indicated. Although outside the scope of this study, Boyne et al. (2007b) suggest that the disruptive effects to *high* performing organizations is more pronounced and can ultimately be detrimental to overall performance. Recommendations for future research address this as a potential need.

When executive change occurred, outsiders were chosen by sampled hospitals almost six to one to succeed as CEO during the 2004 and 2005 survey periods. Post-succession, both insiders and outsiders trended toward the frontier closing the efficiency gap however, only outsiders did so at a statistically significant level. Hospitals choosing an outsider to succeed as CEO closed the gap to the competitive advantage frontier faster than comparable hospitals without executive change or those who chose an insider. Outsiders were able to improve this performance gap at a significant rate while insiders performed no better than the control group. Additionally, organizations that had a lower competitive performance level to start the study period responded more to an outsider CEO succession event. Outside CEOs bring a fresh, new perspective and come equipped with a new set of tools for the organizational performance tool box. They often bring new concepts and ideas for strategy and problem solving to the organization. An outside perspective may also allow them to reach more broadly towards strategic solutions for change among industry leaders and maintain a competitive advantage. However, this same perspective according to the literature contributes to more disruptive successions occurring when an outsider is chosen.

Insiders in this sample made a greater departure from the frontier than did outsiders in the succession year studied. This possibly indicates better measurements of the construct occurring. It could also indicate that blame for previous poor performance rests on the incumbent and other pre-succession circumstances where a greater, more immediate departure from the status quo was perceived necessary by the insider or the Board of Directors. Insiders in this sample of hospitals may have felt as if they knew what needed to be done early on and got to work quickly whereas outsiders may have tended to hold back and attempt to learn the organization; giving themselves more time and thwarting any reputation as 'hatchet' man or woman. A small sample size (n=112 [15.3%]) may have impacted these results but speaks to something significant occurring in healthcare succession.

This study confirms the reported above average rate of healthcare CEO succession compared to other industries with an 18.6 percent turnover rate in sampled organizations during the succession year studied. Results from the panel data demonstrate that current CEO succession practices continue to fail many healthcare organizations, further supporting a renewed focus on succession planning practice and research in healthcare. The growth in executive succession–organizational performance relationship research is encouraging. The need for a renewed focus on the essential nature of leadership succession planning across the entire healthcare industry remains. The crucial strategic nature of CEO selection and the magnitude of this individual's influence on future organizational performance are widely recognized in the business sector (Zhang & Rajagopalan, 2010a).

A key role of healthcare leaders is to define the strategic goals and priority outcomes for their organizations and align the efforts of all stakeholders with these goals and outcomes. The conceptual use of transformational leadership in this study improves comprehension of the influences strategic decisions made by leaders ultimately have on followers to achieve organizational performance goals. Transformational leaders communicate a clear vision and strategic direction for the organization which becomes the basis of future behavior modeling and goal setting and that emphasizes collective, rather than individual interests. Followers have a common understanding of the importance of specific visions and strategies, creating a highly cohesive unit with a high degree of goal congruence. This empirical research and conceptual model empowers healthcare leaders to more fully understand how the executive succession–organizational performance relationship might be used to maximize quality of care and patient experience in U.S. hospitals.

Conclusions

Researchers continue to be challenged by inadequate research designs when exploring organizational phenomena such as executive succession and competitive performance in the marketplace. Executive succession–organizational performance studies that use convenience sampling strategies and measure competitive performance using proxies make causal inferences difficult to understand for diverse or lay audiences. Such studies are also difficult to replicate as a means of building a case for causality because the competitive landscape shifts over time. Each of these limitations poses a different threat to researchers' abilities to develop and test theories dealing with the cause

and effect relationship between the executive succession–organizational performance constructs.

There are three improvements to executive succession–organizational performance research designs as a result of this study that increased the congruence between theory and empirical findings. First, using PSM to retrospectively simulate a randomized sampling of intervention and control groups better estimated causal relationships which exist between succession and performance since an RCT was not feasible. Second, directly measuring organizations' relative abilities to convert multiple inputs into multiple outputs rather than relying on proxy variables as in previous research, has increased the scientific realism of the competitive performance variables explored. Finally, applying robust analytic techniques to distinguish organizations who are managing resources to create competitive advantages from those who are performing sub-optimally has allowed for inferences to be made about similar organizations in the broader marketplace. Findings from this quasi-experimental panel study using these new techniques in healthcare provide implications for improvement within the industry and are discussed below. Opportunities for future research were also identified and considered as well in further discussion.

Contributions to the Literature

This current study both replicates and extends past research on the executive succession–organizational performance relationship. This study adds to the works of Karaevli (2007; 2011) and others (Finkelstein et al., 2009; Holcomb et al., 2009) by seeking to understand these unique associations in the context of U.S. hospitals. This

study fills several knowledge gaps by examining the impact CEO successions in U.S. hospitals have on organizational performance and the ability to effectively provide care. Prior to this study, empirical knowledge had been limited as to whether inside or outside CEO candidates perform better in these organizations.

Karaevli (2007) provided a review of 52 inside-outsider executive succession studies published from 1954 to 2005 (see Appendix A for an update of this review through 2011). Of those studies, only the two conducted by Samuelson, Galbraith, and McGuire (1985) and Wiersema (1992) employed control groups as part of the research design. From 2005 through 2011, only one study by Arena et al. (2011) attempted to construct control groups to measure competitive performance measures. However, none of these studies attempted to construct samples in which pre-succession organization characteristics were evenly or randomly distributed across intervention and control groups as part of the design.

This research contributes to the larger body of leadership succession knowledge in multiple ways. One key contribution of this study was the discussion and application of propensity score matching methods and stochastic frontier estimation techniques, which are relatively new to the healthcare literature. Without simulating an experimental study design, it is difficult to draw causal inferences from the study group to the general population and maintain external validity. PSM allows researchers to examine the primary effect of interest in non-experimental designs and substitute experimental control units using pre-intervention covariates. This set of comparison units extends an

experimental framework to settings where cause and effect relationships might not have been ethically, financially, and/or logistically feasible.

Being prudent with regards to its limitations, researchers can use PSM to reduce selection bias in quasi-experimental and non-experimental designs. PSM methods are particularly useful in the presence of a high dimensionality of observable characteristics which is the case in the healthcare industry. When there are many variables to consider it can be difficult to determine which to match upon. PSM is a method that can be used in future healthcare studies to assist researchers in simulating an event retrospectively and creating intervention and control groups as if they were randomly assigned.

Direct measurement of organizational performance and competitive advantage has complicated efficiency research in the past and produced inconsistent findings with regard to the succession-performance relationship. According to Kumbhakar and Lovell (2000), in order for an organization to maximize output and achieve or maintain competitive advantage, they must be both allocatively and technically efficient. Realizing that organizations are never fully efficient, researchers and others can use stochastic frontier analysis to isolate and measure efficiency gaps. SFE is also used to explain random events that may lead to an efficiency shortfall not provided with other techniques. Thus, finally answering the question of whether inefficiency occurs at random or whether some organizations are predictably more efficient and can sustain a competitive advantage. Patterns of sustained competitive advantage create model organizations which lie close to the frontier that others can emulate. This estimation technique allows

organizations to target potential increases in output or potential cost reductions that could be achieved in relation to the frontier of maximum efficiency.

Techniques such as these have yet to be used extensively in healthcare research or operations. Analysis using frontier approaches to understand and improve upon healthcare inefficiencies holds great promise in the U.S. Scientists could potentially use the techniques to set performance benchmarks on the basis of inefficiency and to identify and correlate inefficiencies among healthcare organizations. Healthcare organizations might use frontier estimation techniques to reward and promote efficient leaders who are meeting or exceeding organizational performance targets. These techniques have great promise for value based purchasing initiatives by encouraging organizations to operate more efficiently and measuring the degree to which others fail to do so. In order to effectively measure operating efficiency and competitive advantage, healthcare as an industry must move away from average performance and toward a best-practice frontier that better represents true sustainable results. Therefore, frontier estimation techniques for measuring organizational performance and competitive advantage are likely to be an essential tool for healthcare leaders and researchers in the near future.

SFE techniques used in this study helped to provide a conceptual model of inefficiency in healthcare to explain the succession–performance phenomena in terms leaders and strategists can understand. This study quantitatively examined healthcare inefficiency using this model with the purposes of identifying executive succession–organizational performance impacts and making recommendations for improved future measurement. No studies have been published to date with a model which explains

associations between CEO succession origins and organizational performance in U.S. hospitals. Very limited empirical evidence exists in the healthcare literature as to whether inside or outside candidates to succeed the CEO perform better in these organizations.

This study answers the call of previous research demanding that inconsistent findings with regards to CEO succession origin and organizational performance need to be reconciled and current methodologies need to move beyond simple associational research addressing pre- and post-succession factors (Boyne et al., 2011a; Karaevli, 2007; Mahmood et al., 2011; McKee & Driscoll, 2008). This narrow conceptualization has left a gap in our understanding of the executive succession–organizational performance relationship and this study bridges that knowledge gap. Studies such as this examining hospital CEO succession and its organizational impacts can provide valuable decision support for all stakeholders including incumbent CEOs, boards of directors, executive search firms, and academic programs which prepare potential candidates. This research provides specific findings that can be used to assist in structuring programs and informing stakeholders of critical facets of executive succession and changes in organizational performance as a result.

Effective executive succession planning and an understanding of its impacts on organizational performance will provide the tools necessary for organizations to thrive during leadership change, supporting both organizational goals and developmental opportunities for employees (Wolf et al., 2005). Findings from this study support recommendations in the recent literature that previously held notions of succession as simplistic and mundane need to be cast-off and left behind. The lack of a best-practice

succession framework for healthcare that is clearly guided by theory and empirical evidence may contribute to the inconsistent implementation and outcomes that result. This study contributes to concept clarity and validates transformational leadership as a viable conceptual framework for future succession research and planning efforts. Understanding leadership succession best-practices in U.S. hospitals and how leadership succession strategies should be implemented to improve overall organizational performance will add to the current state of the science within the industry.

Implications for Healthcare

A better understanding of these concepts by healthcare executives and other key decision makers will assist in making the appropriate improvements to executive transition processes which maximize leadership influence over the delivery of already scarce healthcare resources. This research provides discernment for healthcare succession strategies which organizations may use to enhance their competitive advantage in the marketplace and guidance for healthcare executives to measure, monitor, and benchmark their impact on organizational performance. Now that the significance of executive leadership succession and successor origin in healthcare can be identified, we are better able to predict and measure the organizational performance gained or lost as a result. We may also better control or manipulate this impact through improved succession planning and processes geared toward performance improvement which in turn will result in a positive impact on patient outcomes.

Up to this point, an integrated framework detailing the succession–performance relationship of healthcare executives has not yet been developed. Therefore, it has

become increasingly important for healthcare leaders and researchers to study these phenomena within the context of healthcare organizations and the inherent characteristics of the industry. This study provides a research launching point forward and a foundation for healthcare organizations to build upon. Understanding CEO succession factors that influence performance in healthcare organizations is vital to the industry and the future of efficient care delivery. The succession–performance relationship could potentially provide a powerful means for healthcare executives to address a whole spectrum of challenges in today's healthcare environment, including cost-containment, market competitiveness, and quality performance alongside ever-increasing supply and labor costs.

Combining this research with a heightened awareness and increased application of proper succession planning techniques can foster long-term solutions for the current deficiencies of leadership talent in healthcare which, as discussed previously, are paramount to future organizational success. The review of literature conducted in conjunction with this research revealed significant growth in the research domains of leadership succession and human resource management. A broader awareness of the need to identify and prepare potential successors across all organizational levels for key roles has led to the emergence of a new construct called *strategic talent management* (Silzer & Dowell, 2010). Considered a key competitive advantage in the marketplace, strategic talent acquisition and management enables organizations to acquire and maintain talent which may have been elusive to them in the past using traditional methods.

Effective talent management programs that include internal development while maintaining an external presence in the marketplace create a continuous pipeline of qualified leadership candidates who can provide the organization with confidence and assurance over the long term. As discussed previously, agreement about the type of leader and skills needed for the future of an organization is also essential to the process, either with internal or external candidates. Development programs will need to be adapted to accommodate the strategic needs of the organization and for the continuity of leadership. Once talent management programs are implemented, evaluation is essential to ensure strategic succession frameworks align with the organizational mission and vision and are included in all aspects of the leadership development process.

Strategies for Succession

Succession literature in both the business and healthcare sectors indicates that formalized succession planning is likely to provide organizations a healthier, more stable operational appearance and better position them to positively and proactively address strategic challenges over the long-term. However, succession planning in private-sector organizations continues to be practiced far more frequently than it is in healthcare (Favaro et al., 2010). Although the pervasiveness of its implementation is less than desired, the perceived importance of succession planning in healthcare is widespread (Garman & Tyler, 2007).

Formal, strategic succession planning for senior leaders can better position healthcare organizations to address changes in leadership and prevent any gaps in

services provided. Senior leadership transitions that occur smoothly promote a sense of continuity and stability for healthcare organizations and the communities they serve.

According to Garman and Tyler (2006), the extent of threats and opportunities created for healthcare organizations by senior leadership transitions are highly dependent on the effectiveness of succession plans in place. Implementation and evaluation of leadership succession strategies remain troubling for most healthcare organizations however. An integrative review of both business and healthcare literature by Carriere et al. (2009) indicated that a best practice, leadership succession framework for healthcare does not exist. Their review did find similarities between the business and healthcare sectors in which both emphasize continuous planning, the clarification of expectations and potential needs, and the identification of future leaders as imperative to the leadership succession process. However, even with these similarities, there remains no actionable model of healthcare leadership succession available based either in theoretical conceptualization or on empirical data.

On average, 16 percent of U.S. hospital executives leave their positions during a typical year having served a term of less than six years (Pizzi, 2010). This revolving door phenomenon can be even more pronounced at some hospitals. Healthcare organizations can ensure their future success by presumptively preparing for executive leadership changes before they happen. According to Bower (2007b), this is a process that can take over a decade or more and presents the greatest challenge some organizations will ever face. Leadership succession can be an intense, anxiety producing

time for many employees and whether expected or unexpected, vacancy at the CEO level heightens this anxiety.

Organizations experiencing a succession event, even those that have performed exceptionally well for several years, have a natural tendency to regress back to average or even below average performance during times of transition. Grusky (1960) forecasted the disruptive nature of succession events on organizational performance in the early sixties and this supposition holds true for this analysis as well. The results here indicate a significant drop in efficiency during the year CEO succession occurred within the study sample, supporting the notion that executive succession is a challenging time organizationally. Purposeful CEO succession planning may help to facilitate a smooth transition and diminish the disruptive effects of succession on organizational performance and employee well-being.

The addition of rigorous and strategic leadership development and succession planning at all levels in healthcare organizations is essential. Hospitals must begin to think more like large, strategic corporations when it comes to succession and leadership development. To avoid further crisis, it is essential for healthcare organizations to abandon their current fiscal year thinking and expand to that of years and decades. Major, best-practice initiatives are needed in healthcare to guide extensive leadership development, recruitment, succession and retention programs that ultimately improve accountability and overall performance of the organization.

Investing in Leadership Succession and Development

The lack of universally practiced executive leadership succession planning and development in U.S. hospitals is alarming given the void of candidates in healthcare with the adequate skills, knowledge and experience to succeed as CEO. The supply of highly skilled and knowledgeable healthcare leaders qualified to lead in the industry is far less than the opportunities needing to be filled. In addition, desirable leadership qualities and experience are often transient across multiple industries and can lead to significant recruitment and retention challenges for healthcare leadership roles. Healthcare organizations are competing with other industries to attract qualified leadership candidates, further exaggerating the healthcare leadership supply / demand misalignment. Continued failure of the healthcare industry to invest in a sustained pool of aspiring, accomplished executive leaders will lead to continued inappropriate filling of leadership vacancies and potentially poor organizational outcomes.

Limited succession planning in the U.S. healthcare industry despite its significance to future success further supports the need for research of the CEO succession-organizational performance relationship within this industry. To close the gap on the frontier of performance, highly successful organizations maintain a pipeline of talent that can take their organization to the next level. Succession planning and leadership development programs in healthcare can benefit both participants and organizations by promoting mutual goals and priorities. Despite its clear advantages, the rationale for not employing a comprehensive succession plan as a component of leadership development activities within healthcare organizations remains elusive. A

strong succession plan should rank at the top of any organizational to-do-list however, succession planning for most healthcare organizations is more difficult to institute than it might appear at face value. According to the ACHE, over half of hospitals stated that they had *no* succession plans at all, which is 20 percent greater than other industries (Weil, 2006). Considerable barriers still exist in the implementation and maintenance of such planning, especially at the CEO level. These barriers need to be understood and addressed by today's healthcare leaders in order for their organization's to proactively prepare for leadership transitions in the future.

The emphasis needed on cultivating future leaders to ensure longevity and a sustained competitive advantage is missing in many healthcare organizations. In fact, healthcare as an industry has not invested in succession planning or other leadership development activities at a level equal to that of other industries. Groves (2006) reports that data from the American Management Association indicates just 1.25 percent of payroll expenses are spent on leadership development and training within the healthcare industry while the top 100 companies average four percent. Heightened CEO turnover in the healthcare industry (ACHE, 2012; Stephens, 2006) and a decline in CEO tenure over the same time period (Khaliq, Walston, & Thompson, 2006; Sinnott, 2008) highlight the further deterioration potential if adaptations are not made.

A major strategic need of organizations during the leadership succession process is the transfer of responsibility and knowledge among leaders and employees. This demonstrates a significant commitment by an organization that is much more than merely promoting individuals to fill vacancies. Cumulative knowledge of an

organization's employees and their ability to effectively apply it is crucial to long-term success. The onus of knowledge transfer relies on executive leaders who are ultimately responsible for organizational performance. Rothwell (2010b) describes best practice succession planning where strategic knowledge transfer needs of the organization are integrated with career development of individual employees into a single comprehensive talent management program. Enhancing the strengths and balancing the weaknesses of both programs, succession planning and career development are more potent tools working together towards an organization's competitive succession strategy (Rothwell, 2010a).

Rothwell (2010b) also indicates that for organizations today to be successful they must shift their focus from traditional succession thinking to what he calls tactical, daily succession. Citing responses from executives that no time exists for strategic succession planning due to the demands of daily operational work, Rothwell (2010b) encourages incorporating succession into the daily activities of every leader. He also recommends increasing the awareness of succession and development throughout the organization and that the use of an effective succession plan can link the top-down strategic objectives with the bottom-up talent progression that already exists.

Forward thinking organizations expect leaders at all levels to plan for their own exit strategy in an effort to minimize gaps, maintain unit performance and meet organizational goals. In fact, Groves (2007) and others suggest that in order to ensure that succession planning and leader development is a top priority for all leaders, succession planning responsibilities should be integral to all leadership performance

expectations and incorporated into their appraisal measurements. This investment should focus on all key leadership positions within the organization and not just those of upper administration. A bottom-up approach encourages all leaders of an organization to evaluate their strategic leadership positions and any high potential employees who might be looking to grow within the organization. It also encourages internal reflection on a leader's own professional path and progress made towards individual career growth potential. Pragmatic leaders understand that their current positions are not permanent and they recognize that long-term organizational success depends on their successor's accomplishments as much as their own.

Hospital boards and incumbent CEOs should also be held accountable to and encourage active involvement in the entire succession and development process. For prudent CEOs, succession is just one more process that needs to be organized and structured so that it is well managed. As stated earlier, management of the succession process is often a reflection of the overall management of the organization. Surveys indicate that only 27 percent of hospital CEOs said that they had identified at least one individual to succeed them (Garman & Tyler, 2007), up slightly from 21 percent in 2004 (Garman & Tyler, 2004). However, still problematic for most hospital CEOs considering this figure is nearly 60 percent in other businesses (Weil, 2006).

The incumbent CEO must start investing heavily in succession planning early on in their tenure with some sources indicating this should begin after their very first year with the organization (Bower, 2007b). To ensure strategic mission and vision needs of the organization are met, the current CEO must be heavily involved in succession

planning and leadership development program processes from initiation to ongoing evaluation. The incumbent CEO must ensure that he or she has the leadership team in place to successfully implement the desired organizational strategy. An adept and poised CEO embraces succession planning as a means to promote connectedness, strength and stability for the long-term. He or she sets the tone and readies the cultural environment for positive succession within an organization.

Executive support is vital in the development of future talent and healthcare executives must understand the importance of an active and operational succession plan that persistently grooms future leaders. A strong and visible CEO, committed to the succession planning process will demonstrate for employees its essential nature and significance to future organizational health. Without this personal involvement and significant time investment by the CEO to know the status of his or her own leadership pipeline, organizational succession processes will continue to under deliver.

Although critical to the ongoing success of most organizations, finding and retaining future leaders is futile if their ongoing development is overlooked, resulting in a lack of sufficient preparation for new job functions. Groves (2006) found that two thirds of hospital CEOs anticipates a significant shortage of individuals prepared to assume executive leadership positions in healthcare. Some propose that this can and should be remedied by developing existing talent from within the organization (Bower, 2007b; Collins & Collins, 2007; Wilson, 2005). According to them, capturing internal capital and creating a comprehensive set of assessment and development practices will provide inner strength and allow hospitals to become more strategic in executive recruitment and

succession. However, Larcker and Miles (2010) cite statistics from their survey of CEOs indicating that almost 40 percent of respondents admitted that they had no viable internal candidates. More than half of these same CEOs cited a dearth of leadership growth and development resources that potentially drive future executives away from healthcare.

Several other sources in the literature also reveal education and training for on-boarding new healthcare executives lacking in many institutions (Larcker & Miles, 2010; Garman & Tyler, 2007). This lack of talent management by healthcare organizations could explain why outsiders were chosen six to one in the sampled hospitals of this study. Practical, cost-effective methods to bridge this knowledge gap in healthcare institutions are needed to further support the competitive advantages achieved through succinct executive succession. Results from this study highlight the need for thoughtful, strategic executive succession to successfully navigate any disruptive effects and to emerge more prosperous with sustainable positive outcomes over the long term.

Individual Leadership Impact

The healthcare industry is constantly changing and the need for stable executive leadership is paramount. Increased utilization, inadequate reimbursement, and constrained capacity have placed U.S. hospitals in a very fragile state (American Hospital Association, 2005b). As demand for value-based purchasing increases, so does the interest in the relationship between hospital performance and leadership. Creating value by enhancing the effectiveness of healthcare delivery systems and developing the human potential necessary for its future should be of great significance to health researchers, care providers and policy makers.

Strong executive healthcare leadership is not only imperative because of the need for cost effective, quality care that provides consumers value, but also because of the scope and intricacy of today's healthcare organizations. Healthcare in our nation provides great promise, but without strong leadership at the highest executive level, current industry pressures can jeopardize that promise (American Hospital Association, 2005b). Previous succession research has revealed disconnects between perceived capabilities of internal candidates and benchmarks to measure them against the external marketplace. In order to develop a diverse group of leadership candidates for comparison within healthcare, scholars must come to a consensus on measures of their aptitude and their ability to impact outcomes. The methods and techniques used in this study should advance that endeavor and better guide performance measurement after executive leadership change.

Uncertainty surrounding the skills and abilities of future healthcare leaders also contributes to concerns that individuals with the proper balance of talent and passion to tackle these roles are in limited supply. Larcker and Miles (2010) found that only half of their study sample of CEOs had written criteria for the required skills of their successor and question the discernment and appreciation of the necessary skills if not written and not communicated to all internal and external stake holders. Their research indicates that it is challenging for most organizations to accurately identify these necessary skills for successful executive leadership.

The belief of many executives that the skills necessary to become an effective leader are not teachable also hinders much of the leadership development efforts at the

executive level according to Collins and Collins (2007). They suggest that the identification of these skills is extremely important prior to implementing any leadership succession or development planning. The lack of research in the area of healthcare executive leadership succession influence makes future transition a particularly concerning issue for the industry. Techniques from this research used to assess and benchmark executive influence on performance may support healthcare organizations in the direct measurement of individuals being considered to lead. Failure to resolve disparities between leadership expectations and candidate abilities can significantly disturb the most well planned leadership transition and cause even the most well qualified candidate to stumble.

Significant debate still exists in the literature as to the impact that individual executive leaders have on organizational performance. Leading scholars still pose the question: "Do leaders matter?" and argue both perspectives, for and against (Augier & Teece, 2009; Boyne et al., 2011a; Rowe et al., 2005). The extent of a leader's organizational influence on healthcare providers and quality care provision has conventionally been linked to his or her style of leadership (Boga & Ensari, 2009). Findings from the literature review for this project present several examples in the current literature indicating that executive leadership succession can significantly impact organizational performance and that inappropriate leadership succession can lead to less than optimal outcomes (Carriere et al., 2009; Collins & Collins, 2007; Giambatista et al., 2005; Zhang & Rajagopalan, 2010b).

As early as 1960, Grusky's common sense perspective suggested that top leaders do impact organizational performance but a lack of definitive, empirical evidence to substantiate this view has not been available for some time. This study adds empirical evidence in support of an individual leader's impact, both positively and negatively, on organizational performance. Overall in this sample of U.S. hospitals, change in executive leadership did lead to an improvement in baseline organizational performance. As discussed in the previous chapter, a five-year panel analysis provided evidence that leadership selection does matter and the executive leaders chosen from outside the organization were able to close the performance gap faster than insiders.

Transformational leadership was successfully used in the study to conceptually demonstrate the impact executive leaders can have on healthcare organizations. Elements of transformational leadership aid in the comprehension of the mutual strategic goals that must be met to expand services, improve quality and recruit or retain the best care providers in healthcare. Succession processes guided by transformational leadership appeal to the values and needs of both the organization and potential leaders and followers. Within transformational leadership succession, a relationship is formed where the needs and aims of both the organization and individual become unified towards a collective purpose. According to Baker (1992), this collective purpose is a crucial concept of transformational leadership and one of its strategic benefits.

Senior leadership succession continues to generate remarkable interest from individuals both inside and outside healthcare organizations. Even employees without leadership aspirations need to understand how organizational leaders are selected and

how the succession process is handled. A transparent process can encourage employee engagement and should be viewed positively. Understanding how leaders are chosen may frame how individuals think about the organizations they aspire to be or are presently employed with.

Employees at all levels of an organization should recognize that leadership matters and the selection of future leaders is important to enduring success. They should also know that traditional ways of promoting leaders has not always been the right answer. Choosing leaders like interchangeable machine parts only to be discarded if short-term targets such as quarterly returns or profit margins are not met, sends the wrong message organizationally. Similarly, those successful at the operational level with short-term deliverables may not be suitable for championing long-term successes and profitability. According to Bower (2007a), competition for the highest office within most organizations remains extremely political, in spite of colossal risks at stake. He insists that a great deal of succession talk occurs under a cloak of secrecy, behind locked doors and in whispered tones. True transformational leadership and thoughtful succession does not invite or encourage politics or surreptitious behavior.

Exploration of the effect executive leadership change has on organizational performance in U.S. hospitals as in this research, better informs future succession efforts. Given the importance of CEO transition on organizational performance identified in this project and the lack of succession planning in healthcare compared to other industries (Weil, 2006), competitive advantage related to executive leadership succession in healthcare should be given a renewed focus. Recommendations for future

research are described in detail below as opportunities to replicate this study in a variety of settings abound.

Future Research

This current study acknowledges several limitations that may provide some interesting future research avenues. Similar to previous executive succession research, this study relies on existing data providing quantitative outcomes. CEO behaviors are not directly observed, studied or quantified. These limitations interfered with the ability to study underlying or preexisting factors of the successor or organization which might have contributed to the succession origin chosen. Research into different strategic priorities and change implementations of insiders versus outsiders would make for interesting future research. More qualitative analysis through the use of interview or survey data would have allowed for further insight into what successors actually do when initiating change. Qualitative analysis of primary data in conjunction with real-time, direct observations of executives' behaviors might provide further insight into the dynamics of executive decision making and organizational outcomes. Analysis of primary survey and interview data combined with currently available quantitative works contributes to a more holistic view of the insider versus outsider succession origin phenomena.

This study measured organizational inefficiency as a deviation from a cost efficiency, best-practice frontier by which all organizations in the sample were measured. While this is an improvement over other methods which utilize an index of performance in the form of stock prices or revenues, it still limits our ability to

understand specific organizational or individual differences that may have existed during the time period studied. The frontier also represents a pattern of efficient allocation and resource utilization in key competitive dimensions across this sample of U.S. hospitals and in this case, the impacts as a result of executive leadership change but it does not capture other strategic nuances that may exist. Further study using this dataset in conjunction with SFE while isolating other strategic initiatives in healthcare may provide greater discernment of their organizational performance impacts as well.

This study utilized a large sample of public, acute care healthcare organizations and this study contributes specifically to this population. This sample does not capture the research phenomena in industries other than healthcare or organizations providing more specialized services than acute, inpatient hospital care. Future research studying the executive succession – organizational performance relationship in other industries or organizations may provide new knowledge not discovered here. Replicating and extending this study's methodology into other contexts including smaller, specialty, or government owned facilities may address the paucity of research in these areas.

According to the literature, executive succession is most likely to occur in poorly performing organizations. Although selection bias based on prior performance is controlled for using PSM in this study, prior organizational performance is not an active, independent variable of study. Boyne et al. (2011a) suggests that executive successions can have positive or negative effects on an organization but this is dependent on the organization's prior performance leading up to the succession event. They hypothesize that when prior organizational performance is low, succession will

have a more positive effect and conversely when prior performance is high, executive succession is more disruptive. This panel data could be utilized in future research to analyze organizational performance prior to the succession event and further test this hypothesis. The application of SFE and PSM techniques and the use of this large, longitudinal sample may affirm or refute the findings of Boyne et al. (2011a) as they relate to U.S. hospitals, thus furthering knowledge on the subject.

Additional study is needed in regards to SFE and quality outcomes in this population. Although hospitals may be performing very close to the cost efficiency frontier, there is limited information in this study about quality outcomes achieved at the frontier. In other words, is less truly more and is low cost healthcare sustainable while at the same time maximizing quality or is quality being sacrificed for the sake of efficiency? It is not clear from the current literature whether efficient use of capital and labor alone have a direct impact on outcomes or quality in healthcare.

It is acknowledged that the quality indicators used in this study as covariates to compare like organizations were not the strongest available and they were in no way intended to be the sole, definitive measure of quality in the sampled hospitals. Other indicators of quality outcomes in healthcare such as hospital accreditation status and risk adjusted mortality rates could potentially be used in the future, in addition to cost, as outcomes of healthcare production. However, there are no clear, evidence-based quality outcome variables identifiable in a large hospital dataset such as the one used here which would have provided a true quantitative measure of care quality being delivered along the frontier. Teaching status was chosen in this study as a measure of quality because of

its prevalence in the existing dataset and the structural advantages for hospitals it commonly represents (Rosko & Mutter, 2008).

Although SFE represents a more global measure of competitive advantage and accounts for random factors that affect performance not addressed with previous methods, future healthcare research could benefit from improvements upon this methodology by adding definitive representations of care quality outcomes along with cost efficiency. Maximizing the two represents the principles of creating consumer value and of value based purchasing as indicated in previous chapters. Establishing direct measures of value in healthcare and combining these with SFE techniques used here to create a *value frontier* may provide for a better analysis of outcomes-based efficiency.

Both executive change and succession origin in this study were measured as dichotomous variables. CEO succession origin was a dichotomous variable used to represent unobservable characteristics of human capital at the executive level and to measure the effects of CEO origin on organizational performance and competitive advantage. Artificially dichotomizing such a complex, multidimensional construct might not provide the best description of the phenomenon occurring. Karaevili (2007) suggests measuring *insiderness* or *outsiderness* as a continuum rather than a dichotomous variable and that, combined with the methods of this current study may provide new insight to the phenomenon occurring.

Approaching continuous variables and combining them with SFE techniques may provide new findings not gleaned from this study. The panel data and techniques from this study could be used to address the performance implications of a succession origin

continuum. Expanding upon this study's findings, future research should assess if varying degrees of executive background and experience from outside an organization are associated with changes in the competitive performance gap found here. In other words, does Karaevli's (2007) *outsiderness* continuum hypothesis hold true with this panel data and do executives with longer tenure outside an organization or industry close the performance gap even faster than those with less outside experience. This longitudinal panel analysis is a good beginning to succession – performance research but further discernment around this continuum is needed over the long-term.

Executive change in this study was also measured dichotomously as a representation of organizational change at the CEO level. This measurement only denoted the presence or absence of CEO succession and no other magnitude of change was represented such as succession of other executive team positions occurring in conjunction with the CEO, length of vacancy of the position in question prior to filling, or previous CEO tenure in the position being succeeded. Measuring other dimensions of executive change occurring within the panel data to supplement the executive change measured here might prove valuable in future research.

According to Barron, Chulkov, and Waddell (2011), other senior leadership successions, not only that of the CEO, affect team composition and team dynamics which has great potential to influence strategic decision making and organization performance. Replicating this study with the demographics of the entire senior executive team may provide new insight into the succession–performance relationship not revealed here. Team dynamics before and after a CEO change may further impact organizational

performance results beyond that of the CEO succession alone. For example, an outsider CEO with a predominantly insider senior leadership team and vice versa might result in alternative performance results.

In addition, CEO succession events in conjunction with the departures of other executive team members shortly thereafter and the origins of their replacements chosen could expand on the knowledge gained in this research. SFE and panel data that evaluates the entire executive team rather than just the CEO may provide clarity in the literature related to the influence of executive team dynamics and their effects on organizational performance. Future research using similar data and methodology could investigate how changes in executive team dynamics affect strategic decision making and organization performance. Focusing on CEO succession alone without considering other executive team changes may not precisely depict the executive succession–organizational performance relationship in its entirety.

Factors inherent in the organization and those that compose the surrounding external environment may have the potential to significantly influence executive leadership transition and may be related to post-succession organizational performance. Previous research has suggested that many factors alone can influence organizational performance (Shen & Cannella, 2002) including: location, size, ownership and governance structure, primary service delivery and many other external market factors. What is not known is if an association exists between organizational or environmental characteristics and the perceived need for executive leadership change in healthcare. Also

unclear from previous research, is if these same characteristics influence the decision to select an outsider over an insider to succeed as CEO.

Organization size has been specifically related to the likelihood of having succession planning practices in place and translated into the need for outside succession but further empirical analysis is needed. Hospitals larger than 130 beds are most likely to have succession planning programs in place while those with 60 beds or less are likely to go without (Garman & Tyler, 2007; Giambatista et al., 2005). Because the disruptive effects of succession are likely more pronounced in smaller organizations where leadership development resources tend to be scarcest, an increased focus on small to mid-sized organizations is pressing. Research into whether lack of human capital in smaller organizations leads to increased succession from the outside would be beneficial in this population. If so, ensuring that the same performance benefits realized here with this broad sample population are also seen in outside executive successions of smaller organizations would be essential.

Reconciling inconsistent findings on the influence of internal and external factors associated with executive leadership succession may provide additional understanding of their post-succession influence towards improved performance in U.S. hospitals. Although controlled for in this current study using PSM techniques to simulate random selection, organizational and environmental factors of U.S. hospitals could have very specific influence on the need for executive change, the origin of the successor chosen, and subsequently the post-succession organizational performance. Organizational and environmental factors may be particularly significant in the CEO

succession – organizational performance context and their level of influence would be very suitable for further study.

Often scholars have theorized that inside successions signal intent to maintain a particular strategic course or direction and outside succession is indicative of needed change. However, these suggested effects lack empirical evidence to take them beyond hypothetical concepts and further study of these effects which accompany inside versus outside succession is necessary. These suggested effects are not well understood and may have a more pronounced effect on organizational performance than characteristics of the individual successor. Panel data and methodologies such as those used in this study may help differentiate true succession effects rather than the suggested effects of inside versus outside succession.

The findings of this study confirm that executive succession can take a year or more to affect strategic change and organizational performance. These findings are consistent with previous literature stressing the importance of new CEOs, especially outsiders, learning the organizational culture and gaining the social or political capital necessary to promote change (Karaevli, 2007). The longitudinal dataset in this study only allowed for panel analysis of the performance change occurring in the two years following a succession event. A longer, more robust longitudinal dataset might provide a more complete analysis of the succession impact occurring later in executive tenure. Additionally, more extensive longitudinal research would unveil whether or not the performance improvements and increased gains with outsiders are maintained after he or

she is succeeded or if they matriculate back to or further below the baseline of the original succession event.

The methodology advances which are integral to this study could be applied in many other realms. Gaps in the literature related to the executive succession–organizational performance phenomenon in other sectors remain and would be improved upon with future analysis. Expanding this study to other settings and industries would expand upon the generalizability of the methods and techniques used as well as the succession – performance results uncovered. Also of interest would be to use this panel data to study things beyond the control of the CEO such as simultaneous changes to organizational structures, strategies or processes which might make performance enhancements difficult or impossible in the short-term. This might include changes to an organization's mission or service offerings, changes to the organizational board or governance structures or significant workforce reductions prior to CEO arrival. Changes such as these may impact any CEO's ability to improve organizational performance and should be further evaluated over a longer time frame.

Replacing insider versus outsider executive succession in this current study with alternative independent variables and then controlling for succession origin may provide an entirely different main effect also worthy of analysis. Other characteristics of CEOs such as age, educational background, gender and tenure as an executive may be of interest and may similarly supplement the knowledge gained here with regards to succession origin. Voluntary versus involuntary turnover is another component that could provide useful information with regards to the executive succession–organizational

performance relationship. This could be a worthwhile variable of measurement that provides further dimensionality on the topic. Khaliq et al. (2006) found that CEO tenure is relatively the same for hospital CEOs regardless of whether they separate from their position voluntarily or involuntarily. Further research into organizational performance consequences of voluntary versus involuntary executive separations and CEO tenure are warranted. The short life cycle of hospital CEOs is of significant interest to healthcare research and whether the effect on performance in healthcare is greater than in other sectors would be very impactful. Research in this area might identify characteristics specific to healthcare organizations dissuading our leaders from serving over the long term.

Summary

The need for further research into the executive succession–organizational performance phenomena and succession planning for healthcare executives is more important than ever to minimize the potential negative impacts of transition at the highest levels of our organizations. Prior to this research, there was very limited empirical evidence available in the healthcare literature related to the influence executive succession has on performance in U.S. hospitals. There was also limited knowledge as to whether inside or outside candidates to succeed the CEO performed better in these organizations. Continued failure of researchers to address the lack of empirical evidence and to improve research designs and analytic inferences related to this phenomenon has been problematic. This study overcame several empirical knowledge gaps in the

healthcare literature related to the influence CEO succession and CEO origin have on performance outcomes of healthcare organizations.

This study adds to the works of Karaevli (2007; 2011) and others by seeking to understand the unique associations of the executive succession–organizational performance relationship in the context of U.S. hospitals. Threats to determining a causal relationship between executive succession and organizational performance were presented in the review of literature. An improved sampling design and analytic strategy that addresses these threats was employed with a sampling of U.S. hospitals to successfully analyze this phenomenon. The methodologies of using PSM to identify a sample that approximates an RCT study design and the use of SFE to estimate organizations' competitive positions relative to one another is ground-breaking for the healthcare literature and a noteworthy addition to current science in itself.

Measurement of the insider-outsider succession's impact on competitive advantage has thus far been scientifically inconclusive across multiple disciplines. The preceding chapters have described an improved sampling design and analytic strategy for exploring the executive succession – organizational performance relationship. This improved research study design was employed to conduct a quasi-experimental panel study of insider versus outsider executive successions and their impact on organizations' competitive performances relative to organizations with no leadership change, furthering current empirical evidence on the subject.

PSM was successfully employed, as described in the previous chapters, to identify an experimental control group and simulate a random sampling. This study

confirms that PSM can be used in future studies to assist researchers in simulating random assignment of pre-intervention characteristics occurring in the past. SFE was used to directly measure organizational performance and inefficiency relative to the marketplace and the resulting frontier provided new insights into how the executive succession–organizational performance relationship specifically impacts U.S. hospitals over time. The general trend in U.S. hospitals is that efficiency is improving and overall healthcare organizations are pushing the frontier of market performance. Evidence from this study further substantiates that frontier estimation techniques can be a powerful direct measurement tool for relative inefficiency in U.S. hospitals.

This study provided an empirical examination of CEO selection, specifically the dichotomy of CEO succession origin, and its implications for organizational performance. The pre- and post-succession measurement using a panel design was a significant strength of this study and in general, leadership change led to increased competitive capabilities where outsiders were able to close the competitive gap faster than insiders. Strong empirical evidence from this study provides support for the cause and effect associations of executive impact on organizational performance. The evidence here is significant in support of the notion that leaders do matter and they do have an impact on organizational performance over the long-term.

This research answers the call of Carriere et al. (2009) and furthers the establishment of a best-practice framework for succession planning and organizational performance in healthcare. The consistency and transparency provided through transformational succession planning promotes optimum organizational efficiency,

improved leader and follower satisfaction and in turn, better patient care. This research also emphasizes the need for a renewed focus on the essential nature of leadership succession planning in healthcare. As indicated previously, the results from this longitudinal sample of U.S. hospitals reveals that outside successors are able to close the succession performance gap at a statistically significant rate that is faster than that of insiders. These findings indicate that the internal leadership development efforts and investments made in healthcare thus far may not be providing the returns desired. These leadership development failures internally may provide some explanation as to why the use of replacement planning rather than thoughtful, strategic succession planning has become the status quo in healthcare.

Best practice organizations understand that strategic development of next generation leaders is now a fundamental part of daily operations rather than something only high-performing organizations invest time and effort undertaking. Organizations at this level understand that great leadership is crucial to achieve sustained performance and that leadership development and succession planning processes are essential, core business initiatives crucial to outperforming their competition. When organizations and their leaders begin to act nonchalant about their talent management processes and duties, their capacity to improve performance begins to spiral downward.

Increasingly, healthcare professionals are being asked to do more with less and to improve performance in order to achieve organizational goals. Diminishing healthcare resources in our country coupled with increased utilization results in a limited capacity to provide care where most needed. As discussed in the introductory chapter, efficiency

and productivity in a healthcare organization often drive many performance optimization and quality of care initiatives. In light of these trends and the gathering concern over the future of healthcare leadership, this study sought to examine how highly successful hospitals and healthcare systems might address these issues through a better understanding of the executive succession–organizational performance relationship.

Greater effectiveness and efficiency through better utilization and management of available resources should be the utmost goal of any health system. However, as stated earlier, this should not be at the expense of care quality or patient outcomes. In studies they cited, Huerta et al. (2011) found that historical reforms geared towards improvement in healthcare efficiency and quality have centered around payment system reform rather than the strategic effectiveness of care delivery processes. Executive leadership in healthcare organizations is a crucial link to the provision of many health system services targeted at quality patient outcomes and efficient service delivery. After all, maintaining health system performance and the strategic planning for such is the true competitive advantage when it comes to an organization's ability to provide needed services.

Preserving the balance between efficiency and quality, strategy and vision in healthcare can be a big job. The CEO post is critically important to healthcare organizations however, many people fail to measure up to this responsibility. The complex and highly political environments that make up healthcare organizations can be difficult for new leaders to navigate and may necessitate a considerable transition period for both those inside and outside the organization. These continually changing environments also make it critically important to continuously assess executives' abilities

to meet the organizational needs post-succession. Today's healthcare organizations necessitate competent executive leadership to meet daily operational challenges and to maintain strategic focus.

With executive leadership turnover steady at a relatively high rate, the healthcare industry must begin to investigate what inherent characteristics are dissuading leaders from entering and remaining in these positions. Given current talent misalignments, the way we go about executive succession may be misguided. The importance of the succession process is often overlooked or not well planned during executive transition. Healthcare organizations are particularly vulnerable as they tend not to place adequate emphasis on leadership succession and the cultivation of future leaders needed to sustain organizational performance advantage and lasting stability.

Succession planning is more important now, than ever in the history of healthcare. With fewer than 20 percent having an active executive succession plan, most hospitals and health systems have settled in to a reactionary, do nothing approach. Failed preparation can be costly for organizations both in the short- and long-terms as vacancies can happen without warning and at the most inopportune time. Replacement planning for healthcare leaders is not working. Strategic and thoughtful succession planning from the bottom–up is urgently needed in the healthcare industry in this country. Reinvigoration of succession essentials that focus on people, their talents and the development of both is vital to the continuation of performance improvements achieved within the industry and to reduce the immediate post-succession disruption.

This research fills several knowledge gaps and should serve to inform other disciplines about the predictability of the succession–performance relationship based on pre-succession factors, specifically the CEO origin dichotomy of insider versus outsider. Further exploration of the significance of this impact will improve predictions of the organizational efficiency and productivity gained or lost as a result. We may also better control or manipulate this impact through improved succession plans and processes. A better understanding of these concepts in healthcare will assist in making appropriate leadership decisions that maximize access to already scarce healthcare resources. By improving our understanding of executive leadership succession in U.S. hospitals and the organizational performance impacts of it, this study has contributed significantly to the existing knowledge on the topic.

The concept of transformational leadership was successfully used as a framework to guide this study and to emphasize the influence healthcare leaders have on organizational performance. The CEO's influence on overall organizational change and his or her ability to be truly transformational should be emphasized. The CEO's transformational role in leading quality improvement and positive patient outcomes should be recognized and supported across all disciplines. Leadership skills and abilities of the CEO are significant to the smooth operation of healthcare organizations. Healthcare CEOs positively influence the work environment and foster staffs' commitment to stimulate greater achievement and enhance the organization's competitive advantage. Transformational CEOs who provide meaning, safety and growth for followers in the workplace will be able to promote innovation, change and creativity

throughout the organization. These contributions typically translate into quality patient care, excellent customer service, and superior patient outcomes that continue to move healthcare in our country forward.

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APPENDIX A

THEORIES AND CONSTRUCTS IN THE SUCCESSION-PERFORMANCE LITERATURE

Theory / Construct	Article	Use	Findings	Future Implications
Agency Theory	Combs, J. G., Ketchen, D. J., Perryman, A. A., and Donahue, M. S. (2007). The moderating effect of CEO power on the board composition–firm performance relationship. *Journal of Management Studies, 44* (8), 301-323. DOI: 10.1111/j.1467-6486.2007.00708.x.	Agency theory considers relationships where responsibility is delegated from principals to agents. Agents are assumed to be self-interested and to possess goals that diverge from those of principals.	According to agency theory, CEOs are self-interested, risk averse, and possess goals that diverge from those of shareholders. Thus, CEOs will engage in self-serving actions at shareholders' expense when given an opportunity. The position of CEO confers considerable power over a firm's resources because shareholders are widely dispersed and no one shareholder can exert direct control.	Application of these ideas to the executive suite suggests that, without adequate incentives and monitoring, CEO-agents will emphasize their personal wealth and job security at shareholder-principals' expense. Thus, principals must align agent interests with their own through some combination of incentives that tie agent rewards to principals' outcomes and direct monitoring of agent behavior.
	Shen, W. and Cho, T. S. (2005). Exploring involuntary executive turnover through a managerial discretion framework. *Academy of Management Review, 30* (4), 843–854.	Agency theory is used to develop a theoretical framework of involuntary executive turnover through the environmental and organizational contexts executives face. Framework posits that objectives and actions interact to affect the causes and performance consequences of involuntary executive turnover, as well as which executives will be forced to depart.	Organizational governance of organizations (e.g., ownership structure, board composition, and investor activism) can have an important effect on the occurrence of involuntary executive turnover during periods of poor performance. Executives do not necessarily align themselves with these control mechanisms.	Executives are responsible for organizational performance and should be dismissed when performance becomes poor. Executive dismissals under poor performance will increase shareholder wealth.

Theory / Construct	Article	Use	Findings	Future Implications
Agency Theory *(continued)*	Zajac, E. J. (1990). CEO selection, succession, compensation and firm performance: A theoretical integration and empirical analysis. S*trategic Management Journal*, *2*, 217-230.	The agency approach popular in assessing CEO compensation has not yet been used to address CEO selection/succession issues that have been studied extensively in the organizational literature, e.g. the choice of an insider versus outsider CEO.	The study offers a more complete conceptual model of the relationship between CEO-related issues and firm performance, based on a combined agency and organizational perspective on CEO selection, succession, compensation, and firm performance.	
	Zhang, Y. (2005). A selection that cannot stand the test: Succession contexts and new CEO dismissal. *Academy of Management Best Conference Paper 2005*. Academy of Management.	This study used agency theory to examine new CEO dismissal (i.e. within three years after succession) and the potential for inappropriate selections and any preceding succession contexts that may have been related to inappropriate choice.	With a sample of 204 CEO successions in the time period of 1993-1998, the authors found that the origin of the new CEO and the characteristics of the board of directors at the succession time have significant impact on the likelihood of new CEO dismissal.	Based upon agency theory and human capital theory, the author argued that new CEO dismissal may represent a correction to an inappropriate CEO selection and accordingly, succession contexts that tend to lead to an inappropriate CEO selection will increase the likelihood of new CEO dismissal.
Common- Sense	*Multiple works use the construct conceptually in the succession-performance literature.*	*See literature review for definition and usage of this construct.*		

Theory / Construct	Article	Use	Findings	Future Implications
Complementarity Theory	Choi, B., Poon, S. K., & Davis, J. G. (2008). Effects of knowledge management strategy on organizational performance: A complementarity theory-based approach. *Omega - The International Journal of Management Science, 36*, 235–251.	The authors present a framework of complementarity analysis as the theoretical basis for analyzing the impact of knowledge management (KM) strategies on organizational performance.	By drawing on the complementarity theory from the economics literature the authors seek to determine which knowledge management strategies work well together and what the performance implications to the organization are.	
Contingency Theory	Boyne, G. A., James, O., John, P., & Petrovsky, N. (2011a). Leadership succession and organizational success: When do new chief executives make a difference? *Public Money and Management, 31*(5), 339-346. DOI: 10.1080/09540962.2011.598345.	The authors use contingency theory to test whether management matters and if leadership succession impact is contingent on prior performance.	Changes in the top management team lead to improvements when initial performance is bad, but result in deterioration when initial performance is good.	The results support the view that high-performing organizations should attempt to retain members of their senior management team, whereas low performers should seek to replace them.
	Guthrie, J. P., & Datta, D. K. (1997). Contextual influences on CEO selection: Firm characteristics and CEO experience. *Journal of Management Studies, 34*(4), 537–560. DOI: 10.1111/1467-6486.00062.	Based on the strategic choice (Child, 1972) and upper echelons (Hambrick and Mason, 1984) perspectives, this work examined the linkages between executive characteristics and the formulation and implementation of strategy.	The type of manager required for effective organizational performance is contingent upon a firm's critical functions, including those of the environmental context.	Although cognitive styles or personality constructs may be more important determinants of a person's suitability for an organization, it is clear that the observable attributes of firm tenure, chronological age and functional background serve as salient, differentiating candidate characteristics.

Theory / Construct	Article	Use	Findings	Future Implications
Contingency Theory *(continued)*	Boyne, G. A., James, O., John, P., & Petrovsky, N. (2011b, July | August). Top management turnover and organizational performance: A test of a contingency model. *Public Administration Review*, pp. 572-581.	The authors use contingency theory concepts to construct an executive succession model applicable to CEOs.	Executive change is most significant when the new executive has different motives and cognitive schema then the predecessor, but performance implications are moderated by internal and external variables and constraints.	Contingency theory presently provides a major framework for organizational design. There are, however, several major challenges to it. The contingency theory of organizational structure is said to be obsolete because of new organizational forms, but this lacks credibility.
	Katou, A. A. (2008). Measuring the impact of HRM on organizational performance. *Journal of Industrial Engineering and Management, 1*(2), 119-142. DOI: 10.3926/jiem.2008.v1n2.p119-142.	The authors hypothesize that according to the resource-based view (RBV); human resource management (HRM) policies do influence employee outcomes and subsequently improved organizational performance. The purpose of this research was to analyze this impact in the context of any external contingencies.	Data were collected from 178 organizations and demonstrated that HRM polices did have a direct impact on organizational performance however, strategic vision and business systems partially mediated improved organizational performance associated with HRM policies.	The influence an event may have on organizational performance is contingent on factors external to that event and should be considered as potential mediators.

Theory / Construct	Article	Use	Findings	Future Implications
Human Capital Theory	Landeta, J., Barrutia, J. and Hoyos, J. (2009). Management turnover expectations: A variable to explain company readiness to engage in continuous management training. *The International Journal of Human Resource Management, 20* (1), 164–185. DOI: 10.1080/09585190802528557.	The authors analyze the behavior of companies against human capital theory and their expectations of the benefits of continuous management training. These benefits, in turn are assessed with regard to the firms' expectations that their managers will leave without having the chance to recover the outlay invested.	The empirical study carried out by the authors with over 300 Spanish companies revealed that company projections for voluntary turnover of management employees are positively connected with earlier experiences of turnover, with markets prone to change, and with business risk. Negative associations were found with developed social management networks, satisfied managers and their degree of company specificity. No significant relationship was observed between expected turnover and the intensity of training.	The risk of not recovering the investment in training due to management turnover is more complex than strictly economic. According to the authors, human capital theory is the best-known theoretical contribution in the field of training. Human capital theory presents training as an investment made with the expectation of recovering it later in the form of greater income and higher productivity. It also explains the investment that companies make in management training resources and their cautious behavior when they are not sure they will be able to recuperate the investment.
	Bailey, E. E. and Helfat C. E. (2003). External management succession, human capital, and firm performance: An integrative analysis. *Managerial and Decision Economics, 24*, 347-369. DOI: 10.1002/mde.l 119.	The authors draw on human capital theory from economics, and analyze top management as a critical resource that may create positive value for the firm. Economic analysis of human capital is used to analyze whether differences between external successors and the transferability of their human capital affects firm performance.	By comparing external successors that have within-industry and related-industry skills, the authors found that successors with less transferable skills have greater variance of firm performance.	This analysis provides an example of the benefits of integrating economic concepts with empirical research in the traditional strategic management literature and economic analysis of human capital as it affects firm performance.

Theory / Construct	Article	Use	Findings	Future Implications
Human Capital Theory *(continued)*	Zhang, Y. (2005). A selection that cannot stand the test: Succession contexts and new CEO dismissal. *Academy of Management Conference Paper 2005*. Academy of Management.	*See agency theory above.*		
Knowledge Transfer Theory	Grossman, W. (2007). Intra-industry executive succession, competitive dynamics and firm performance: Through the knowledge transfer lens. *Journal of Managerial Issues, 19*, 340-361.	The author cites limited emphasis on the possible effect of changes to the executive ranks of a firm on knowledge flows, rivalry, and competitive strategy. The author suggests that more research should be directed to understanding personnel flows between organizations and how related knowledge transfer not only enables firms to adopt innovation, but also to differentiate and distinguish itself from rivals.	The author recommends that firms avoid viewing new executives as a commodity that carries highly specialized, technically relevant knowledge. The commoditization of human resources in this way may be a self-defeating tactic if it leads to the homogenization of a firm's core product or services. In other words, the complexity of resources and interpersonal relations must be considered.	In order to absorb new knowledge, innovate, and secure a competitive advantage through intra-industry succession, organizations must consider the attributes of the new executive, and effectively manage the way they are integrated into the organization.
Organizational Adaptation Theory	Shen, W., & Cho, T. S. (2005). Exploring involuntary executive turnover through a managerial discretion framework. *Academy of Management Review, 30*(4), 843–854.	Organizational adaption theory is used to conceptualize involuntary executive turnover as a mechanism through which organizational governance purposely replaces individual executives to better align with the changing environmental demands.	Following this perspective, the authors found that poor performance and environmental shifts are important indicators of the need for change in an organization’s top management group.	Managerial discretion framework predicts an improvement in organizational performance following involuntary executive turnover.

Theory / Construct	Article	Use	Findings	Future Implications
Organizational Learning Theory	Soebbing, B. P., & Washington, M. (2011). Leadership succession and organizational performance: Football coaches and organizational issues. *Journal of Sport Management, 25*, 550-561.	The authors attempted to integrate organizational learning into the three common constructs of leadership succession, common sense, vicious cycle and ritual scapegoating.	Incorporating organizational theories with leadership succession constructs provide a greater context to with which to explain the selections made by organizations in the succession process.	
	Zhang, Y., & Rajagopalan, N. (2004). When the known devil is better than an unknown God: An empirical study of the antecedents and consequences of relay CEO successions. *Academy of Management Journal, 47*, 483-500.	Organizational learning theory is used to hypothesize that relay CEO succession has a positive effect on post- succession performance because relay successors are able to start their learning process prior to taking office. Few empirical studies have used organizational learning theory in the context of CEO succession research and mainly focused on the timing of the learning process during a succession event.	Theory assumes that the departure of an incumbent CEO always leaves a gap that the new CEO cannot instantly fill. Rather, a learning process on the side of the new CEO as well as on the side of the organization is initiated that requires some time and at first leads to a decline in firm performance – an effect that is later reversed as the learning process proceeds.	This initial learning phase of a newly appointed CEO lasts for about two and a half years before learning becomes more incremental. An initial performance decline after a CEO succession event may be reversed over this period of time. Organizational learning offers an explanation for this initial performance decline and its reversal during the early tenure of a new CEO.

Theory / Construct	Article	Use	Findings	Future Implications
Power Circulation Theory	Combs, J. G., Ketchen, D. J., Perryman, A. A., & Donahue, M. S. (2007). The moderating effect of CEO power on the board composition–firm performance relationship. *Journal of Management Studies, 44*, 301-323. DOI: 10.1111/j.1467-6486.2007.00708.	The authors suggest power constantly circulates rather than just during times of organizational decline. Unlike agency theory which primarily focuses on self-serving behaviors by the CEO, the authors suggest power circulation theory centers on the latent and overt jockeying for position among rival executives.	The authors found an interaction between CEO power and power of others, specifically those who sit on the board. This interaction has ramifications for board structure and how the circulation of power varies across an organization.	The authors add to the work of Shen and Cannella (2002) by offering a contribution to power circulation theory that focuses on the consequences of contestation of power to investors rather than that of the incumbent.
	Shen, W., & Cannella, A. A. (2002). Revisiting the performance consequences of CEO succession: The impacts of successor type, post-succession senior executive turnover, and departing CEO tenure. *Academy of Management Journal, 45*(4), 717-733.	Highlighting the importance of succession context, this study follows a power circulation theory of control and the authors suggested three types of CEO successors: followers, contenders, and outsiders. The power circulation theory of control suggests that incumbent CEOs face a risk of power contests initiated by other senior executives as well as by outsider directors. CEOs are surrounded by senior executives who are typically ambitious individuals with strong needs for power and control. The power of a CEO is thus, from time to time, is subject to challenge and contestation from these senior executives.	From their sample of 228 CEO successions, the authors discovered that successor type interacts with post-succession senior executive turnover to influence organizational performance and that there is a difference in the strategic mandates and ability of incumbent CEOs to initiate strategic change. The authors were able to distinguished two types of insider successors, contenders and followers, on the basis of how their predecessors left the positions to which they succeeded.	Outside successors may have the mandate to change the direction of the firm, but the lack of firm-specific knowledge and the resistance of the remaining management team members put outsiders at a disadvantage. The authors found a strong negative impact of outsider succession on post-succession operational performance. So-called contenders performed better in this study.

Theory / Construct	Article	Use	Findings	Future Implications
Resource-Based View (RBV)	Katou, A. A. (2008). Measuring the impact of HRM on organizational performance. *Journal of Industrial Engineering and Management, 1*(2), 119-142. DOI: 10.3926/jiem.2008.v1n2.p119-142.	*See contingency theory above.*		
	Landeta, J., Barrutia, J., & Hoyos, J. (2009). Management turnover expectations: A variable to explain company readiness to engage in continuous management training. *The International Journal of Human Resource Management, 20*(1), 164–185. DOI: 10.1080/09585190802528557.	The Resource-Based View (RBV) assumes that each company accumulates resources and capabilities differentiating it from others to attain a competitive advantage. The authors set out to determine what influenced decisions for organizations to invest in or discontinue Continuous Management Training (CMT). Specifically, they wanted to determine if an organization's projections of managerial turnover had a significant influence on this decision.	The authors analyzed organizational behaviors of over 300 Spanish organizations and found that projections for voluntary turnover of managers are associated positively with past turnover experiences, with business markets prone to change, and with increased business risk. They found these projections to be negatively associated with existing social management systems, manager satisfaction and their level of specialization within the company. No relationship was found between projected management turnover and the amount or intensity of training conducted.	RBV has been successfully used in empirical studies as a conceptual framework to guide business decisions in the interest of improving an organization's competitive advantage.

Theory / Construct	Article	Use	Findings	Future Implications
Ritual Scapegoating	*Multiple works use the construct conceptually in the succession-performance literature.*	*See literature review for definition and usage of this construct.*		
Social Network Perspective	Cao, Q., Maruping, L. M., & Takeuchi, R. (2006). Disentangling the effects of CEO turnover and succession. *Organization Science, 17*, 563–576. DOI: 10.1287/orsc.1060.0201.	With the theoretical lens of social network perspective as a guide, the authors develop a framework to examine the impact of CEO turnover and succession on organizational capabilities.	With this conceptual framework, the authors are able to identify conditions in which CEO turnover is expected to influence organizational discovery and future performance capacities.	The developed framework may provide a tool to future researchers to understand contingencies by which CEO succession might moderate the performance impacts to organizations related to CEO turnover.
Socialization Theory	Fondas, N., & Wiersema, M. (1997). Changing of the guard: The influence of CEO socialization on strategic change. *Journal of Management Studies, 34*(4), 561-584.	The authors hypothesize that consideration of prior work experience and background of new CEOs allows for greater understanding of strategic change and competitive advantage.	Findings indicate that a more critical view of desired industry and career experience, education and personal strengths of new CEOs can provide greater perspective of needed organizational change. This, along with awareness of situational demands and the make-up of top management teams can springboard new executives to successfully launch change initiatives.	

Theory / Construct	Article	Use	Findings	Future Implications
Transformational Leadership	Colbert, A. E., Kristof-Brown, A. L., Bradley, B. H., & Barrick, M. R. (2008). CEO transformational leadership: The role of goal importance congruence in top management teams. *Academy of Management Journal, 51*(1), 81–96.	The authors aimed to better understand the relationship between transformational leadership and organizational goals and their associations with critical outcomes. Although research has begun to examine a transformational leadership–organizational performance link, little is known about the mechanisms that explain this relationship. The authors propose that CEO transformational leadership is associated with higher levels of goal congruence. Several characteristic of transformational leaders support this association.	Using data from 94 top management teams (TMTs), the authors found that goal congruence between CEOs and vice presidents partially mediated the relationship of CEO leadership and individual attitudes. Their analyses suggested that at the organizational level, CEO transformational leadership was positively related to within-team goal congruence, which in turn was positively related to organizational performance.	The authors aimed to extend previous research on transformational leadership to the organizational level of analysis. To fill this gap, they suggest that research must move beyond the leader-follower relationship to examine how transformational CEOs relate to the top management teams and how that translates to improved performance. By focusing on transformational leadership within TMTs, the authors were able to examine CEO leadership and the associated organizational performance impact.
Upper Echelons Theory	Barron, J. M., Chulkov, D. V., & Waddell, G. R. (2011). Top management team turnover, CEO succession type, and strategic change. *Journal of Business Research, 64*(8), 904-910. DOI: 10.1016/j.jbusres.2010.09.004.	Upper echelons and power circulation theories are used to challenge prior research of executive turnover and organizational performance which typically focus solely on CEO turnover rather than that of top management teams (TMTs). The authors predict a failure to distinguish outsider succession which occurs concurrently with TMT turnover from that which does not, may explain the conflicting results discovered by Karaevli (2007).	The authors found that discontinued operations associated with CEO departure occurred more frequently when other members of the TMT also left the organization. This finding is significant considering their assertion that previous empirical studies commonly limited analysis to only cases of CEO turnover especially in the finance and economics literatures.	This research supports upper echelons theory and questions previous research and theory that fail to account for the significant organizational impact of other TMT turnover that may also be associated with CEO turnover.

Theory / Construct	Article	Use	Findings	Future Implications
Upper Echelons Theory *(continued)*	Karaevli, A. (2007). Performance consequences of new CEO 'outsiderness': Moderating effects of pre- and post-succession contexts. *Strategic Management Journal, 28*, 681–706. DOI: 10.1002/smj.589.	The author attempts to reconcile inconsistent findings of the associations between CEO succession origin and organizational performance using upper echelon theory as a conceptual guide.	A longitudinal study of 30 years of data from three different industries in the U.S. revealed a strong association of executive tenure within an industry and performance during times of uncertainty supporting the upper echelon theory in this type of research.	Findings supported a strong, experienced senior executive team particularly when CEO organization or industry tenure was limited. The author suggests future research on the influence of the executive team and particular dynamics that may affect organizational performance during succession events.
	Shen, W., & Cannella, A. A. (2002). Revisiting the performance consequences of CEO succession: The impacts of successor type, post-succession senior executive turnover, and departing CEO tenure. *Academy of Management Journal, 45*(4), 717-733.	The authors use upper echelons theory to conceptualize that CEO turnover influences top management team and hypothesize that this turnover has significant impact on strategic decision making and organizational performance.	The findings indicate that focusing on the CEO alone does not fully capture the performance consequences of CEO transition and an expanded focus on the top management team level and post-succession executive turnover is necessary.	According to upper echelons theory and this author's work, a firm's CEO alone is not responsible for shaping strategic decisions but in fact it is dependent on the entire management team.
	Waldman, D. A., Ramirez, G. C., House, R. J., & Puranam, P. (2001). Does leadership matter? CEO leadership attributes and. *Academy of Management Journal, 44*(1), 134-143.	The authors attempt to extend upper echelons theory beyond individual qualities and on to encompass such personal as charismatic leadership.	The authors found a connection between top managers and firm outcomes dependent on the managers' charismatic leadership, under conditions of perceived uncertainty.	Upper echelons theory suggests that specific characteristics and the leadership of top managers do indeed make a difference in strategy formulation and organizational performance.

Theory / Construct	Article	Use	Findings	Future Implications
Upper Echelons Theory *(continued)*	Zhang, Y., & Rajagopalan, N. (2010b). Once an outsider, always an outsider? CEO origin, strategic change, and firm performance. *Strategic Management Journal*, *31*(3), 334-346.	The authors examine relationships between the strategic change and resource allocation in firms led by inside and outside CEOs.	Based on longitudinal data of 193 CEO transitions, the authors found a positive effect on firm performance when the level of strategic change was low and a negative effect on firm performance when the level of strategic change was high. They found that these effects were more pronounced for outside CEOs than for inside CEOs.	The upper echelons perspective suggests that the difference between outside and inside CEOs in the relationship between the level of strategic change and firm performance exists. The authors found evidence that outsider succession has a complex non-linear relationship with firm performance and is heavily dependent on CEO tenure.
Vicious- Circle	*Multiple works use the construct conceptually in the succession-performance literature.*	*See literature review for definition and usage of this construct.*		

APPENDIX B

PROPENSITY SCORE MATCHING ALGORITHM

The propensity score is the probability of participating in an intervention based on observed, pre-treatment characteristics. This score summarizes multiple pre-treatment characteristics in a single figure using a standard probability model. PSM uses this propensity score to determine group membership (e.g., treatment and control) and to control for selection bias by matching scores of those who were exposed to the intervention to those who were not. Therefore, the pre-treatment characteristics used must not be affected by the intervention. Large sample sizes help to balance the groups when matching based on propensity scores is used.

Matching and propensity score methods are often used in observational studies (i.e., 'natural experiments') to create control groups for the estimation of binary treatment effects (Dehejia & Wahba, 2002). The main assumption is that selection on observable characteristics reduces conditions that interfere with the measurement of the treatment and allow for inferences about the causal effect of said treatment. This scoring helps to reduce the dimensionality of covariates that may impact the treatment effect (Dehejia & Wahba, 2002). A limitation of this method is that it relies heavily on a robust sample from which to find matching comparison subjects for every treatment subject to avoid those that go unmatched. There are, at a minimum, four decisions to make in specifying a PSM algorithm.

The first decision is whether or not to include an outcome of interest as part of the model. Including an outcome covariate puts the PSM into its most commonly used form where the average treatment effect on the treated (ATT) is the basis for calculating propensities. The expected value of ATT is defined as the difference between expected outcome values with and without treatment for those who actually participated in treatment. There are numerous probability models that can be used to calculate the firms' propensities (for example, Heckman (1979) logit, probit, and Bayesian approaches). The logit model is well documented in the statistics literature and is amongst the simplest to use per Formula Two:

(2)

$$\Pr(T_1 = 1|X_1) = \frac{e^{\lambda h(X_i)}}{1 + e^{\lambda h(X_i)}}$$

where T_i is the treatment status (i.e., CEO succession events versus no leadership change) and $h(X_i)$ is the linear terms of the covariates on which potential matches are identified.

The second decision is whether or not to allow control group subjects to be matched with multiple treatment group subjects (i.e., 'with replacement'). Matching with replacement minimizes the distance between matched treatment and control group subjects and has been shown to perform better than other alternatives (Dehejia & Wahba, 2002). Each treatment subject is matched to the closest control subject regardless is it has been previously matched. Using this specification is beneficial in terms of bias reduction, but may lead to smaller than desired control group sizes. In order to overcome

this limitation, the third decision to make is whether or not to match multiple control subjects to treatment subjects (see 3-to-1 matching above). By using multiple control group observations per subject, the precision of subsequent estimates is increased, but at the expense of introducing more bias. The bias issue is tested in the aforementioned balancing hypothesis in the Methods Section.

The last issue is the method of selecting comparison subjects. The most common method in the literature is the nearest-neighbor approach, which matches the control subject to a treatment subject with the closest propensity score. To perform nearest-neighbor matching, subjects in both the control and treatment groups are randomly ordered and then matched to subjects with the closest propensity score in the opposite group. According to Dehejia and Wahba (2002), nearest-neighbor performed equally to other methods of selection.

STATA was used for all the PSM functions. The 11.2 version of the STATA software does not have a default command available for propensity score matching. Becker and Ichino (2002) have created the user-written routine *pscore2* that implements the propensity score matching algorithm. Users can install the *pscore2* routine by typing *findit pscore2* into the command window. Download links for STATA automatically installing the routine are provided. Documentation for this routine can be accessed by typing '*help pscore2*'.

APPENDIX C

TECHNICAL DESCRIPTION OF THE SFE MODEL

The original stochastic frontier production model developed by Aigner, Lovell, and Schmidt (1977) and Meeusen and van den Broeck (1977) was specified for cross-sectional data and involved a production function with a two component error term. These two components from the original model are regression residuals and account for inefficiency and other random error effects of a production function. Using this model, inefficiency is delineated from random statistical regression error and a non-negative value (0-1) representing the ratio of actual to potential production remains. This ratio quantifies inefficiency of an individual unit and is visually represented by their distance from a best practice frontier. Formula Three represents an expression of this original model:

$$(3) \qquad Y_i = f(x_i\beta) + (V_i - U_i) \qquad i=1, ..., N$$

where Y_i is the production output that is a function of a vector of inputs (x_i) and a vector of unknown coefficients to be estimated (β) plus V_i representing random regression effects and U_i representing the non-negative, production inefficiency term.

SFE assumes that each organization potentially produces less than it might due to a degree of inefficiency. Units with a value of one are considered completely efficient and have obtained the maximum feasible output. Therefore, these units reside on the frontier of maximum efficiency. Values less than one indicate a shortfall in efficiency

and a gap between the unit and the maximum feasible output.

This inefficiency term is the focus of this, and other inefficiency studies in that researchers can manipulate or control for a variety of covariates and assess for their impact on efficiency. For the past two decades, the original specification model has been used in a wide variety of empirical research applications. During this time, the methodology has been extended to include cost production and other functional models and has been altered for use with longitudinal data and time-varying efficiencies as is the case with this study. The trans-log extension of the Cobb-Douglas cost production function is used to create a cost efficiency frontier of hospitals as follows:

$$(4) \qquad Y_i = f(K_i, L_i, \beta) + (V_i - U_i) \qquad i=1, ..., N$$

where the vector of inputs (x_i) is replaced with capital (K_i) and labor (L_i).

STATA was used for all the SFE functions and the 11.2 version of the software has specific features to estimate either technical or cost inefficiency effects. These stochastic frontier estimators can be used with either cross-sectional or panel data and both the time-invariant and time-varying decay models.

APPENDIX D

TABLES

Table 1.

Descriptive Statistics of AHA Estimation Procedure Variables used for PSM[a]

Variables	Population Mean[a]	Population s.d.	Sample Mean[b]	Sample s.d	1	2	3	4	5	6	7
Total facility admissions	7,718	9,154	7,454	8,564	1.00						
Adjusted admissions	12,589	13,259	12,239	12,479	0.98	1.00					
Total births (excluding fetal death)	836	1,291	833	1,307	0.83	0.83	1.00				
Total facility inpatient days	46,092	55,805	43,506	48,955	0.89	0.85	0.70	1.00			
Full time equivalents	806	1,102	748	941	0.90	0.88	0.70	0.89	1.00		
Total surgical operations	5,953	7,630	5,858	7,180	0.87	0.88	0.69	0.76	0.81	1.00	
Total outpatient visits	121,900	145,453	120,337	144,347	0.69	0.73	0.56	0.65	0.75	0.66	1.00
Adjusted patient days	73,956	78,746	70,839	71,125	0.88	0.88	0.71	0.97	0.88	0.78	0.69

[a]N = 3,941
[b]n = 1,640

Table 2.

Definitions and Descriptive Statistics for Hospital Cost Function Variables

Name	Variable Description	*n*	Mean[a]	Std. Dev.
ADJADM	Adjusted admissions	6349	10,087	12,696
COTH	Member of Council of Teaching Hospitals (binary)	6349	0.06	0.23
DEPEXP	Depreciation and interest expense	4767	836	1,291
HITECH6	Hospitals that have at least 6 of 8 high-technology services (binary)	6349	0.52	0.50
MNTEACH	Not COTH but one or > full-time equivalent medical resident (binary)	6349	0.44	0.50
OPDSURG	Ratio of outpatient surgeries to total outpatient visits x 100	5912	4.48%	8.98
PAYTOT	Sum of employee benefits and other payroll expenses	6349	$38.3m	$62.8m
PK	Price of capital	4766	$22,610	31,657
PL	Price of Labor	6345	$44,697	15,805

Table 3.

Correlates of Efficiency Variables

Name	Variable Description	1.	2.	3.	4.	5.	6.	7.	8.
LNNTC	ln (normalized total cost)	1.00							
LNNPK	ln (normalized price of capital)	0.36	1.00						
LNADJADM	ln (adjusted admissions)	0.90	0.36	1.00					
LNVTOT	ln (total outpatient visits)	0.79	0.34	0.82	1.00				
LNADJPD	ln (adjusted patient days)	0.86	0.12	0.79	0.70	1.00			
OPDSURG		-0.03	0.12	-0.03	-0.21	-0.15	1.00		
HITECH6		0.45	0.28	0.51	0.45	0.34	0.02	1.00	
COTH		0.44	0.10	0.33	0.35	0.36	-0.04	0.13	1.00
MNTEACH		0.02	0.00	0.01	-0.01	0.01	0.02	-0.18	-0.18

Table 4.

Propensity Score Matching Results

Variables	Coefficient	Std. Err.	z	P > |z|
Intercept	-2.542485	0.598045	-4.250000	0.000000
Total facility admissions	0.000026	0.000020	1.300000	0.194000
Total births (excluding fetal deaths)	-0.000055	0.000067	-0.830000	0.408000
Total facility inpatient days	0.000001	0.000002	0.720000	0.472000
Full time total personnel	0.000000	0.000000	-0.300000	0.768000
Total surgical operations	-0.000102	0.000184	-0.550000	0.581000
Total outpatient visits	-0.000001	0.000015	-0.060000	0.956000
Adjusted patient days	0.000000	0.000000	-0.700000	0.486000
Efficiency measure	0.508285	0.473742	1.070000	0.283000
Number of observations	3,941			
Log-likelihood	-1,437.16			
Prob. > chi-squared	0.637300			

Table 5.

Means, Standard Deviations and Correlations Used in SFE Model (Appendix C)

Variables	Sample Mean	Sample s.d.	9.	10.	11.	12.	13.	14.
Total facility expenses (excluding bad debt)(million $)	119.00	173.00	1.00					
Depreciation expense (million $)	5.32	9.64	0.81	1.00				
Payroll expense (million $)	49.30	72.20	0.99	0.81	1.00			
Price of capital	26,208.10	34,332.13	0.23	0.44	0.21	1.00		
Price of labor	45,811.28	14,486.14	0.37	0.27	0.39	0.21	1.00	
Log of normalized total expenses	7.09	1.22	0.75	0.62	0.73	0.24	0.33	1.00
Log of normalized price of capital	-0.89	0.97	0.20	0.37	0.18	0.60	-0.01	0.32

Table 6.

Longitudinal Stochastic Frontier Estimation Results

#	Variables	Coefficient	Std. Err.	P > z
	Intercept	2.6941	0.1901	0.0000
1.	Natural log of normalized price of capital (LNNPK)	0.2108	0.0233	0.0000
2.	Natural log of adjusted admissions (LNCMAJADM)	-0.6988	0.0463	0.0000
3.	Natural log of total outpatient visits (LNVTOT)	0.1026	0.0280	0.0000
4.	Natural log of adjusted patient days (LNADJPD)	0.3916	0.0438	0.0000
5.	Ratio of outpatient surgeries to total outpatient visits (OPDSURG)	0.7501	0.0374	0.0000
6.	HITECH6 indicator	0.0250	0.0066	0.0000
7.	Council of Teaching Hospitals (COTH)	0.3585	0.0117	0.0000
8.	Teaching hospital other than COTH	0.0860	0.0057	0.0000
Squares				
2 and 2	LNCMAJADM * LNCMAJADM	0.1093	0.0038	0.0000
3 and 3	LNVTOT * LNVTOT	0.0497	0.0012	0.0000
4 and 4	LNADJPD * LNADJPD	0.0150	0.0037	0.0000
Cross-products				
2 and 1	LNCMAJADM * LNNPK	0.0014	0.0039	0.6950
3 and 1	LNVTOT * LNNPK	-0.0038	0.0027	0.1520
4 and 1	LNADJPD * LNNPK	-0.0065	0.0035	0.0610
2 and 3	LNCMAJADM * LNVTOT	-0.0719	0.0044	0.0000
2 and 4	LNCMAJADM * LNADJPD	0.0038	0.0061	0.5230
3 and 4	LNVTOT * LNADJPD	-0.0373	0.0036	
	0.0000			
	γ	0.7259	0.0103	
	Log-likelihood	-7390.414		0.0000
	Wald chi-squared	20,783.40		
	Number of observations	1,640		
	Number of iterations	8		

Table 7.

Null Hypotheses Testing for Diagnostics of Appropriate Analytical Modeling

Null Hypothesis	Test Statistic	p-value	Decision	Implication
H_0: $B = 0$	B = 7075.942	>0.000	Reject	Use trans-log model rather than Cobb-Douglas
H_0: $\gamma = 0$	γ = 2400	>0.000	Reject	Use SFE rather than OLS
H_0: $\mu = 0$	**	**	Reject	Use half-normal distribution rather than turncated half-normal

**The truncated model fails to converge

Table 8.

Longitudinal Regression Results

	Fixed effects regression			Random effects regression		
	Coefficient	Std. Err.	P > t	Coefficient	Std. Err.	P > z
Intercept	4.8364	0.0004	0.0000	4.8464	0.0367	0.0000
Outsider's Intercept	0.1394	0.0018	0.0000	0.0122	0.0018	0.0000
Insider's Intercept	0.0638	0.0041	0.0020	0.0127	0.0041	0.0020
Time	0.1183	0.0003	0.0000	-0.0024	0.0008	0.0280
Outsider's slope	-0.3688	0.1500	0.0090	-0.0024	0.0008	0.0280
Insider's slope	-0.1606	0.3476	0.1520	-0.0014	0.0018	0.5910
sigma_u	1.4867			1.4845		
sigma_e	0.0217			0.0217		
Rho	0.9998			0.9998		
Number of groups	1,640			1,640		
F	3905.3					
Wald chi2(5)				19514.22		
Prob > F	0.0000			0.0000		

Use the Fixed Effects Model (Hausman test fails to reject the null at *p*= 0.0834)

Table 9.

Frontier Estimation Results in Hospitals Experiencing Leadership Change

Variables	Coefficient	Std. Err.	z	P > |z|	95% Conf. Interval	
Base line poor performance [a]	-0.361	0.153	-2.36	0.018	-0.661	-0.061
Negative jolt after change [b]	-0.352	0.180	-1.96	0.051	-0.705	0.000

n = 734

[a] FY2003

[b] FY 2005

Table 10.

Descriptive Statistics of Efficiency Frontier Estimates
In
Hospitals Experiencing Leadership Change[a]

	Inefficiency *(Non-random error)*		**Efficiency**	
Year	**Mean**[a]	**s.d.**	**Mean**[a]	**s.d.**
2003	0.212	0.085	0.819	0.060
2004	0.058	0.014	0.945	0.013
2005[b]	0.127[cd]	0.030	0.884[cd]	0.025
2006	0.184[cd]	0.059	0.840[cd]	0.044
2007	0.055[d]	0.008	0.947[d]	0.008

[a] n = 734

[b] year of change

[c] more inefficient / less efficient than previous year

[d] improved over baseline

Table 11.

Longitudinal Panel Analysis Results (FY2003-FY2007)

Variables	Coefficient	Std. Err.	z	P > |z|	95% Conf. Interval	
General trend in efficiency of sample; Gap to the frontier is closing [a]	-0.180	0.078	-2.33	0.020	-0.332	-0.028
CEO change intervention moved away from the frontier [b]	0.044	0.018	2.36	0.018	0.007	0.080

[a] N = 1,640
[b] n = 734