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A Determination of the Association of Competition and Regulation With
Hospital Strategic Orientation

A dissertation submitted in partial fulfillment of the requirements
for the Degree of Doctor of Philosophy at
Virginia Commonwealth University

By

Kathleen B. Heatwole
M.H.A. Virginia Commonwealth University, 1980
B.S. Mary Washington College, 1973

Director: Michael J. McCue, D.B.A.
Professor
Department of Health Administration

Virginia Commonwealth University
Richmond, Virginia
August 2006

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ABSTRACT

A DETERMINATION OF THE ASSOCIATION OF COMPETITION AND REGULATION WITH HOSPITAL STRATEGIC ORIENTATION

By Kathleen B. Heatwole, Ph.D.

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy at Virginia Commonwealth University

Medical College of Virginia Campus, Virginia Commonwealth University, 2006

Director: Dr. Michael McCue, D.B.A., Professor, Department of Health
Administration

This research study examines the influence of two major forces, competition and regulation, on the strategic orientation of hospitals. This is a particularly relevant subject, as the effectiveness of competition versus the effectiveness of regulation in the health care market has been called one of the Bellwether issues in health care policy, and the most controversial and far reaching philosophical battle facing the health care industry. Even after three decades of research and debate, there is still no consensus on how the hospital industry responds to

either a competitive environment or a regulated environment. There continues to be significant variation across the country on which model provides the environmental context for hospitals, and there is no resolution of the issue on the horizon. It is clear that the dichotomy of a competitive environment or a regulated environment and the wide variation from market to market will continue to be significant factors influencing the development of hospital strategies. Developing strategies that provide an appropriate fit with the particular environmental context is a critical aspect of the success of an organization.

This study provides a unique perspective on the subject, with an examination of the relationship between the level of competition in the market and the level of regulation in the market, and whether these dimensions influence hospital strategic orientation. Porter's strategic orientation typology is used as the model for hospital strategy, and the theoretical framework combines the legitimacy seeking elements of institutional theory and the resource and cost control elements of resource dependency theory.

The findings of this study indicate an association between a competitive environment and a differentiation orientation. As competition decreases, there is a greater likelihood of association with cost inefficiency. The results also indicate that in the absence of CON or as CON decreases, there is a greater likelihood of cost inefficiency. Although this study provides a timely analysis of a very controversial topic, it is clear that additional research efforts are needed on this critical issue that impacts every hospital in the country.

CHAPTER ONE: STUDY OVERVIEW AND RESEARCH QUESTIONS

Introduction

The effect of competition versus the effect of regulation in controlling the hospital industry continues to be one of the most controversial issues in the health care environment, and the conflict impacts federal and state regulations, health policies, and other health care market initiatives (Folland, Goodman and Stano, 1994; Federal Trade Commission Report (FTC), 2004; Shactman, 2005). This issue affects national policy as well as state regulations, and there are no indications that the issue has any short-term resolution. Carmela Coyle presented an update on national health policy and predictions for the future in the 2005 Futurescan Report prepared by American Hospital Association (AHA,) the Society for Healthcare Strategy and Market Development (SHSMD) and the American College of Health Care Executives, (ACHE). Coyle identified the competition versus regulation policy question as a major philosophical issue that is not expected to be resolved in the near term. Do hospitals fit the traditional economic model of competition or are unique characteristics at play in the hospital industry that require special regulations to control entry and competition? Shactman (2005) reporting on the FTC's 2004 Council on Health Care Economics and Policy called this the "Bellwether question" of national health

policy regarding whether federal policy should encourage and foster competition or develop regulatory blocks to competition(p 873). This controversy has been debated by politicians, health care policy-makers, and academic researchers for more than three decades, however, even after extensive research and analysis, there is still no consensus on how the hospital industry responds to either a competitive environment or a regulated environment (Bernstein and Gauthier, 1998; Trinh and O'Conner, 1999). Although there is no consensus, there is serious concern with either the regulatory model or the market competition model and the impact of either model on the future of American hospitals (Altman, Shactman and Eilat, 2006). Because of the on-going debate and the wide divergence of opinion on how the hospital industry responds to competition and regulation, there is significant variation across the country on which model provides the environmental context for hospitals (Solomon, 1998; Casalino, Devers and Brewster, 2003).

The literature on hospital strategy development is consistent in the recognition of the influence of the environment in which the hospital exists. The level of competition and the extent of the regulatory environment are frequently cited as factors influencing hospital strategic orientation and organizational adaptation (Cook, Shortell, Conrad and Morrissey, 1983; Santerre and Pepper, 2000; Goldstein, Ward, Leong and Butler, 2001). It is clear that the dichotomy of a competitive environment or a regulated environment and the wide variation

from market to market will continue to be significant factors influencing the development of hospital strategies.

Background on the Conflict Between Competition and Regulation

The history and subsequent research on these two major forces, competition and regulation date back to the 1970's, when the federal government passed the National Health Planning and Resources Development Act in 1974. This legislation established Certificate of Need (CON) laws nationwide, because the government's prevailing economic theory at that time was that the hospital industry could not be controlled through normal competitive market forces. Subsequently, during the Regan administration, the government adopted a free market, pro-competition approach, and CON legislation was repealed in 1987 as a federal mandate, and left up to each individual state to determine whether to keep or abandon the regulatory approach. Throughout the past three decades, the emphasis of either control through competition or control through regulation has varied widely from state to state, creating vastly different environments under which hospitals develop their organizational directions and strategies. Altman and Rodwin (1988) reviewed this dichotomy in health policy and concluded that the lack of consistent direction created what they termed "halfway competitive markets and ineffective regulation", where neither competition nor regulation could be effective in any market (p 323). Unfortunately, the debate continues more than fifteen years since Altman and Rodwin identified concerns, and hospitals continue to develop their strategies in a very chaotic environment.

In addition to the on-going governmental and political debate, the research on the effectiveness of competition and regulation during the past three decades has been as schizophrenic as any area of health care research, with researchers reaching diametrically opposing conclusions.

Research on the effectiveness of competition on the hospital industry seems to have made a full circle. Early research on competition, for the most part, concluded that competition had the effect of increasing hospital costs (Joskow, 1980; Robinson and Luft, 1987; Dranove, Shanley and Simon, 1992) by creating what Robinson and Luft termed a “medical arms race”. Research in the 1990’s contradicted earlier research and determined that competition did control health care costs (Zwanziger, Melnick and Bamezai, 1994; Manheim, Bazzoli and Sohn, 1994). However, by the 2000’s, research on the effect of competition had introduced the element of quality, and although again citing the medical arms race and cost increasing effect of competition, researchers found an association between high competition and increased quality (Hirth, Chernew and Orzol, 2000; Rivers and Fottler, 2004; Devers, Brewster and Casalino, 2003).

Research on the effectiveness of CON regulation has experienced a similar history of conflicting results. Research by Sloan and Steinwald (1980), Noether (1988), and Conover and Sloan (1998) concurred that CON was not effective in controlling costs. However, Joskow (1980) concluded that CON did reduce the number of hospital beds, Mayo and McFarland (1989) found CON reduced cost, and a major study by Lewin-IFC, a major health policy consulting firm, concluded

that CON was effective in controlling the “medical arms race” (1991 and 1992). By the 2000’s, research on the effectiveness of CON had turned to issues of controlling volume and therefore quality, however, again, research results have been inconclusive. Robinson, Nash, Moxley and O’Conner (2001) concluded CON had no impact on quality, however, Vaughan-Sarrazin, Hannan, Gormley and Rosenthal (2002) and Ho (2004) both found that CON had a positive effect on quality by controlling the proliferation of technology.

The main point of this background section is to demonstrate the significant controversy that continues to exist in the competition versus regulation arena. There is serious concern about the ability of market and economic competition to offer a solution, but just as much concern about any regulatory measures that could provide a long-term solution based on interviews from the Community Tracking Study (Nichols, Ginsburg, Berenson, Christianson and Hurley, 2004). Because of the wide divergence of opinion on what are the most effective methods to control the health care industry, it seems clear that hospitals will continue to plan and develop strategies in environments that vary significantly from state to state with regard to the level of competition and the level of CON regulation.

There is evidence that the environmental context with regard to competition and regulation does influence strategy development. Solomon (1998) used the Community Tracking Study to explore the dynamics and variations in public policy and the resulting impact on hospital strategy. Specifically considering the

regulatory versus competitive environments, Solomon concluded that the presence or absence of Certificate of Need regulation drives market relationships and competitive advantage, and that organizations develop specific strategies depending on the public policy impacting their organizations. This research study will provide additional insight into the strategic orientation taken by hospitals in these different environments.

Purpose of the Study

This research study examines the influence of two major forces, competition and regulation, on the strategic orientation of hospitals. Although there has been significant research on the influence of competition and regulation on hospital costs, capacity, and quality, there is relatively little research on the relationship between the level of competition in the market and the level of regulation in the market and whether these dimensions influence hospital strategic orientation (Kumar, Subramanian and Strandholm, 2002). In addition, much of the existing empirical research on competition and on regulation has focused on single states such as Keeler, Melnick and Zwanziger (1999) on California hospitals; Gift, Arnould and De Brock (2002) on Washington hospitals and Marlin, Huonker and Sun (2002) on Florida hospitals or compared variables in only two states such as Ho (2004) comparing California and Florida hospitals. This research study will add to the body of knowledge by providing a national perspective on the association of the competitive and regulatory environments on strategic orientation.

Study Constructs

This study addresses the constructs, competition, regulation and strategic orientation. Competition is defined in this study as the market competition associated with each hospital within the defined market as measured by the Herfindahl Index (HHI). In addition, a system HHI analysis is included to compare the results of the models with HHI measured at the individual hospital level with the results when HHI is calculated at the hospital system level for each county. Regulation in this study is restricted to the Certificate of Need regulatory environment.

Strategic orientation is defined using Porter's generic strategic model. Michael Porter in his book, *Competitive Advantage* (1985), defines a major strategic typology that has become one of the most widely used models in research on strategy development. Porter's generic strategic orientation model has been validated by numerous research studies that confirmed the model's use as a predictor of firm performance and success (Hambrick, 1983; Kim and Lim, 1988). This model has also been used extensively in health care research, particularly in the area of hospital strategic direction (Lamont, Marlin and Hoffman, 1993; Marlin, Huonker and Sun, 2002; Kumar, Subramanian and Strandholm, 2002).

The construct, strategic orientation, in this study is based on Porter's generic strategic orientation model, where organizations develop either a differentiation orientation or a cost leadership orientation. Porter defines the differentiation

strategic orientation as securing a competitive advantage by creating a unique or valued product or service that is difficult for competitors to duplicate (Porter, 1985).

The differentiation strategy can be manifested throughout the organization and can encompass both tangible assets such as scope, service and technological superiority and intangible assets such as reputation, image, perceived quality and competency or key relationships. A common aspect of Porter's differentiation orientation is that it usually increases costs, as developing uniqueness or a particular reputation requires additional resources whether staff, facilities, products, or marketing.

In contrast, Porter's cost leadership strategic orientation focuses on cost reducing strategies. The competitive advantage is gained through cost control. Cost orientation strategies look for organizational efficiencies and economies of scale. Cost strategies focus on control of all aspects of operation including labor, inventory, equipment, appropriate utilization of facilities, and matching input and output volumes (Porter, 1985).

Porter (1991) defines the major purposes of strategy as positioning and focusing the organization's internal capabilities and strengths within the constraints of the external threats and challenges. In Porter's work on strategy, the environment is a major influencing factor and, if an organization appropriately aligns its strategies within its environmental context, the environment can be a pivotal determinant in the organization's survival (Porter, 1985).

The purpose of this research is to add to the body of literature on hospital strategy development with an analysis of variables that define a strategic differentiation orientation and a cost leadership orientation as well as considering market and organizational variables to determine if a relationship exists between the orientation selected and the specific environmental context of the level of market competition and the CON regulatory controls.

Research Questions

Four research questions are addressed in this study. The first research question addresses the strategic orientation construct, and is posed as the following: Is there a grouping of measurable variables that can be supported to approximate the construct, strategic orientation, and its components of differentiation and cost? This research study develops and tests a group of variables based on a review of the literature and a dual theoretical framework that encompasses both institutional theory and resource dependency theory.

The second research question addresses the construct, competition, and is posed as the following: Is there an association between the level of competition in hospital markets and the strategic orientation of hospitals? Based on Porter's strategic orientation model, this research evaluates whether a highly competitive market influences a differentiation orientation over a cost orientation, or if a highly competitive market is associated with a cost orientation over a differentiation orientation. Conversely, the study examines the effect of a less-competitive market and the association with either a differentiation orientation or a cost

orientation. The initial model analysis for competition is based on the Herfindahl Index (HHI) developed for each individual hospital within a county boundary. However, this study also considers the influence of system affiliation by re-analyzing the models based on HHI developed at the system level for all system-affiliated hospitals within a county boundary.

The third research question addresses the regulation construct and is posed as the following: Is the Certificate of Need regulatory environment a determinant in hospital strategic orientation? Again, using Porter's model of strategic orientation, is the stringency of the CON environment more strongly associated with a differentiation orientation or a cost orientation, and conversely, is the absence of CON associated more strongly with a differentiation orientation or a cost orientation? This study evaluates the stringency of CON review using data provided by the American Health Planning Association based on dollar thresholds and number of services requiring CON review.

Because Certificate of Need regulations act as a barrier to limit entry and expansion of services, many researchers have found a causal relationship where the level of CON regulation influences the competitive environment (Noether, 1988; Bazzoli and Andes 1995; Bernstein and Gauthier, 1998; Kessler and McClellan, 2000). Of particular interest in this study is the interplay between the competitive market and the CON regulatory environment.

Therefore, a fourth research question is also addressed in this study regarding the interaction effect between competition and regulation in influencing

hospital strategic orientation. An evaluation examines the possible interaction between competition and three levels of CON regulation or no CON regulation, as well as assumptions on the converse where there is low competition and either the absence of CON or the three levels of CON review to determine if there is a greater likelihood of an association with a specific strategic orientation based on an interaction of competition and regulation.

Significance of the Study

A research study that combines the constructs of competition, regulation and strategic orientation is particularly timely. With significant controversy surrounding the effectiveness of either competition or regulation in the hospital industry, it appears that there will be no imminent policy changes to conform the nation's hospitals under one standard or model. The Federal Trade Commission (FTC) Report (2004) highlights the conflict. Although supporting the competitive model, the FTC Report outlines the magnitude of the issues that must be resolved before a competitive model could be effective, and concedes that it is a daunting and overwhelming process. Therefore, these widely divergent environments will continue to affect hospitals and how they adapt and develop strategies. There is a need for further research on how hospitals respond to the specific environmental circumstances within their markets. The health care environment is complex and turbulent, particularly with regard to the impact of market competition and CON regulation. A significant body of literature supports the importance of developing appropriate strategies to complement and fit the

specific dynamics of the environment, and that an organization's survival depends on developing a compatibility with its specific environmental context (Veliyath and Shortell, 1993; Zajac, Kraatz and Bresser, 2000; Douglas and Ryman, 2003).

This study evaluates the relationship between the environment and specific strategies that are directed toward creating advantage through differentiation or cost leadership. The results should provide a foundation for future research that factors performance and measurable competitive advantage of these specific strategic orientations.

Theoretical Framework

The theoretical framework for this research combines institutional theory and resource dependency theory to create an integrated theoretical approach. Both theories have important common tenants where the environment, and specifically, an uncertain environment, is a critical component and organizations can respond to the environmental pressures through the development of strategic responses. However, each theory viewed independently has limitations with regard to the study of strategic orientation.

Institutional theory focuses on conformance and adaptation to achieve legitimacy, however, one of the tenants of institutional theory is the exclusion of the economic aspect of organizational response (Meyer and Rowen, 1977; DiMaggio and Powell, 1983). Although legitimacy is an important component of

strategic orientation, the consideration of resources and efficiencies are also important to an analysis of the development of hospital strategies.

Resource dependency theory also assumes that organizations direct and adapt to their environment; however the primary focus of resource dependency theory is to achieve or retain autonomy and stability through resource enhancing strategies, thereby reducing dependency on other organizations (Pfeffer and Salancik, 1978; Alexander and Morrissey, 1989; McCue, Thompson and Dodd-McCue, 2000/01). A weakness of resource dependency theory as a stand-alone framework for strategic orientation research is that it ignores the institutional environment and the importance of legitimacy as a strategic goal.

In the strategy literature, there is wide acceptance of a dual theoretical framework that combines both institutional theory and resource dependency theory (Dickson and Weaver, 1997; Goodrick and Salancik, 1996; Oliver, 1991). This integrated framework provides a range of strategic responses, considering a continuum of responses from the institutional and legitimacy seeking strategies defined by institutional theory to the resource management and resource enhancing strategies defined by resource dependency theory.

This combined theoretical approach is particularly relevant with Porter's generic strategic orientation model. Porter's strategic typology assumes that organizations will pursue either a differentiation strategy orientation or a cost leadership strategy orientation. Within the differentiation orientation, organizations create unique structures, arrangements, products or services that

are perceived as valued or legitimate by their constituencies. Institutional theory complements the differentiation orientation through the strategic conformance with recognized forms that have achieved legitimacy. Resource dependency theory is compatible with Porter's cost orientation focus, as organizations develop strategies to maximize their resources and enhance their financial viability.

This integrated theoretical model provides a framework for the development of the hypotheses presented in Chapter 3. Institutional theory and resource dependency theory tenants, as well as the elements of Porter's generic strategic orientation model and relevant prior research, form the basis to address these research questions.

Methodology

This study uses a cross-sectional design to assess the relationship between competition and hospital strategic orientation and regulation and hospital strategic orientation. In order to fully explore the different regulatory environments of states with CON and without CON, the study population includes all short-term, acute care hospitals in the US, but excludes governmental and specialty hospitals. Data sources include the American Hospital Association annual survey for 2001 and 2002, the Centers for Medicare and Medicaid Services (CMS) for 2001 and 2002, the Area Resource File (ARF) for 2001 and 2002 and the American Health Planning Association's National Directory of Health Planning, Policy and Regulatory Agencies, 2001 edition. Dr Gloria

Bazzoli, with Virginia Commonwealth University, provided data on managed care penetration. The observations for the dependent variables are based on 2002 data, while the independent variables have been lagged one year and are based on 2001 data, in order to evaluate a direction of influence between the independent and dependent variables.

This study includes a series of statistical steps and analyses to evaluate the associations among the study variables, and the association of competition and of regulation on strategic orientation. The first step assesses the linear association between the selected variables with a correlation matrix to identify potential collinearity issues. A factor analysis is then conducted to validate that the variables identified through prior research and the theoretical framework are valid representations of the strategic orientation constructs, and to create factor scores for each sample hospital. The factor scores are then used as the dependent variables in a series of models to evaluate the association of regulation as measured by CON and competition as measured by HHI. The study then considers the additive effect of the independent variables and explores the interactions between the measurements of competition and regulation. Finally, consideration is given to the effect of system level HHI compared to HHI calculated at the individual hospital level. As the dependent variables are continuous, linear regression is the statistical technique used to assess the association of competition and of regulation with a differentiation

orientation and/or a cost orientation, controlling for market and operational influences.

Overview of the Chapters

Chapter 2 provides a summary of the competition versus regulation conflict, highlighting the arguments both pro and con on the factors that are considered unique to the hospital industry. A comprehensive review of the relevant literature and research on health care competition and Certificate of Need regulation, is provided in this chapter, including a history of the research and findings on these two key forces impacting the hospital industry. The generic strategic orientation model developed by Michael Porter in his two major books, *Competitive Strategy* (1980) and *Competitive Advantage* (1985) is presented in detail, providing relevant research that has validated the model, and specific hospital research that has used the model in strategy studies.

Chapter 3 presents the theoretical framework used in the study, providing an overview of both institutional theory and resource dependency theory, and the limitations of each used independently. An integrated theoretical framework is presented in this chapter as well as prior research that has used the integrated theoretical model. This chapter demonstrates the use of the theoretical framework and Porter's generic strategic orientation model in developing hypotheses on the effect of market competition and CON regulation on strategic orientation. Eight hypotheses are presented that suggest a measurement of the constructs of differentiation and cost leadership and predict the effect of

competition, effect of regulation and the interaction of competition and regulation on either a differentiation orientation or a cost orientation.

Chapter 4 provides an overview of the methodology used for this study, including the research design, data sources and variables used in the analysis. In this chapter, prior research and results using the same variables are presented to validate the variables and the measurements that were selected for this study. Detail on the specific methodologies used in this analysis is presented, including the statistical analysis, the regression analyses and the interaction analysis of the two constructs, competition and regulation.

Chapter 5 presents the results of the analysis. The relationships among the variables are presented, with statistical results indicating the relationships between the dependent and independent variables.

Chapter 6 concludes the research study with the results compared to the hypotheses presented in Chapter 3. This chapter interprets the results of the data and provides conclusions about the relationships between the dependent variables defining a differentiation strategic orientation and the dependent variables defining a cost orientation and the independent variables defining competition in the hospital's market, CON regulation in the hospital's market, as well as the control variables defining market characteristics and organizational characteristics. Chapter 6 presents the findings and their significance to the health care field, as well as limitations to the current study and potential areas for future research efforts.

Summary

This research provides a timely contribution to hospital strategy literature by adding to the body of knowledge on a controversial yet far reaching topic. A hospital's strategic orientation in relation to its environment, whether considering competition or regulation, can be critical to its survival.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter presents relevant literature and research on the environmental context in which hospitals develop their strategies. The first section provides an overview of the continuing debate in the literature on the effectiveness of competition versus the effectiveness of regulation in providing controls on the hospital industry. There is significant disagreement in the literature on whether the hospital industry fits the traditional market model where competition is more effective in providing the environmental context for the hospital industry or whether regulation is a more effective method of controlling the industry (Weil, 1985; Trinh and O'Conner, 1999; Coyle, 2005; Shactman, 2005). Because of this controversy, there is considerable variation in both the level of competition and the level of regulation experienced by hospitals in the US, both within markets and from state to state.

The second and third sections of this chapter review the major bodies of literature on the two constructs, competition and regulation. The second section focuses on the literature regarding competition in hospital markets and the effect of the level of competition on hospitals. The third section reviews the relevant

literature and research on the regulatory environment, focusing on the Certificate of Need aspect of the regulatory environment.

The final two sections of this chapter link the environmental influences of competition and regulation to hospital strategy development. Section four presents a review of the literature on strategy within environmental contexts. In the fifth and final section, Porter's generic strategic orientation model is presented as well as a review of prior research that has used and validated this model.

Section One: The Debate Between Competition and Regulation

Traditional neoclassical economic theory posits that perfect competition offers the optimal economic model. In this model, competition is the primary motivator among firms to achieve the lowest price and highest quality with the greatest efficiency (Folland, Goodman and Stano, 1994; Federal Trade Commission (FTC), 2004). The 2004 FTC Report on competition in health care states that competition maximizes benefits to consumers regardless of the uniqueness and complexities of the health care industry, and that consumer demand and decisions should be based on price and quality considerations. Bernstein and Gauthier (1998) refer to this model of competition as the basic premise of US economic policy.

However, there is considerable debate among economists, policymakers and academics on the effectiveness of competition as a control on cost, quality and efficiency for the healthcare system. The opposing faction views regulatory

policies as having a greater impact on controlling the healthcare market.

Folland, Goodman and Stano refer to the ongoing debate between competition and regulation as one of the “biggest ideological battles regarding how to fix the ailing healthcare industry” (p 587). Coyle (2005) refers to the current policy debate as “straddling the philosophical fence” between competition and regulation, with no imminent resolution in national policy (p. 7).

Highlighting the inconsistency in policy is the current government response to the proliferation of specialty hospitals and ambulatory surgical centers, which directly compete against full service hospitals. Casalino, Devers and Brewster (2003) used the Community Tracking Study data to demonstrate the significant growth in specialty hospitals. Data on the effect of specialty hospitals continues to be controversial and inconclusive with regard to the impact on the healthcare industry and whether regulation should control or whether competition should encourage development of specialty hospitals. Although the 2004 Federal Trade Commission recommended reducing barriers to entry for new providers such as specialty hospitals, the federal government instituted a moratorium on payments to doctors with ownership in specialty hospitals and froze reimbursement for ambulatory surgical centers until 2009, while continuing to evaluate, study and debate the implications of competition versus regulation in the healthcare industry (Shactman, 2005).

As the following review of the literature indicates, there continues to be significant disagreement on the effectiveness of the competitive model and

continued disagreement on the effectiveness of the regulatory model. This study, with its concentration on both competition and regulation as separate constructs and an evaluation of the interaction effect between competition and regulation on hospital strategic orientation will add substantially to a very controversial and timely subject.

The basic assumptions regarding the economic model of competition are that an adequate number of providers and purchasers are available, that both providers and purchasers have complete information on which to make decisions regarding price and quality, that the product is the same for all providers, and that there are no entry or exit restrictions. The debate that has continued for decades is whether the healthcare industry, specifically focusing on hospitals as the major cost component of the healthcare system, fits these assumptions regarding the competitive model (Folland, Goodman and Stano, 1994; Federal Trade Commission, 2004).

Hospitals operate in a very complex and turbulent environment with many structures and rules that are unique to the health care field (Proenca, Rosko and Zinn, 2000). That uniqueness is a factor in the long-standing debate on whether the hospital industry fits the competitive market model (Weil, 1985; Lynk 1987; Friedman, 1999). There are two very distinct and conflicting concepts on the type of control exerted on the health care industry, with free market and competition on one side and regulatory controls on the other (Jacobs, 1983;

James, Perry, Warner, Chapman and Zaner, 1991; Anderson, Heyssel and Dickler, 1993).

One of the major arguments that differentiates the health care industry from other traditional industries is that consumers do not possess the knowledge to understand the product or judge the quality of the product (Hamilton, 1985; Bernstein and Gauthier, 1998). Additional challenges to the more traditional competitive market model include uncertain and ambiguous payment mechanisms for a product where, for the most part, the customer is not the payer for the services rendered (Joskow, 1980; Trinh and O'Conner, 1999). Both the third party insurance mechanism and the physician who acts as intermediary for the patient serve to insulate the patient from the cost of the services provided (Manheim, Bazzoli and Sohn, 1994; Goldstein, Ward, Leong and Butler 2001). Even though the customer is typically not the payer for the services, there is a national expectation that health care is a right for everyone regardless of ability to pay (Young, 1991). Because of that expectation, there are areas of the country where there is not an adequate supply of providers, and financial incentives are necessary to attract and support hospital providers. The provision of free care to indigent patients also creates a non-profit orientation in the hospital industry, which confounds the traditional view of the competitive market (Weil, 1985; Dranove and White, 1994). And finally, the health care system is subject to specific regulations such as EMTALA and the Health Insurance Portability and Accountability Act (HIPAA, 1996) that mandate access and regulatory

requirements that are outside the control of hospitals. Coyle (2005) cites the specific regulations directed at the health care industry as a major impediment for hospitals. Highlighting the complexity of regulations, Coyle cites the HIPAA regulations that consist of thousands of pages of regulations, and even eight years after implementation, additional HIPAA regulations are continuing to be promulgated on the healthcare industry.

Proponents of the competitive model as a control mechanism for the hospital industry cite an adequate and even abundant supply of hospitals and other providers (Federal Trade Commission, 2004). Those supporting the competitive model for healthcare assume that hospitals can compete on price factors, particularly in the managed care environment (Gift, Arnould and De Brock, 2002; Sage, 2003). In conformance with the more traditional competitive marketplace vein, the health care product is continually evolving with new and complex technology, services and procedures. There is increased competition among hospitals to be the first to implement new technology and services provided in state of the art facilities, however this competition must be based on price and quality (Gift, Arnould and De Brock, 2002). The intense competition for all needed resources not only technology, but also staff, physicians, facilities and capital make the hospital industry similar to other industries which must compete on all fronts (Katz, Zavodnik, and Markezin, 1983).

Although many industries are now under intense review, the health care industry consumes such a large and growing proportion of the gross national

product that there is intense public and governmental scrutiny of cost, quality and performance (Federal Trade Commission, 2004; Schaeffer, 2005). This complex and turbulent healthcare environment where there is such a dichotomy of thought regarding the appropriate mechanism for control has generated a large body of literature and significant and conflicting empirical research on the effectiveness of competition and the effectiveness of regulation.

In this study, the interplay between competition and regulation are evaluated with regard to the influence of each on hospital strategic orientation. The literature and prior research have focused on two particular aspects of these forces as counterbalancing influences, with market competition between hospitals versus Certificate of Need regulation of hospitals. Certificate of Need legislation is viewed as protecting existing hospitals from competition by restricting entry of new providers (Sloan and Steinwald, 1980; Campbell and Ahern, 1993), as a barrier to competition (Hirth, Chernew and Orzol, 2000), and as an impediment to free market forces (Lynk, 1987). The Federal Trade Commission and the U.S. Justice Department view Certificate of Need regulation as an anti-competitive policy that creates barriers to new providers (Taylor, 2004).

States with CON legislation are viewed as having a relatively non-competitive environment, as CON prevents entry by new providers, including for profit specialty organizations, physicians and entrepreneurs and restricts expansion of existing providers. Shortell (2005) attributed CON as impacting and controlling

the level of competition, citing that the great majority of specialty hospitals are located in states not regulated by CON. States that have repealed CON are considered to have adopted a free market approach where hospitals must compete with any other organization that offers a better or less costly alternative (Lewin – ICF Reports, 1991 and 1992).

It is the significant variation in the type of environment, whether a competitive environment or a regulated environment in which hospitals plan their strategies that forms the interest for this research study. The next section of this chapter summarizes the literature and relevant research on the effectiveness of competition within the hospital market. It is followed by a summary of the literature and research on the effectiveness of regulation, focusing on the Certificate of Need regulatory environment.

Section Two: Literature Review on the Effectiveness of Competition

This section provides an overview of the literature and empirical research on competition in the hospital market highlighting the changing role and impact of competition over the past two decades. A market that meets the competitive market definition in general is one with no barriers to entry, no monopolies or large systems that dominate quality, an adequate supply of willing providers that drive down prices and operate efficiently, with knowledgeable consumers (Bernstein and Gauthier, 1998; Pauly, 2004). The literature on competition in the health care field is mixed with regard to the effect of competition on the hospital

industry, and there continues to be significant debate with regard to research results (Dranove and White, 1994; Gaynor and Hass-Wilson 1999).

Interestingly, research findings on the effectiveness of competition seem to have come full circle over the past twenty to twenty-five years. Early research in the 1980's on the effect of competition focused on the non-price aspect of competition, with a predominance of the literature concluding that competition was associated with increasing costs due to technological and service proliferation. As managed care grew in the late 1980's and early 1990's, research viewed competition as price sensitive or cost decreasing. But by the late 1990's and early 2000s, research again focused on non-price proliferation of services and cost increasing duplication associated with competition. Because of the significant variation in research results and debate among researchers, economists and policy makers on the effect of competition on the healthcare market, competition continues to be a key construct for researchers and a major determinant in a hospital's environment (Sohn, 2002). A review of the relevant research highlighting the debate on competition follows.

Early Research on Competition – Cost Increasing Effect

Joskow (1980) cited concern at the federal level that competition was not adequate to control what was perceived to be an oversupply of hospital beds beyond what was needed. Joskow evaluated the effect of both competition and regulation on hospital bed supply. The basic premise of Joskow's study was diametrically opposite of the neoclassical economic model of competition.

Joskow posited that because health insurance insulated consumers from the cost of healthcare, price was not a variable considered by consumers. Therefore hospitals would compete based on increasing their scope and quality. Using the Herfindahl index based on size distribution of beds to measure the level of competition, Joskow determined that hospitals in highly concentrated markets had lower reserve margins – basically lower occupancy rates and more available beds than hospitals in less concentrated markets. Joskow questioned whether competition and policies designed to increase competition actually created excess capacity.

Robinson and Luft (1987) also found that competition in the hospital industry had the opposite effect from the traditional economic theory of competition, which supports lower price through competition. Their study calculated a market share index using the Herfindahl index for almost 6,000 hospitals using 1982 data, and determined that hospitals in more competitive markets had significantly higher costs than hospitals in less competitive markets. They hypothesized that competition among hospitals drove non-price service development such as technology and facility enhancements that actually increased costs. Robinson and Luft referred to this phenomenon as a “medical arms race” where competition in the hospital industry stimulated a one-upmanship that led to duplication and unnecessary spending (p. 3244).

Also providing support for the lack of benefit from increased competition in the hospital industry, Dranove, Shanley and Simon’s (1992) study of California

hospitals found a small but statistically significant association between competition and resource consumption. Evaluating the effect of non-price services, Dranove, Shanley and Simon concluded that increased competition is associated with an increase in the number of services provided.

Research on Competition – Cost Reducing Effect

Diverging from the medical arms race effect of competition in the hospital industry, Noether (1988) posited that both price and non-price attributes were reduced by increased competition. Noether used a Herfindahl index to measure the level of competition. This study also included an analysis of the Certificate of Need regulatory impact, as Noether concluded that the CON regulations restricted entry and decreased competition. The conclusions of this study indicated that hospitals in more competitive markets were responsive to both price and quality indicators.

Although limited to California data, Zwanziger, Melnick and Bamezai (1994) concluded that increased competition lowered the rate of growth of hospital costs. Their study evaluated the impact of managed care competition on the strategic orientation of hospitals. The study determined that price and cost factors were the dominant strategies in HMO/PPO dominated markets, but non-price strategies still prevailed in non-insurance directed markets, with resulting higher costs.

Manheim, Bazzoli and Sohn (1994) expanded the research on competition by taking a national perspective and multi-year timeframe. Their study evaluated

the association between competition and hospital costs for the years 1983 and 1988 to determine not only the effect of competition on costs, but also a comparison of pre and post DRG time periods. Their findings indicated that the number of hospital market area competitors as well as the number of direct competitors were both predictors of hospital costs per admission, with the relationship of the greater the competition, the lower the cost/admission. This relationship was found to hold consistently for both time periods. Although these results presumed a benefit to payers and consumers, there was a downside for hospitals. A subsequent study by Bazzoli and Andes (1995) indicated that increasing competition had detrimental effects on hospitals. This study concluded that increased market competition was a primary determinant in hospital failures and closures. As increased competition drove prices downward, weaker hospitals could not withstand the reductions in revenues.

Citing the significant debate on the effect competition has on the healthcare industry, Kessler and McClellan (2000) undertook a longitudinal study that evaluated the welfare impact of competition using data from 1985, 1988, 1991 and 1994. Their findings mirrored the cyclical results of prior research on the impact of competition on healthcare costs. Their research concluded that competition had a cost increasing effect prior to 1991, however, the results reversed in the early 1990's. Their findings using the 1991 and 1994 data indicated that increased competition was associated with lower costs. Their

conclusions cited the impact of managed care in the early 1990's as an influencing factor in the shift in the direction of the impact of competition on costs.

Current Research on Competition – Non-Price Increasing Effect

By the late 1990s to early 2000s, the managed care environment had stabilized somewhat, taking a less contentious approach toward providers (Draper, Hurley, Lesser and Strunk, 2002). Managed care competition expanded beyond price only to include non-price competitive factors such as services, technology and quality (Young, Burgess and Valley, 2002). As the managed care pressures abated and shifted, the majority of the research on competition during the late 1990's and early 2000's reported a change in the influence of competition on healthcare costs. Rather than lowering costs as the economic theory of competition postulated, healthcare researchers in the 1990s and 2000s found that increased competition was highly correlated with increased costs. Once again, the "medical arms race" phrase began to be associated with greater competition in the healthcare industry. Researchers began to document the potentially deleterious effects of competition in the healthcare industry for consumers and payers of care. In a review of the literature on the relationship between competition and hospital prices, Gaynor and Vogt (2003) found that the majority of studies concurred that less concentrated markets consistently had lower prices, while more concentrated markets had higher hospital prices. Grossman and Banks (1998) posited that the hospital industry did not respond to the traditional economic market model. Instead, hospitals were incentivized to

respond to competitive forces by increasing their technological capabilities. Their study examined the effect of competition on the volume of coronary artery bypass (CABG) procedures in un-regulated markets. Their results indicated that as the number of competitor hospitals increased, the volume of procedures per hospital decreased. Grossman and Banks referred to the effect of competition on the hospital industry as welfare reducing in that diluting the volumes of procedures per hospital had a potentially negative effect on quality.

Offering the opposing view with regard to the impact of competition on quality, research by Hirth, Chernew and Orzol (2000) concluded that the more competitive the environment, the higher the quality. This research evaluated the adoption of new technology based on the level of competition, the regulatory environment and the payer market. With regard to competition, their findings indicated a significant increase in the technology provided in highly competitive markets, which, in their opinion, led to increased quality.

Research by Rivers and Fottler (2004) concurred with the conclusion that competition was associated with increased quality. Their research concluded that hospitals had shifted their strategic orientation from a cost emphasis to a service, technology and quality enhancement focus. And their research found that this emphasis led to a statistically significant association between greater competition in the hospital market and lower mortality rates.

Using data from the Community Tracking Study, which provided a longitudinal perspective, Devers, Brewster and Casalino (2003) concluded that the impact of

competition had cycled from a non-price emphasis in the 1980's to a price emphasis in the mid 1990's and back to a non-price focus by the early 2000's. This study evaluated hospitals' competitive strategies over time using a price or cost strategic orientation versus a non-price orientation. Their conclusions supported a resurgence of the Medical Arms Race phenomena cited by Joskow (1980) and Robinson and Luft (1987) where increasing competition was associated with higher costs and duplication of services. Devers, Brewster and Casalino concluded that hospitals in the 2000's were strategically striving for legitimacy as perceived by patients and doctors therefore duplicating high tech equipment and services regardless of cost and efficiency. As part of the policy implications of their study, Devers, Brewster and Casalino suggested a re-evaluation of regulatory approaches as a measure to control the healthcare industry in light of their findings that competition in the hospital industry had the opposite effect of the traditional economic model of competition.

Section Two provided a summary of the literature and research on the effect of competition in the hospital industry, highlighting the significant and often polar opposite results of the research. There appears to be no clear consensus in the literature on the effectiveness of competition. In the absence of conclusive results that the hospital industry responds positively to the competitive market model, researchers and policymakers have considered the effectiveness of regulatory controls. The next section provides an overview of Certificate of Need (CON) regulation highlighting the research on the effectiveness of CON in

providing controls for the hospital industry. As the following section indicates, there is as much controversy on the effectiveness of Certificate of Need regulations as there is with regard to the effectiveness of market competition.

Section Three: Background on Health Care Regulation

One of the primary reasons associated with the regulations directed toward the hospital industry is the perceived failure of the marketplace to control costs (Misek and Reynolds 1982). However, it is a regulatory environment that presents wide variation in applicability, interpretation and implementation. Because of the high cost of implementing and supporting new technology, services and facilities and the questionable impact and cost control of traditional market forces, the regulatory environment has created unique and conflicting constraints and requirements for hospitals (Young 1991).

A variety of regulations have been directed toward controlling the hospital industry, including Certificate of Need regulations, rate review regulations and federally mandated price regulations with the Medicare program such as Prospective Payment System (PPS). Many of the early studies on the effect of the regulatory environment evaluated both CON and rate review (Sloan and Steinwald, 1980; Ashby, 1984; Cook, Shortell, Conrad and Morrissey, 1983). However, during the de-regulation era, rate regulations all but disappeared, with only one state continuing rate regulation (Schneider, 2003). Payment methodologies that have been promulgated through the Medicare program, are basically applied consistently to all hospitals throughout the country. The

regulation that continues to be applied inconsistently from state to state and continues to be controversial with regard to effectiveness is Certificate of Need regulation (Sloan and Steinwald 1980; James, Perry, Warner Chapman, and Zaner 1991). Because of the wide variation from state to state, from no CON to highly stringent CON, hospitals must consider the application of or the elimination of CON regulations as the environmental context in which the development of strategies occurs. Therefore, the regulation focus for this study is the Certificate of Need regulation.

Certificate of Need regulation is one of the most highly studied, yet still controversial regulations directed toward the health care industry. Given the significant difference of opinion in both the academic and legislative arenas on whether the hospital industry responds to traditional market competition pressures, CON has been closely followed and researched.

Interestingly, although Certificate of Need has been studied extensively, results remain inconclusive. The effectiveness of Certificate of Need regulation in controlling the cost of health care and the proliferation of facilities and technology is still highly debated even after decades of research. In more recent research efforts, the focus on the effectiveness of CON legislation has evaluated not only the impact on healthcare costs and control of the “medical arms race”, but also the role of CON in controlling or impacting the non-economic aspects of health care such as access, volumes and quality. But the results of the efficacy of CON legislation on cost, diffusion of technology, control of assess and

volumes are just as conflictual as with the research on the effectiveness of competition. Therefore, there is great variation from state to state with regard to whether CON regulations exist, and even great variation among the states that have retained CON with regard to the capital thresholds and the number and types of services that trigger CON review (American Health Planning Association Annual Directory, 2004). Because of the controversy surrounding the effectiveness of CON and the inconsistency in application around the country, it is the most appropriate regulatory aspect for this study.

History of Certificate of Need Regulation

Variations of Certificate of Need legislation existed in several states in the 1960's and 1970's on a voluntary basis (Mendelson and Arnold, 1993). But federally mandated legislation was promulgated in 1974 with the passage of The National Health Planning and Resources Development Act of 1974, Public Law 93-641. This act mandated that all states adopt state-operated CON programs or funding through the Public Health Service would be withheld (Lundy, 1984). Certificate of Need legislation was developed to control entry into the market by new providers as well as control and limit over spending by existing providers through duplication, technology proliferation and inappropriate expenditures (Tierney, Waters, Rosenberg 1982). The prevailing theory at that time was that the health care industry was not responsive to normal competitive market forces, and required the controls of a federally mandated system to contain costs (Lynk, 1987). The goal of Certificate of Need legislation was to reduce burgeoning

health care costs by restricting hospital and nursing home development and expansion of beds and services, expansion of highly technical and costly technology and construction of new facilities.

Not only did federal legislation mandate the implementation of state controlled health planning and review of CON activity, but also defined the thresholds for CON applicability. Public Law 93-641 had the clout of withholding public health service funds to states that had not implemented state regulations in accordance with federal guidelines (Lundy, 1984) and by 1979, all but three states had implemented some variation of CON legislation (Sloan, 1981).

The efficacy of CON legislation was debated throughout the early 1980's, but with the emphasis on free market and competitive forces during the Reagan administration, it was determined that other controls through either the private sector or the Medicare prospective payment system would be more effective (Ashby, 1984). In 1986, President Reagan signed a health care bill that repealed Certificate of Need legislation effective Jan 1, 1987 (MacEachern, 2003).

After the repeal of federal mandates, continuation of CON regulation was left up to each individual state. Clearly that created a situation with great variability from state to state, with no consistency regarding which organizations were subject to review, what services were included under review, what capital threshold amounts were reviewed, and how stringently the regulations were applied (James, Perry, Warner, Chapman, Zaner 1991; Leeds, 1996).

Although Certificate of Need legislation was originally mandated as a cost control method, states varied widely in their definition of the goals of their own CON programs. Simpson (1986) noted that states had adopted a wide range of goals for their CON programs, including improving access to health care services, enhancing quality of care, assuring availability and continuity of care, but relatively few states actually identified controlling costs as a major goal. States used criteria for reviewing CON applications such as meeting community need, improving public health and creating geographic dispersion to all citizens. So even as states were following their stated CON goals, their primary mandates of achieving quality and access forced considerations that were in direct opposition of controlling and reducing health care costs (Ashby, 1984).

The American Health Planning Association (AHPA) and the Health Policy Tracking Service provide updates on legislative activity regarding CON regulation from state to state, and consistently report CON debates in state governments and by elected officials on whether to continue, modify, increase or decrease CON requirements or eliminate regulations altogether. According to the 2004 National Directory of the American Health Planning Association, 36 states have some form of CON regulation. The AHPA Directory also provides a summary on capital threshold amounts and the types and numbers of services that trigger CON review by state, supporting the significant variation that exists even among the states that have CON regulations. The 2004 AHPA Directory identifies 14 states have repealed CON legislation altogether. With the continued national

debate that has spanned more than three decades, substantial empirical research has been conducted to determine the impact of Certificate of Need regulations. However, the results of the research on the effectiveness of CON have continued to be inconclusive.

Early Research on CON

In the 1970's and 1980's, researchers had begun to study the effectiveness of CON legislation, with a focus on evaluating the impact of CON primarily on cost and proliferation of technology. After federal legislation sunsetted in 1987 and individual states made decisions to retain or repeal state regulations, empirical research studied the impact of these state decisions.

Research regarding the cost effectiveness of CON has concluded diametrically opposite results. Research by Sloan and Steinwald (1980) on a sample of 1,228 US hospitals concluded that CON was not effective in controlling hospital costs, and had a compensatory effect of increasing costs with regard to non-regulated variables such as labor costs. Evaluating the effect the year prior to implementation of CON regulations, they found that hospitals increased beds when it was anticipated that regulations would restrict future expansion. In a subsequent empirical analysis on the impact of regulation on hospital costs, Sloan (1981) also concluded that CON had no impact on costs and was not effective in controlling growth of beds.

Although qualifying his research on the CON regulatory aspect of his study as limited in scope, Joskow (1980), concluded through empirical research that CON

did reduce the number of hospital beds when comparing hospitals in states with CON to hospitals in states without CON. Joskow defined the goal of CON regulation as controlling the tendency of hospitals to oversupply beds beyond what would be needed to meet actual demand for beds, and for this aspect, his results indicated that CON regulation was effective.

Taking a more theoretical view of CON legislation, Coyte (1987) attempted to explain the wide variation in prior empirical results by developing economic models of the effect of CON. Coyte posited an interaction between the influence of the regulatory environment and the method of reimbursement in determining the effect of CON. In his model, Coyte predicted that the impact on cost was dependent on whether CON constrained bed capacity or restricted entry. In a fee for service reimbursement environment, when CON limited bed capacity, costs would increase. However, in the same fee for service reimbursement situation, if CON acted as a barrier to entry, costs per patient would decrease.

Noether (1988) researched both the competitive environment and regulatory environment, concluding that CON had the effect of restricting entry and expansion of services and therefore decreased competition in the hospital industry. Using the time period 1977 and 1978, Noether evaluated the early impact of CON and concluded that CON was not effective in controlling costs, and actually re-allocated expenditures and created higher prices. This study also evaluated the impact of the level of competition in hospital markets using a Herfindahl index comparison and found that increased competition resulted in

lower healthcare costs. This was a significant study in evaluating the impact of both market share competition and CON regulations. Noether concluded that CON regulations had a negative effect by restricting competition and thereby increasing costs.

However, the following year, in keeping with the conflicting results of empirical research on the effect of CON legislation, Mayo and McFarland (1989) concluded that CON had a positive effect in limiting the number of hospitals beds and reducing the average cost per patient day. This study was limited to hospitals in Tennessee but also evaluated the impact of market concentration using the Herfindahl index to measure market structure, with findings that indicate that the higher the market concentration based on admissions, the higher the cost per patient.

Highlighting the controversy regarding the effectiveness of CON were extensive studies conducted by Lewin – IFC, a major health policy consulting firm, specifically developed for the states of Ohio and Pennsylvania in the early 1990's as their legislatures were considering the future of their CON programs. Lewin – ICF researched the national impact of CON comparing hospitals in states with CON legislation and states without CON legislation. Their studies also evaluated the different thresholds of review from state to state and included variables controlling for the stringency of the regulated states. Although concluding that there was no evidence that CON regulations controlled hospital costs, their findings did indicate that CON was effective in controlling the

proliferation of many acute care services where volumes have been associated with quality (Lewin – ICF, 1991 and 1992).

Current CON Research Efforts – Contradictory Results

After federal legislation mandating CON ended in 1987, states took a variety of actions, including lowering thresholds for review, eliminating services from CON review, and repealing CON legislation completely. However, the controversy regarding the effectiveness of CON continued, with conflicting empirical research on the impact on costs. Two major research efforts on CON in the late 1990's, early 2000's concluded completely opposite effects on health care costs.

Conover and Sloan (1998) evaluated the effect of CON regulation and de-regulation on health care costs, using four binary variables representing stages of CON legislation. The four CON variables included pre-CON, young CON, mature CON and de-regulated CON. Conover and Sloan also used three measures of the stringency of the CON programs. Their research concluded that states with mature CON regulations had a reduction in bed supply and a slight reduction in acute care cost/capita, but hospital expenses per adjusted day and per admission had a statistically significant increase. In addition, profitability of hospitals in mature CON regulated states had increased. Their data did not show an increase in the proliferation of technology in states where CON had been eliminated in comparison to states that retained CON regulation.

However, a 1995 empirical model developed by Cardill, Ford and Kaserman to evaluate the effectiveness of CON in slowing the rate of technology adoption found that CON did limit the adoption of hemodialysis technology.

In keeping with the inconclusive theme of the empirical research to date, three independent studies by the largest automobile manufacturers in the country concluded just the opposite of the Conover/Sloan research. In 2002, the Michigan legislature undertook an evaluation of their CON program to determine if CON should be eliminated. The three major automakers, General Motors, Ford Motor Company and DaimlerChrysler all presented the results of research conducted by their companies on the effectiveness of CON legislation. The American Health Planning Association (AHPA) compiled the results of the three independent studies. All three automakers compared the health care costs of their employees in states with CON regulations and states without CON legislation. General Motors compared both utilization and cost data for their workforce during a six-year period from 1996 to 2001. Data were collected from Indiana and Ohio, two states without CON legislation and Michigan and New York, two states with mature and stringent CON legislation. With the same benefit structure and age, sex and race cohorts, GM found that health care expenditures per employee were significantly higher each year in the non-regulated states. Ford Motor Company analyzed employee health care costs in states where there were more than 10,000 Ford employees and dependents. Ford's research encompassed both inpatient and outpatient cost of care as well

as cost and utilization of MRI and coronary artery bypass graft surgery. The results were similar to GM's experience. The cost of hospital care/1000 Ford members and the cost of outpatient hospital services/1000 Ford members were significantly higher in Indiana and Ohio – states with no CON requirements than in Kentucky, Missouri and Michigan with CON legislation. In addition, the cost of both MRI and CABG were between 20 and 40% higher/1000 members in states without CON. DaimlerCrysler Corporation (DCC) compared their per/person health care costs and also found significantly higher costs in states without CON. For 2000, DCC found their adjusted cost/person in Wisconsin and Indiana – both states with no CON at \$3,519 and \$2,741 respectively, while the adjusted cost/person in the CON regulated states Michigan and New York were \$1,839 and \$1,331 respectively.

The results of the research conducted by the three automakers led to their conclusion that CON was an effective tool to control the cost of health care. The automotive companies posited that their studies controlled for extraneous, confounding variables better than other prior research that evaluated national data on health care costs and impact of CON. Because their data were based on their employees only, other potential interactions that made national data suspect were controlled. Their studies and recommendations were presented to the Michigan legislature, and were a major factor in the decision to continue CON regulation (AHPA Report).

Changing Focus of CON Research

Although research on the effectiveness of CON legislation with regard to controlling costs and technology proliferation continued in the 1990's, other dimensions of effectiveness were beginning to be explored. In a commentary on the effectiveness of CON, Hackley, (1993) suggested that CON acts as a deterrent and barrier so that organizations do not even propose projects that have a high likelihood of being denied by CON regulators. Therefore the numbers of projects denied by CON regulation might be artificially low by not counting those projects that were either modified significantly or deferred altogether. Hackey also recognized a role for CON in state health planning with regard to access to care, regionalization of services, and impact on clinical outcomes by affecting utilization and volumes. Although the review of empirical studies led Mendelson and Arnold (1993) to conclude that CON was a critical factor in controlling long term care costs and Medicaid expenditures, they also suggested an expanded role for CON in improving access and quality. The role of CON with regard to access included several studies on the impact of CON on the provision of indigent care. Campbell and Ahern (1993) hypothesized that in a more competitive environment with an increased focus on costs, hospitals would reduce the amount of indigent care. However, in their study of California hospitals during the five-year period 1983 to 1987, this hypothesis was not supported, as public, non-profit hospitals and teaching hospitals increased their uncompensated care levels. Based on this research, they theorized that CON is

used to reward hospitals that provide significant levels of indigent care. A similar empirical study of hospitals in Florida yielded similar results, tying successful CON approvals to the provision of higher indigent care levels (Fournier and Campbell 1997).

By the mid 1990's, substantial research had determined a correlation between volumes and quality. Jollis et al (1994) found higher mortality rates in hospitals with low volumes. Empirical research by Kimmel, Berlin et al (1995) also determined a higher rate of complications in low volume hospitals. Concurring with prior research, Hannan, Racz et al (1997) found that the high volume hospitals and high volume physicians had the lowest mortality rates even when controlling for clinical risk factors. McGrath, Wennberg et al (2000) also found volume a predictor of quality outcomes. The results of their research concluded that the best clinical outcomes were consistently at the highest volume hospitals and highest volume physicians. Research by Elixhauser, Steiner, Fraser, (2003) found a statistically significant difference in the unadjusted mortality rates between high volume hospitals and low volume hospitals. These research efforts again focused national attention on Certificate of Need regulation as a means of slowing the proliferation of technology and equipment in the hospital sector, and thereby concentrating volumes.

Research on the Impact of CON on Volume

As CON regulations have some control over the proliferation of providers of highly technical services, there has been renewed interest in CON as a tool to

preserve volumes, and thereby influence quality. As expected, the focus of empirical research has shifted to a determination of the impact of the CON regulatory process on the quality of specific hospital procedures.

Robinson, Nash, Moxey and O'Conner (2001) evaluated data from the state of Pennsylvania to examine the impact of CON on the quality of coronary bypass graft (CABG) surgeries. Pennsylvania repealed CON in 1996, and Robinson et al compared outcomes for CABG three years before CON was de-regulated and three years post de-regulation. Their findings showed a significant increase in the number of open heart surgery programs, but no significant increase in the number of CABG surgeries. Comparing risk adjusted mortality for CABG patients before and after CON repeal in Pennsylvania, they determined that eliminating CON had no negative impact on quality.

Reporting in JAMA in 2002, Vaughan-Sarrazin, Hannan, Gormley and Rosenthal (2002) concluded just the opposite of the Robinson research. The Vaughan-Sarrazin et al research had a national perspective, using Medicare claims data from all states during the time period 1994 through 1999 to evaluate the impact of CON regulation. Risk adjusted mortality rates for CABG patients in states with CON regulation were compared to risk adjusted mortality rates for CABG patients in 18 states that had repealed CON legislation. This research concluded that states without CON had lower hospital volumes for CABG, and higher mortality rates, suggesting that eliminating CON may negatively impact quality by allowing the diffusion of volumes among multiple providers.

A subsequent study by Ho (2004) compared volumes and mortality rates for percutaneous transluminal coronary angioplasty (PTCA) in Florida where CON was in force to those in California where CON had been repealed. Volumes were higher and mortality lower in CON controlled Florida, leading Ho to the conclusion that CON had a positive effect on quality by controlling volumes.

The preceding section has highlighted the substantial volume of research on the impact of Certificate of Need on costs, proliferation of technology, access, volumes and quality. Section Three provided a summary of the literature and research on the effect of CON regulation in the hospital industry, highlighting the significant and often contradictory results of the research. There appears to be no clear consensus in the literature on the effectiveness of CON regulation except in the area of controlling volumes, and even with this regard, the research has been limited to a few specific procedures. With such conflicting research on the impact of CON regulations and the renewed interest in the potential for CON to play a role in health care access and quality issues, widespread de-regulation does not seem likely. It appears that Certificate of Need legislation will continue to be a major factor in the hospital industry environment.

Section Four: Environmental Context for Strategy Development

Sections Two and Three have provided an overview of the complexity surrounding the environmental pressures facing hospitals. The conflicting and often schizophrenic nature of the competitive environment or the regulatory environment placed on hospitals provides the context in which hospitals develop

their strategies. Finding either a highly regulated and/or a highly competitive marketplace places hospitals in the position where evaluating structures, processes, efficiencies, and competitive strategies is vital to their future (Hamilton 1985). The turbulent and uncertain healthcare environment has made organizational change and strategy development major research issues (Deephouse, 1996). In their article on the development of health care strategy, Shortell and Zajac (in *Innovations in Health Care Delivery*, 1990) define strategy as an organizational evaluation and response to environmental and competitive forces in order to continue the long-term existence of the organization (p. 145). Smith (2002) also defines strategy in terms of its relationship with its environment, and as environments become more complex, the development of strategies that align with the external environment becomes even more critical. Hospitals must continue to adapt their organizations to the specific environment in which they operate. It is within this turbulent environment with widely divergent regulatory and competitive forces that hospitals must develop their strategies for success and survival (Santerre and Pepper, 2000).

Strategy Development

A question that has been prominent in the strategy research on the health care industry is; do hospitals adapt, respond or strategically plan based on the specific environment in which they operate or are the strong, viable organizations selected by the environment to survive? Carter (1990) posits that it is not the specific environment that creates the differences among organizations. Rather,

organizations under the influence of environmental pressures including competitive or regulatory actions will develop different strategic responses in order to control, manage and position their organizations to succeed under the given environment. To some extent, strategy development has come under attack in certain academic circles as too bureaucratic (Hax and Majluf, 1991) too inflexible and unresponsive (Aaker, 1992) or too complacent and un-innovative – a process that can stifle creativity (Shortell, Morrison, Friedman 1992; Mintzberg 1994). But on the opposing view, strategy development can be effective in mobilizing and energizing an organization, (Begun and Heatwole, 2004), creating organizational focus toward a common goal (Birnbaum, 1990; Begun, Kaissi and Sweetland, 2005), creating a distinction or uniqueness for competitive advantage (Yamoah, 2004) and in finding a pattern or advantage in a chaotic environment of external pressures and demands (Primožic, Primožic and Leben, 1991; Marren, 2005). Although there is disagreement on elements of strategy development and how the process of developing strategies should be accomplished, there is significant consensus that appropriate strategy development and implementation are vital to creating a competitive advantage and ultimately organizational success (Katz, Zavodnik and Markezin, 1983; Veliyath and Shortell, 1993; Harrington, Lemak, Reed and Kendall, 2004).

Creating a Fit Between Strategy and Environment

The literature on strategy is fairly conclusive on the importance of the compatibility or fit between an organization's strategy and its environment. In

fact, a primary goal of an organization's strategy development is to create an alignment with its environment (Venkatraman and Camillus, 1984; Albright, 2004). Research conducted by McArthur and Nystrom (1991) on manufacturing firms concluded that a significant positive relationship existed between organizational strategy, the environment and firm performance. Zajac, Kraatz and Bresser (2000) conducted research on the Savings and Loan industry evaluating over 4,000 S&L's for a decade. They developed a model to evaluate the effect of environmental factors such as the regulatory environment or competitive environment on strategy and performance. Their research concluded that a positive relationship existed between strategic compatibility with the environment and performance. Confirming the importance of strategy development, Feurer and Chaharbaghi, (1996) researched large corporations and concluded that strategy development is highly correlated with performance in competitive environments. Just as in other organizations, the importance of strategic orientation and aligning with environmental pressures are critical to the survival and growth of hospitals.

Strategy in the Hospital Environment of Regulation and Competition

The turbulent health care environment and specifically, the confusing and often conflicting regulatory environment as well as the competitive marketplace can be a catalyst for strategy development (D'Annunzio, Succi and Alexander, 2000). Strategically positioning an organization within the environmental

constraints it faces is vital to developing a competitive advantage in the hospital industry (Douglas and Ryman, 2003).

Cook, Shortell, Conrad and Morrissey (1983) examined constraints placed on hospitals and hypothesized that environmental conditions would cause hospitals to create strategic responses. Cook et al theorized that hospitals adapt to environmental constraints, developing strategies based on the intensity of the environmental factors. The more restrictive the environment, the more radical the strategies become. Initial responses occur at the institutional level but will escalate to include changes in clinical services, and ultimately, can include interorganizational strategies in order to survive.

Gay, Kronenfeld, Baker and Amidon (1989) also researched the response of hospitals to changing regulatory pressures as in the Cook et al model. Using the DRG system as the regulatory constraint, Gay, Kronenfeld, Baker and Amidon found that hospitals facing an environment that threatens their economic survival will implement major and radical changes including changing clinical practice patterns and changing service complement. They concluded that hospital strategic development is influenced by the specific environment imposed on the hospital, and that hospitals will change practices and change resource and service utilization in response to regulatory pressures.

Section Four summarized the literature on strategy development and the importance of the environmental context in directing strategy. This section reviewed relevant hospital research identifying the fit between the strategies that

hospitals develop and their environment, with specific focus on the forces of competition and regulation that impact hospital organizations.

To provide a framework for this research study on the effect of competition and regulation on hospital strategic orientation, the following section identifies one of the most frequently used taxonomies in the field of strategy research. Porter's generic model of strategic orientation provides the context for developing the strategic orientation construct, which is used in this research study. This framework has been used in numerous studies by health care researchers on the topic of strategic orientation (Lamont, Marlin and Hoffman, 1993; Kumar, Subramanian and Yauger, 1997; Marlin, Huonker and Sun, 2002; Douglas and Ryman, 2003). Section Five of this chapter identifies the model developed by Porter and the elements comprising the model. The following section highlights prior research that has used Porter's framework, both in organizational research and specifically hospital strategy research.

Section Five: Porter's Strategic Model and Relevant Literature Review

The level of competition and the regulatory environment are both considered critical factors in strategy development (Porter 1980). Porter identified five key components that impacted an organization's competitive position including the power of the consumer, power within the supply chain, potential for alternative products and services, pressure from other existing organizations that offer the same or similar product and potential for new rivals entering the marketplace (Porter, 1980, p 4.). Porter determined that the impact of government through its

influence on the regulatory environment was a major factor in all of the elements of competition. Therefore the intertwining of regulation and competition will in turn, influence strategy and the development of organizational strategic orientations.

Porter defines strategic orientation as the alignment of a firm with its specific environment (Porter, 1991). Expanding on Porter's work on strategic orientation, Luke and Begun define strategy as the methods used by organizations to gain a competitive advantage over other organizations deemed to be competitors (Luke and Begun, 1994).

Developing a competitive advantage appears frequently in the literature as a major factor in the development of strategies, particularly within a turbulent environment where significant competition among organizations exists. Porter followed his 1980 work on competitive strategy with a subsequent book, *Competitive Advantage* in 1985. This work defined in more detail the types of generic strategies that organizations could adopt to distinguish them from their competitors, thereby achieving a competitive advantage (Porter, 1985). Porter established three generic strategies that organizations employ to create value as perceived by their customers; cost strategy, differentiation strategy and a focus strategy. The first two generic strategies relate to the majority of organizations in developing competitive advantage. The third generic strategy of focus is where an industry concentrates on just one aspect of service or targets a small market segment to achieve competitive advantage in just that one aspect of business.

As this strategy is rather narrowly defined, it is not frequently used when referring to Porter's generic strategies.

Porter's first generic strategy presumes that organizations pursuing this strategy will develop a competitive advantage by being the lowest cost provider. Their organizational strategic focus revolves around cost factors including developing economies of scale and efficiencies of operation including lowering overhead, controlling labor costs and controlling all aspects of their organization's resources. Cost oriented organizations focus on control or advantages with regard to competitive or scarce resources such as materials, equipment, labor or capital. Cost leadership orientation focuses on maximizing financial viability and maintaining autonomy (Porter, 1985).

The second generic strategy identified by Porter is one that organizations employ to differentiate their business or product from their competitors. This requires strategies that create a uniqueness that is difficult for competitors to duplicate. Differentiation can be achieved through a wide range of strategies such as developing unique products or services, creating unique structures or arrangements, or developing branding, reputation and imaging enhancing positions or relationships. Differentiation orientation focuses on strategies that are perceived as valued or legitimate. One of Porter's main tenants regarding the success of these generic strategies is sustainability. Organizations must continually evaluate their environment and re-position their strategies to maintain a cost or differentiation advantage in their marketplace (Porter, 1985).

Use of Porter's Generic Strategies

Many researchers have found strategic typologies to be useful frameworks for research that involves strategic orientation or analysis of competitive advantage. The most frequently referenced typologies appear to be Porter's generic strategies (1985) or Miles and Snow's Defender, Prospector strategies (1978), in fact, these two typologies are sometimes used interchangeably. There is wide use of Porter's generic strategies in health care literature and research, and it seems to be the predominantly used framework (Autrey and Thomas, 1986; Hill, 1988; Ellis and Brockman, 1993).

Use of the Porter typology has been validated in numerous research studies. Hambrick (1983) used cluster analysis with eight types of industries considered as makers of capital goods to determine successful competitive strategies. His research confirmed that Porter's generic strategies provided a generic model or framework for the strategies. Kim and Lim (1988) also found use of Porter's typology beneficial in research on the correlation between strategy, environment and performance. Kim and Lim used multivariate analysis of a large group of electronics companies in Korea to validate Porter's generic strategies as a predictor of firm success. In their study, firms in less competitive markets succeeded with a cost oriented strategy, whereas firms in competitive environments were more successful with differentiation strategies.

Miller (1988) conducted research on 89 un-diversified firms representing a wide range of industries to evaluate Porter's generic strategies as a typology to

study the influence of the environment on strategy. This research found that differentiation strategies were more effective in uncertain and more competitive environments while cost leadership strategies were more effective in stable and more predictable environments. Miller's research provided validation of Porter's model as a predictor of firm performance and success.

Use of Porter's Generic Strategies in Healthcare Research

Examining the relationship of strategy and environment, and the resultant impact on hospital performance, Lamont, Marlin and Hoffman (1993) used Porter's generic strategies as a framework to evaluate the impact of changes in strategy in what they termed "discontinuous environments" or environments where dramatic and unanticipated changes negated normal rules of organizational behavior. Their study operationalized organizational performance including both financial and operational performance, with the variables: total revenue/adjusted patient day, total margin, net operating margin, occupancy rate and market share (Lamont, Marlin and Hoffman 1993). The study was limited to hospitals in Florida and used two time periods, 1984 and 1988. Using Porter's generic strategies, the researchers conducted a series of interviews with hospital administrators and industry experts to develop variables for each strategy. Cost orientation strategies included total expense/avg occupied bed, cost/adjusted patient day and salary/patient day. Differentiation orientation strategies were operationalized by technical sophistication of services, scope of services offered and number of rare services. Their findings suggested that hospitals that

developed strategies compatible with their environment were more successful than hospitals that did not find the “fit” between strategy and environment. Their research also concluded that a differentiation strategy is a better predictor of performance in a discontinuous environment.

Also using Porter's generic strategies as a framework for determining the impact of strategy on hospital performance was research by Kumar, Subramanian and Yauger (1997). Citing numerous prior research efforts validating Porter's approach, Kumar et al describe Porter's typology of strategy as the predominant model used in strategy research. Kumar et al developed a study to determine whether a cost strategy orientation, a differentiation strategy orientation or a hybrid of cost and differentiation strategies was more an indicator of hospital performance. In their research design, a questionnaire was sent to administrators of a randomly generated sample of 600 acute care hospitals in 1995. Six areas of organizational focus represented a cost orientation, and CEO's were asked to rate their organization's focus on the following variables; lower cost than other hospitals in their market, more cost efficient services, improving time and cost of services, utilization of capital intense items, developing detailed cost analyzes by service, and controlling costs. Focus on a differentiation orientation strategy was measured by the importance respondents placed on the following variables: adding new services, creating unique services and using market research in creating services. Kumer et al used subjective methods to determine organizational performance, where respondents rated the

importance of performance criteria to their organizations. This rather subjective research concluded that hospitals with a cost orientated strategy performed better than hospitals with a differentiation strategy or a hybrid of both cost and differentiation strategies.

Porter's strategic model was also used by Marlin, Huonker and Sun (2002) as a framework for hospital research in their analysis of hospital performance. The focus of this research was to determine the effect on financial performance of being in either a cost strategy group of hospitals or in a differentiation strategy group of hospitals. Hospitals that had no clear strategic orientation were also evaluated in this study. Hospitals were grouped as having a cost leadership orientation by their strengths measuring the variables; cost adjusted per patient day, salary adjusted per patient day and man-hours per adjusted patient day. Hospitals were grouped into a differentiation strategic orientation with strengths in the following variables; a larger number of high tech services, a larger number of rare services, a higher ratio of ICU patient days to total patient days, and the ratio of ancillary costs to total costs. Financial performance was operationalized by the variables; operating margin, total margin, return on assets and profit/adjusted patient day. Their research found that hospitals in the cost leadership group performed better than hospitals in the differentiation group, but hospitals with no discernible strategic orientation were the worst performers. Although this research was limited to hospitals in Florida, their conclusion was interesting in the context of the impact of the environment on strategy

development. They posited that the health care environment focuses on cost containment to the detriment of quality factors, driving hospitals to develop low cost strategies rather than develop innovative or creative strategies that could improve the health care system. Their research suggests the need for policy intervention to restore a balance of cost and differentiation strategies.

Kumar, Subramanian and Strandholm (2002) operationalized hospital performance with a wide range of variables, including financial variables, operating variables and market share. Their framework was the Porter generic strategy model, comparing either an efficiency or cost strategic orientation to a market or differentiation strategic orientation to successful hospital performance in different environments. Their study confirmed the importance of fit between strategy and environment, where hospitals in a relatively stable environment were more successful with cost control strategies and hospitals in a turbulent environment were more successful with a differentiation strategy. Marlin, Huonker and Hasbrouck (2004) used Porter's generic strategic orientation to evaluate the strategy – environment interplay in the hospital industry. Using factor analysis to evaluate potential variables, this study used factor scores to create overall measures for a differentiation and a cost orientation.

Section Five provided an overview of Porter's generic model of strategic orientation, with prior research supporting this model. Prior research in both organizational strategy and hospital specific strategy development were presented that validated the use of Porter's model.

Summary

This chapter presented a review of the literature on the subject matter relevant to this research study, including the key constructs, competition, regulation and strategic orientation. The literature review provided an overview of the on-going debate between competition and regulation as means of providing controls on the healthcare industry. The literature review highlighted the controversy of whether the hospital industry responds to the traditional market and competition model, or whether the hospital industry is so radically different that regulatory controls are required to constrain and shape the industry. The preceding literature review also provides a perspective on the importance of strategy development in relation to the specific environment a hospital operates in, specifically in relation to the regulatory and competitive aspects of the environment. This chapter also summarized a review of the literature on Porter's generic strategies and highlighted other relevant healthcare research using this overarching framework.

Because of the controversy regarding the effectiveness of either competition or regulation, these environmental constraints will continue to impact hospitals in the foreseeable future (Butler, 2004; Enthoven, 2004). The lack of definitive evidence of the effectiveness of either competitive market forces or CON regulations emphasizes the need for further research on the strategies hospitals develop in response to the particular environment in which they operate. Because of the significant conflict in the literature on the influence of competition

and/or regulation, this research study will add significantly to the body of knowledge, and will present a new dimension by evaluating the impact of both the competition construct and the regulation construct to the study of strategic orientation of hospitals within their specific environmental constraints.

The next chapter demonstrates the compatibility of Porter's generic strategies with the theoretical concepts of resource dependency and institutional theory, specifically legitimacy, to create organizational competitive advantage. A research model and hypotheses are developed in the following chapter to address the research questions regarding the effect of competition and the effect of regulation on hospital strategic orientation.

CHAPTER THREE : THEORETICAL FRAMEWORK AND HYPOTHESES

Introduction

The previous chapter emphasized the complex and dynamic environment surrounding the hospital industry with regard to both competition and regulation. Based on the specific environmental pressures, organizations evaluate both institutional pressures and resource dependencies in developing strategic responses. This chapter provides the theoretical framework, the conceptual model for the research and the hypotheses that have been derived from the theory and model. The first section of this chapter provides an overview of the concerns regarding the use of only one theory as a framework for research on strategic orientation based on environmental pressures. Section One provides insight on how a growing body of research on integrative health care models uses a combination of institutional theory and resource dependency theory as an explanation of organizational response to environmental pressures. The elements of both theories are presented in section one, including limitations as stand-alone frameworks for strategy research. Specific examples of prior healthcare research using the integrated theoretical framework are presented.

The second section of this chapter discusses the integrated theoretical framework in relation to Porter's strategic orientation model, and the compatibility

of the framework with organizational strategic responses. The conceptual model for the study is presented in Section Two with a discussion of the presumed direction of influences. The final section of this chapter discusses the proposed theoretical framework as well as the specific hypotheses developed from these theories.

Section One: Theoretical Framework

A wide range of theoretical frameworks has been used in previous research in the healthcare field. However, in the complex and uncertain healthcare environment, it is difficult to find a singular theory that addresses the plethora of conditions, situations and factors involved in an organization's strategic responses (Barringer, 2000). In their 1987 article, Hurley and Kaluzney (1987) discuss the unique characteristics of the health care industry in contrast to other market driven organizations, and raise a series of issues that need to be addressed in developing theoretical frameworks. Although the focus of Hurley and Kaluzney's work is organizational ecology, the issues they raise are valid in evaluating any theoretical framework. Distinctions such as the unique regulatory environment, the emerging structures, integrations, diversifications, levels of competition, role of legitimacy, and the impact of change and strategic choice are all relevant in capturing the most appropriate theoretical framework for healthcare research (Hurley and Kaluzny, 1987).

Rather than limiting to just one theoretical perspective in the study of strategy, many current researchers are opting for theoretical pluralism by using two or

more complementary organizational theories to provide a stronger theoretical framework (Osborn and Hagedoorn, 1997). The combination of resource dependency theory and institutional theory is particularly relevant in the evaluation of hospital strategic response to environmental conditions.

One of the common denominators of resource dependency theory and institutional theory is the influence of a turbulent or uncertain environment. Both theories provide a framework for understanding how and why organizations attempt to respond in order to affect and stabilize their environments. As discussed in Chapter 2, both the competitive environment and the regulatory environment provide unique settings in which to develop strategic responses. The following discussion highlights the key elements of institutional theory and is followed by an overview of the key elements of resource dependency theory. The final part of this section presents a combined theoretical framework using both institutional and resource dependency perspectives.

Institutional Theory

Institutionalism was originally formulated as the emergence of orderly, integrating patterns or rules that provided value beyond the technical aspect of operation (Selznick, 1996). These institutional rules take on a myth-like aura that organizations incorporate to gain legitimacy (Meyer and Rowen, 1977). Organizations are evaluated in terms of their consistency and conformance with cultural rules and models that specify appropriate organizational structures (DiMaggio and Powell, 1983). As these rules become embedded and endorsed

as the standard for the organizational field, organizations become homogeneous or isomorphic within their field as they strive to conform to these norms (Zucker, 1987). In this theoretical framework, the term institutionalism is synonymous with legitimacy, and it is the need for legitimacy that forces conformance (Suchman, 1995).

There is a growing body of literature that views institutional theory in a voluntaristic manner with a connection between the need for legitimacy and the development of strategies to achieve legitimacy (Abernathy and Chua, 1996). Many theorists posit that institutional pressures are addressed by organizations through strategic choice (Oliver 1997, Goodstein 1994, Goodrick and Salancik 1996, Lawrence 1999). Oliver argues that organizations behave strategically and choose to conform to institutional norms and that organizational compliance is one of several strategic choices (Oliver 1997). Institutional pressures are viewed as constraints in an organization's environment, just as other environmental complexities, and organizations can choose to conform or resist (Barringer, 2000). Lawrence introduced the term, institutional strategy and proposed that institutional rules and norms provide the context for the development of competitive strategies (Lawrence, 1999).

This perspective of institutional conformity as a strategic choice is particularly relevant to the evaluation of hospital strategy. Institutional legitimacy is a particularly important commodity in the hospital industry, where perception and reputation are critical for organizational survival (Goes and Park 1997).

Porter's generic strategy framework of differentiation fits with the strategic choice view of institutionalism to enhance reputation, image and engender a perception of legitimacy. Porter's differentiation strategies define an organizational orientation to develop structures, products and services that are perceived as valued by their constituencies.

A primary limitation of institutional theory as a stand-alone framework for strategy research is that it ignores the economic implications of strategic decisions. One of the tenants of institutional theory is that efficiency and effectiveness are neither considered nor evaluated in strategy development (Meyer and Rowen, 1977; DiMaggio and Powell, 1983). However, within certain environmental contexts, these criteria are as vitally important to hospitals as the quality and legitimacy factors in the development of strategies for organizational survival.

Resource Dependency Theory

The resource dependency theoretical approach assumes that an organization will not remain static, but will develop strategies and structures that can position the organization to respond and adapt to environmental pressures (Zuckerman and D'Aunno 1990). The basic premise of resource dependency is that organizations are embedded in an environment with other organizations (Pfeffer and Salancik 1978) and consider that environment when developing their strategies. Resource dependency theory assumes a rational and directed adaptation to the environment. Within this framework, an organization can focus

on resource enhancing strategies to assure survival in the face of changing economic or technological circumstances (Zinn, Weech and Brannon, 1998). In fact, a major assumption of resource dependence theory is that decisions are based primarily on economic efficiency (Dickson and Weaver 1997).

Resource dependency theory assumes that organizations will strive for achieving or maintaining autonomy and stability within their environment (Alexander and Morrissey, 1989). It is the goal of organizations within the resource dependency model to decrease or minimize their reliance on other organizations by adopting strategies that increase their resources, thereby maintaining their autonomy (McCue, Thompson and Dodd-McCue, 2000/01). The resource dependency model focuses on organizational efforts to gain power and control over vital resources (Goes and Park 1997). This focus is on controlling the organization's internal resources in order to reduce the need for external dependency (Pfeffer and Salanick 1978; Song, 1995).

Resource dependency theory assumes a voluntaristic response by organizations, which supports strategy development and Porter's strategic cost orientation model (Conner, 1991). A major supposition of resource dependency is that an organization's survival relates to its ability to secure and maintain critical resources (Pfeffer and Salancik 1978). Therefore, using Porter's strategic cost orientation, an organization will evaluate its internal structures and processes and develop strategies to lower cost. Controlling internal resources through an organizational cost strategy positions the organization as a low cost

leader, which makes the organization an attractive partner when resource exchange becomes necessary (Zinn, Mor, Castle, Intrator and Brannon, 1999). Porter's cost orientation is compatible with resource dependency theory as organizations cost strategize by evaluating and controlling resources that will be both competitive in their markets, but will also enhance their organizational financial performance.

One of the major limitations to the resource dependency perspective is its lack of consideration or recognition of the institutional environment or the development of legitimacy as a needed and necessary organizational resource. Current research on strategy emphasizes the importance of the non-tangible assets of an organization (Young, Burgess and Valley, 2002; Devers, Brewster and Casalino, 2003). With strategic intent, organizations are capitalizing on these characteristics within the established structures and norms of the field to create value and competitive advantages. Therefore, institutional theory provides another critical dimension to strategy research.

Integrated Theoretical Framework

The previous sections suggest that neither of these theoretical perspectives alone provide an adequate framework for research on strategy development. A growing body of research on integrative health care models uses a combination of institutional theory and resource dependency theory as an explanation of organizational response to environmental pressures. The integrative approach suggests that organizations exercise strategic choice, but their strategies are

influenced by both their resource strengths and weaknesses and by their specific institutional pressures (Zinn, Weech and Brannon, 1998). It is suggested that the inclusion of norms and legitimacy from institutional theory can enhance the resource dependency theory to provide a range of acceptable organizational responses based on the organization's strategic goals and direction (Dickson and Weaver, 1997).

A key tenant of both resource dependency and institutional theory is the goal of the organization to develop strategies that will improve the organization's stability within its environment (Goodrick and Salancik, 1996; Oliver, 1991). Resource dependency theory supports the concept of stability through resource control, and institutional theory supports the achievement of stability through legitimacy along a continuum of organizational choice (Song, 1995).

The concept of combining institutional theory and resource dependency theory in a framework that allows for a range of strategic responses has been addressed by several researchers in recent works (Child 1997, Oliver 1997, Abernathy and Chua, 1996, Proenca, Rosko, Zinn, 2000; Mano-Negrin, 2003). In his more recent work, Child proposes that the strategic choice perspective incorporates both re-active and pro-active aspects in organizational decision-making (Child, 1997). Oliver (1997) combines resource dependency theory and institutional theory, particularly in the determination of strategic responses and the development of targeted orientations. Proenca et al suggest that organizations can respond to environmental pressures within a range of choices

that span from the conformity and passivity of institutional theory to the active management of resources from resource dependency theory (Proenca, Rosko, Zinn, 2000).

Empirical research has begun to acknowledge the improvement in explanatory results by combining both resource factors and institutional factors. Scott and Foo (1999) evaluated the survival of new franchisors during the time period 1979 to 1996, and found that both economic or resource factors and legitimacy factors were important determinants of franchise survival. Abernathy and Chua (1996) used a framework of resource dependency and institutional theory in their study of organizational accounting control systems evaluating both the technical environment and the institutional environment. Evaluating the dynamics of large law firms, Sherer and Lee (2002) integrated both resource dependency and institutional theory. Their study analyzed the impact of both competitive pressures and institutional pressures on strategies and innovations within law firms, and found that both resource concerns and the need for prestige were both important factors.

Research on the strategies developed by hospitals also confirms the congruence of a combined theoretical framework blending resource dependency and institutional theory. Proenca, Rosko and Zinn (2000) used both resource dependency and institutional theory as a framework for their research on the determinants of community orientation strategies for over 4,500 hospitals. This framework allowed for a range of organizational strategies, from controlling

resources to reduce dependencies, to meeting institutional expectations of the organization's constituents. Goes and Parks (1997) also used both resource dependency and institutional theory to develop their hypotheses regarding the influence of interorganizational relationships on the adoption of a bundle of services they termed innovative for the healthcare field. They posited that hospitals would develop interorganizational linkages to gain resources and legitimacy thereby stabilizing their competitive environments. Their findings suggested that hospitals strategically developed relationships with other organizations to gain power over resources and increase innovative services as hypothesized under the resource dependency perspective. They also found that hospitals that developed legitimacy enhancing relationships significantly influenced service innovation. Succi-Lopez, Lee, and Alexander (2003) also used a plural theoretical framework in their study on factors in system hospital decisions to divest hospitals. Citing the significant complexity of the hospital environment compared to other organizational fields, their study incorporated resource dependency, institutional theory and interorganizational relations theory in determining the financial, institutional and systems factors that influence decisions on discontinuing a hospital system relationship.

This section summarized the key elements of institutional theory and resource dependency theory, and presented prior research on strategy using a combination of both theoretical perspectives. Specific examples of health care research using the dual theoretical framework confirmed the validity of this

approach. The following section proposes the theoretical framework for this research study and describes the fit of this framework with Porter's generic strategic orientation model. A conceptual model is presented that identifies the key aspects of this study in relation to the research questions identified in Chapter One.

Section Two: Proposed Theoretical Framework

The theoretical framework proposed for this paper builds on the prior works identified in the previous section. The application of a theoretical framework for this study uses the integrated dual theoretical approach of institutional theory and resource dependency theory that includes the conforming or adaptive responses of institutional theory as well as the resource enhancing responses of resource dependency theory. Both institutional perspectives and resource dependency perspectives provide a continuum of alternatives for strategic orientation. As in all of these theoretical perspectives, the environment plays a dominant role. Depending on the particular environmental pressures perceived by an organization to have the greatest impact and the organizational interests determined to be most important, organizations develop strategies to improve their chances of survival.

Fit with Porter's Generic Strategy Model

Hospitals develop strategic responses depending on their specific environmental situation (Shortell and Zajac, 1990; Deephouse, 1996). Porter's generic strategy framework of focusing on differentiation elements or focusing on

cost elements fits the combination of both institutional theory and resource dependency theory. The combined theoretical framework is particularly relevant with Porter's model when using the more current concepts of both theories where the institutional theory stresses legitimacy and the resource-based view stresses resource advantage and financial stability.

One of the key tenants of institutional theory is the influence of environmental uncertainty. Under conditions of uncertainty, imitation and the mimetic process become more pronounced as organizations develop strategies to conform to structures and processes deemed legitimate (Selznick, 1996). Bloodgood and Morrow (2000) theorize that institutional pressures dictate the strategic actions of organizations with regard to both resource based strategies and conformance strategies. When uncertainty and competitive pressures are high, organizations will tend to follow the lead of the most successful organizations by copying strategies that are perceived as legitimate within the field.

DiMaggio and Powell, (1983) refer to both competitive and institutional isomorphism where organizations compete for power and legitimacy by adopting those forms or structures that have become been legitimized. Organizations develop their strategies to comply with the standards, values and beliefs of their constituency, and it is the need to achieve legitimacy that is a driving force in their strategy development (Zinn, Weech and Brannon, 1998). Organizations in a competitive market environment will attempt to copy or model the most successful organizations in their field or the structures that have been deemed

legitimate by external organizations, customers, payers etc. The legitimacy that organizations strive for actually becomes a valued resource for the organization and gives the organization that has achieved the perception of legitimacy a deemed status among its competitors (Suchman, 1995).

There is growing recognition and validation in current healthcare research of the importance of non-price attributes in creating a competitive advantage.

Reputation, image, compliance with norms and expectations are characteristics that enhance legitimacy and play a role in attracting customers, co-opting with payers, developing relationships with critical networking partners and securing market share (Robinson and Luft, 1987; Devers, Brewster and Casalino, 2003).

Resource dependency theorizes that the need for stability is a major motivating force for organizations and that organizations will attempt to control or manage the uncertainties in their environment (Day and Nedungadi, 1994). A major tenant of resource dependency theory is that organizations will develop strategies within their environmental context to secure their internal core (Gay, Kronenfeld, Baker, Amidon, 1989). When the environment is turbulent and uncertain, organizations will be forced to secure resource exchanges with other organizations to try to control their environment, (Aldrich and Pfeffer, 1976). However, if not faced with a competitive, volatile environment, organizations will focus on their internal strengths with the goal of maintaining their autonomy and independence (Alexander and Morrissey, 1989). Organizations in a non-competitive and more predictable environment will strengthen their internal core

and orient their strategies toward securing the resources of their organizations through cost control and efficiency efforts, looking to cost leadership as a means to success and survival. Porter's generic strategic orientation model of cost leadership seems most appropriate in this environment. In a more stable environment, organizations can direct their focus on cost leadership, as their environmental context provides the flexibility to concentrate on improving productivity, efficiency and profit maximization (Hamrick, 1983).

Using Porter's generic strategic orientation model, organizations can develop a differentiation leadership orientation based on the institutional perspective to gain legitimacy or can develop a cost leadership strategic orientation to achieve a financial advantage from the resource dependency perspective. Porter's typology is particularly relevant when evaluating the effect of these institutional and resource pressures with the constructs, competition and regulation. There is wide application of the Porter framework in research on competition among organizations (Young, Burgess and Valley, 2002) and in research on regulation and the influence of regulation on competition in the health care market (Autry and Thomas, 1986).

Conceptual Model

Both institutional theory and resource dependency theory provide the theoretical foundation for the conceptual model developed for this study. The conceptual model provides a formula to study the relationship of competition and regulation with hospital strategic orientation. The construct, competition is

measured by the Herfindahl Index (HHI), indicating the level of market competition, and the construct, regulation, is measured by the CON regulatory environment by state. These competitive and regulatory aspects provide the environmental uncertainty and context within which hospitals develop strategic responses. The literature supports the development of strategies based on the specific environmental context that surrounds a hospital (Zajac, Kraatz and Bresser, 2000), with specific emphasis on the competitive environment and the regulatory environment (Santerre and Pepper, 2000; D'Annunzio, Succi and Alexander, 2000). The environmental context for hospitals ranges from highly turbulent to relatively stable depending on both the level of competition in the market and the regulatory controls of CON that protect entry to the market or the absence of CON that eliminates barriers to the marketplace (Bernstein and Gauthier, 1998; Kessler and McClellan, 2000).

Institutional and resource dependency pressures exist within the environmental context and influence the strategic responses selected by hospitals. Hospitals can develop strategies directed toward achieving legitimacy to respond to institutional pressures, and can develop strategies to enhance resources to reduce resource dependency, depending on the specific environmental context. A primary overarching constant of institutional theory is the influencing force of a turbulent and unpredictable environment (Selznick, 1996). According to institutional theorists, competition is a major factor in a complex and uncertain environment (DiMaggio and Powell, 1993) and the lack of

regulatory controls also creates an unpredictable environment (Porter, 1991). These two elements within a hospital's environment create the need to achieve legitimacy for an organization (Bloodgood and Morrow, 2000). Prior research indicates that under circumstances of high uncertainty in the environment with significant competition among organizations and no regulatory barriers to slow the entry of new competitors, organizations tend to develop differentiation strategies for legitimacy and competitive advantage (Kim and Lim, 1988; Lamont, Marlin and Hoffman, 1993). In a more defined, stable environment with low competition where there are regulatory barriers to entry, organizations tended to concentrate on resource control and efficiencies, and were more successful with cost leadership strategies (Miller, 1988; Kumar, Subramanan and Strandholm, 2002).

In the conceptual model, the construct, strategic orientation, uses Porter's generic strategic orientation typology of differentiation and cost strategies to develop operational measures. The primary focus of the differentiation orientation is to create a perception of legitimacy with strategies including system affiliation, the development of hospital/physician relationships, the development of an ambulatory surgical center, and the development of a strong community orientation. The primary focus of the cost orientation is to enhance resources to reduce dependencies and include controlling nursing FTE's, controlling occupancy and controlling operating expenses. As there are additional variables that also can be influenced by the competitive and regulatory environments and

can impact strategic orientation, the conceptual model provides controls for these market and organizational factors. The conceptual model including all of these elements is identified as Figure 1.

Section Three: Hypotheses Development

This research study defines a group of variables that have been selected to represent a differentiation orientation and a cost orientation based on prior research and the theoretical framework combining institutional theory and resource dependency theory. The conceptual model identified in this chapter presents the overriding influence of the environmental conditions dictated by the level of CON regulation and the level of market competition.

This section presents each variable included in this study to represent either a differentiation or a cost orientation, within the context of prior research that supports the variable measurement of the construct. Four differentiation variables are first presented, including system affiliation, hospital/physician relationships, development of ambulatory surgical centers and community orientation. Three cost orientation variables are then presented, including RN FTE's, occupancy and operating expense. The theoretical influence of either institutional or resource dependency forces are presented with other research findings that support the variable, construct, theory and strategic orientation.

After each of the selected variables is presented and justified as to its inclusion in this study, the research questions are re-stated and hypotheses are

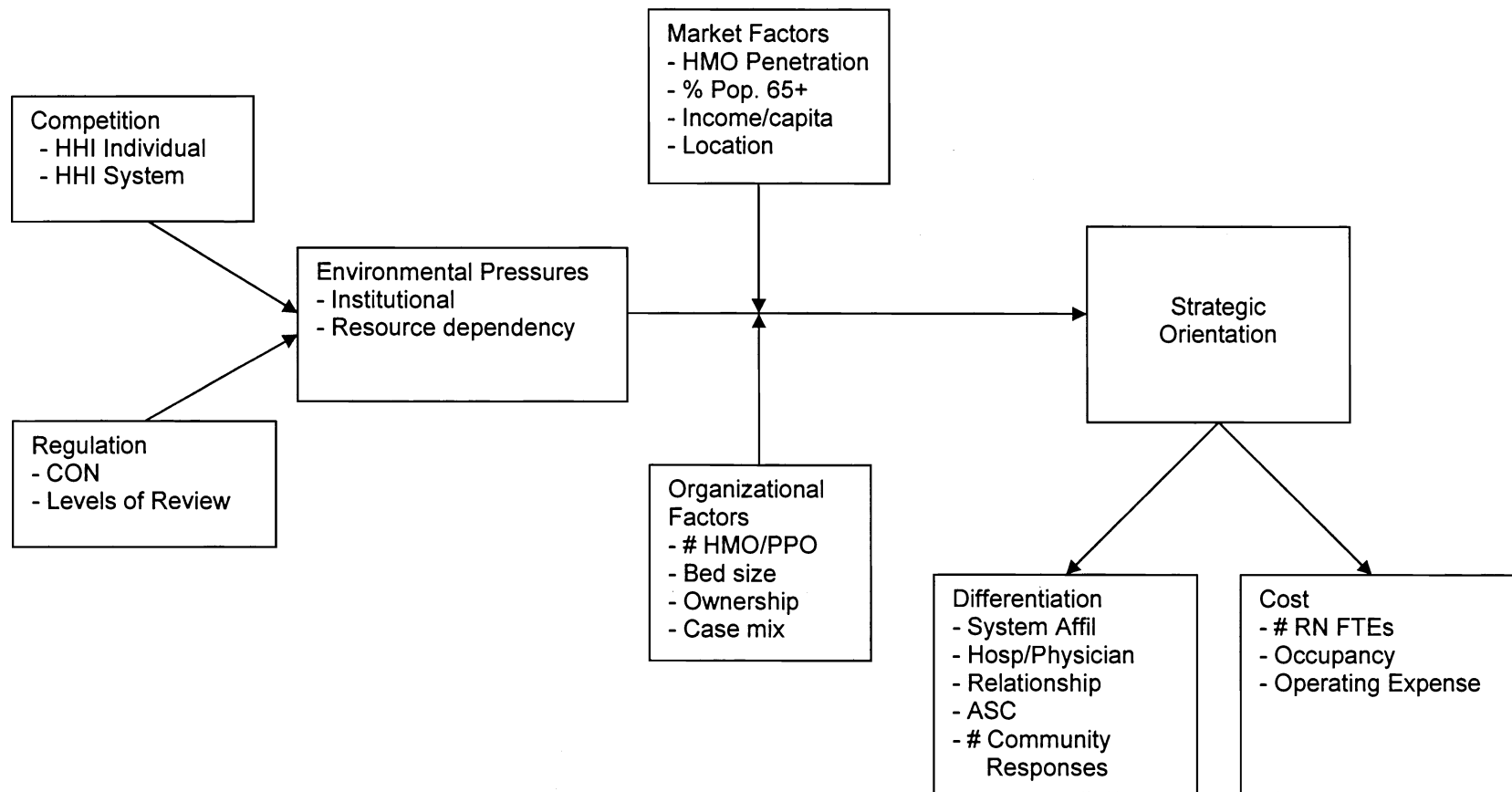


Figure 1. Conceptual Model

developed to address each research question. The hypotheses are supported by prior literature and research on the influence of the level of market competition and the influence of the CON regulatory environment, the theoretical underpinnings of institutional and resource dependency theory and the research on the specific variables that represent each strategic orientation.

The specific hypotheses developed from the theoretical framework and conceptual model are organized around the four research questions presented in Chapter One. The hypotheses predict a grouping of variables to represent the dependent constructs of differentiation and cost leadership orientation, and predict the influence of different environmental conditions dictated by the level of market competition and by the level of CON regulation. The hypotheses also predict an interaction between competition in the market and regulation in the market.

The research methodology for this study evaluates a group of variables that are identified as representing either a differentiation or cost orientation. Factor analysis is used to confirm the relationship of these variables with a particular factor or construct of strategic orientation, and then a factor score is created for each hospital in the sample. The variables are therefore grouped as either differentiation strategies, or cost strategies. The following section presents the seven variables proposed to measure either differentiation strategic orientation or cost strategic orientation and the justification for their selection.

Differentiation Orientation Variables

According to Porter's generic strategy of differentiation, organizations will strive to establish structures, programs and services that are unique within their market (Porter, 1985). Organizations analyze their environments and develop strategies that are compatible with the specific elements found in their environment. Through the strategy of differentiation, organizations create opportunities to highlight features that distinguish them from their competitors. A competitive advantage can result when an organization creates a strategy that is difficult for other organizations to duplicate (Shortell, 2005).

Prior research has indicated several strategies used by hospitals to differentiate their organizations. System affiliation has been cited as a strategy to gain legitimacy and create a distinctive advantage (Shortell and Zajac, 1990; Goes and Park, 1997). Another relationship strategy employed by hospitals to distinguish their organizations, particularly in highly competitive markets is the development of physician/hospital relationships (Burns, Bazzoli, Dynan and Wholey, 2000, Esposto, 2004). Hospitals will also create a competitive advantage through their service complement, such as developing ambulatory surgical centers to appeal to patients and physicians and to differentiate their organizations (Lynch, 1991; Young, McLaughlin, Vaughan and Aluise, 1992). Community involvement is another strategy used to differentiate a hospital from its competitors (Brown and Dacin, 1997). These differentiation-oriented strategies are discussed in detail, using the institutional theory framework and

the conceptual model to develop an expectation on the relationship of competitive markets and CON regulations on the specific orientation toward differentiation as defined by this group of variables of hospital strategies.

System Affiliation

As hospital organizations search for survival strategies, increased market competition and the regulatory environment have created an interest in system affiliations (Zwanziger and Mooney, 2005). These organizational relationships are viewed as a mechanism to reduce uncertainty and complexity (Goes and Park, 1997). However, research on the effectiveness of hospital systems has been mixed.

Prior research that has provided some evidence that system affiliated hospitals are effective compared to non-affiliated hospitals evaluated average price reductions in system hospitals (Conner, Feldman and Dowd, 1998), improved operating efficiency (Alexander, Halpern, Lee, 1996), operating cost reduction (Lynk, 1995) and improved profitability (Woolley, 1989). Of note are the equal number of research studies that have not found the development of system affiliations to be an effective strategy. A 1997 study found that strategic hospital alliances were not more effective at cost control or improving cash flows (Clement, McCue and Luke, 1997). Other studies found that prices increased after merger, (Melnick, Keeler and Zwanziger, 1999) and that economies of scale in mergers were marginal (Dranove, 1998) and that larger health care organizations actually displayed dis-economies both of scale and coordination

(Goldsmith, 1994). McCue et al found that system-affiliated hospitals were less likely to have higher cash and investments than independent hospitals (McCue, Thompson, Dodd-McCue, 2000).

Of note, the great majority of research studies on hospital mergers, system development and alliances have evaluated effectiveness on financial performance and cost containment, to the relative exclusion of other factors that might be considered elements of organizational success or responsiveness to a turbulent and uncertain environment. However, regardless of the research, this organizational form continues to develop at a rapid rate. In fact, one of the more dramatic and visible organizational changes in the health care field has been the growth in interorganizational relationships (Bazzoli, Chan, Shortell and D'Annuo, 2000).

There is growing acknowledgment that system affiliation among hospitals has become an institutionalized arrangement that outside organizations have determined to be acceptable and even desired organizational models (Song 1995). As these relationships form and become recognized within the field, other organizations copy the structure and it becomes an accepted norm (Osborn and Hagedoorn, 1997). Following institutional theory tenants, when there is significant uncertainty and complexity in the environment, there is a greater tendency to adopt what are viewed as institutionalized structures, regardless of their effectiveness (Meyer and Rowen, 1997). DiMaggio and Powell (1983) refer

to this adoption as institutional isomorphism, with the emphasis on the acquisition of power and legitimacy.

Shortell and Zajac (1990) suggest that the formation of systems in the hospital industry is more related to strategic orientation than the achievement of financial or efficiency gains. These relationships are being viewed as a strategy to gain legitimacy (Goes and Park, 1997). Rather than trying to re-invent the structures and processes of the most successful hospitals, organizations are strategically aligning with them through formal structures to enhance the image and reputations of the less successful organizations (Barringer and Harrison, 2000).

Porter's model of strategic orientation provides a compatible framework to the institutionalized structure of hospital system relationships. The differentiation strategic orientation as defined by Porter requires that the strategy create a unique and difficult to imitate structure in order to achieve a competitive advantage. As hospitals align in a relationship, the specific synergies that accrue to the partners would be unique and the image and reputation of the combined partnership not easily replicated.

In a highly competitive market and in markets where there are no CON regulations to restrict entry of new competitors, non-financial factors such as reputation, image and quality become even more important to hospital survival and a critical strategic evaluation in a hospital's decision to form a system relationship. Based on prior research and the theoretical framework of

institutional theory, the variable, system affiliation, is a differentiation strategy and a component of the hypotheses regarding a differentiation orientation.

Hospital/Physician Relationships

Under conditions of market uncertainty such as highly competitive or non-CON regulated environments, hospitals look for strategies to differentiate their organizations or create legitimacy for their organizations with respect to physician relations (Douglas and Ryman, 2003). In fact, there is research that has found correlations between the level of competition and the formation of hospital/physician alliances (Burns, Bazzoli, Dynan and Wholey, 2000; Alexander, Burns, Morrissey and Johnson, 2001).

In non-CON regulated states with no barriers to entry, physicians can and do develop ambulatory surgical centers, imaging services and other modalities that threaten the viability of hospitals (Harrison and Montalvo, 2002). There is an increasing trend for physicians to invest in competitive health care facilities in a for profit setting (Gallagher and Goodstein, 2002). Esposto (2004) concluded that hospitals in markets where physicians have the potential to become competitors have a greater propensity to develop hospital/physician integration structures. Casalino (2005) predicts that developing appropriate hospital/physician relationships will be one of the major issues for hospitals over the next five years.

Hospital/physician affiliations are another form of affiliation that has become legitimized in the healthcare field (Burns, Walston, Alexander, Zuckerman et al,

2001). Dynan, Bazzoli and Burns (1998) cite numerous sources that confer deemed status on hospital/physician relationships as positive role models in quality improvement. Madison (2004) points to the Medicare Partnerships for Quality Cardiovascular Services as a form of institutionalism, which encourages this type of relationship. The Medicare incentives created for hospital/physician affiliations are cited by Madison as a factor in the continued development of this structure. DiMaggio and Powell, (1983) refer to coercive isomorphism when pressures from external organizations that have some authority or clout are assumed to be a mandate to adopt those forms or structures that have been legitimized by these external organizations.

The Porter model of strategic orientation views the differentiation strategy as the creation of a unique and valuable strategy. Kohn (2000) found in a community tracking study that hospital/physician relationships were proliferating, but with the goal of creating partnerships that couldn't be replicated either with regard to scope or geographical coverage. These integrated delivery systems became legitimized structures that had unique bargaining powers in the competitive managed care environment. Research by Burns, Walston, Alexander, et al (2001) suggests that hospital/physician affiliations enhance the image of hospitals by projecting continuity and quality to their communities, thus conferring legitimacy through the relationship. Douglas and Ryman (2003) concluded that a high level of rivalry in the environment provided a context for positive benefits from hospital/physician relationships.

There has been a substantial amount of research on the efficiency and effectiveness of hospital/physician relationships, evaluating the impact on hospital referral patterns, expenses and outcomes. And hospitals identify a number of reasons for their hospital/physician relationships, including assuring a referral base, enhancing contracting ability and strength, and assuring quality and consistency of physicians. However the results of the research on the effectiveness of these relationships is conflictual, with some research indicating a positive impact and other studies indicating no impact or a negative impact (Goes and Zhan, 1995; Mark, Evans, Schur and Guterman, 1998; Burns, Walston, Alexander et al, 2001; Madison, 2004). But even in light of inconclusive data on improved quantitative indicators, hospital/physician relationships continue to develop. This is one of the tenants of institutional theory. Even when there is no evidence of the efficiency or effectiveness of a particular structure, if that structure has become viewed as legitimate by a given constituency, then institutional pressures are strong enough to assure continued adoption of the structure (Meyers and Rowen, 1997). Although there have been no conclusive collective findings that these affiliations are cost effective or efficient, they continue to be developed for the intrinsic value of patient and provider acceptance of this structure and the legitimacy of the structure (Burns, Bazzoli, Dynan and Wholey, 2000).

Prior research has found a positive correlation between the level of competition in the hospital market and the development of hospital/physician

relationships (Burns, Bazzoli, Dynan and Wholey, 2000; Esposto, 2004). The CON environment has also been found to influence the development of hospital physician relationships, with the development of hospital strategies to align with physicians in non-CON regulated states (Simendinger, Powell, Vizzi, 2002). This research and the institutional theoretical framework leads to the inclusion of hospital physician relationships as a variable defining a differentiation strategy and a component of the hypotheses regarding the relationship of the competitive and regulatory environment on a differentiation orientation by hospitals.

Development of Ambulatory Surgical Centers

The development of ambulatory surgical centers (ASCs) is a fast growing trend across the country. Medicare defines an ASC as a facility that operates exclusively to provide surgical services to patients that do not need inpatient hospitalization (Winter, 2003). Luxenberg (2003) estimated that ASC growth is increasing at a rate of approximately 10% annually. The proliferation of ASCs and increasing competition for ASCs comes from hospitals, physicians and private developers, as well as a wide range of joint ventures among those groups (Lynk and Longley, 2002). However, the development of an ambulatory surgical center as a strategic decision can be viewed as a very conflictual one for hospitals. From a positive perspective, an ASC can create a new market for patients and capture the loyalty of a new group of physicians (Lynch, 1991). Conversely, an ASC can create duplication of facilities, staff and equipment and reduce existing revenues by splitting the profits among new partners. Hospitals

must strategically weigh the economies of scale of consolidating all surgery in the hospital facility against the competitive threat from other providers offering an ambulatory alternative (Yang, McLaughlin, Vaughan and Aluise, 1992). The competition for and proliferation of ASCs is a highly debated subject, as either promoting choice and accessibility or threatening the viability of hospitals (Shactman, 2005).

A critical factor in the strategic development of ambulatory surgical centers for hospitals is the consumer driven marketplace. Patient awareness and demand for the access and convenience of ASCs are creating an opportunity for hospitals to differentiate their organizations by branding an ASC to their hospital reputation and image (Lopez and Parini, 2004). Hospitals also develop ambulatory surgical centers in physician joint venture opportunities to partner with key physicians and assure their loyalty (Peters and Blasco, 2004). As with other differentiation strategies selected in this study, there is continued debate on the effectiveness of ambulatory surgery development with regard to the impact on cost and quality. However, these structures have developed significant appeal to patients and physicians, and fall under the aura of institutionalized legitimacy (Casalino, Devers and Brewster, 2003).

Institutional theory posits that organizations must incorporate the recognized standards of work for their organizational field in order to be perceived as a legitimate provider (Meyer and Rowen, 1977). For hospitals, the standards of work assume a comprehensive scope of services, and organizational success

depends on having the appropriate complement and scope of services that is the accepted standard for the field (Zucker, 1987).

Bolon (1998) suggests that because hospitals are such complex organizations and their product of healthcare so difficult to measure and define, the public equates the technical proficiency of the hospital with legitimacy. Therefore, the development of a surgical center that is tied to the hospital brand can be a competitive advantage to consumers. Constituents view association with a hospital as legitimizing the ambulatory surgery center. Physicians can coattail on the legitimacy of a hospital affiliated ambulatory surgery center and achieve benefits from the halo effect of the hospital image. Developing a specific image or reputation for the ASC in association with the hospital could create a competitive advantage that would be difficult for competitors to overcome.

Porter's strategic orientation model assumes that an organization will use those attributes valued by its customers and constituents to create a differentiation strategy, placing the organization in a superior position relative to its competitors. Porter's work, *Competitive Advantage*, (1985) defines the differentiation orientation with specific reference to creating services that engender customer loyalty. However, Porter takes a broader view of customer than just the consumer of the product, and includes all parts of what he terms the value chain. A customer can include not only the purchaser, but also the procurement and referral network. Developing a differentiation strategy that captures loyalty throughout the value chain creates the competitive advantage.

In the hospital industry, physicians are a vital part of the value chain, and developing physician loyalty is as critical to a hospital's success as customer loyalty. The development of an ambulatory surgery center is a differentiation strategy that addresses both the consumer demand and physician demand.

Using the multi-year Community Tracking Study, Casalino, Devers and Brewster, (2003) found that the absence of Certificate of Need legislation and the presence of competition from large specialty groups were factors associated with the development of ASCs. Research studies have concluded that the more competitive the hospital environment, the greater the supply of specialized services (Dranove, Shanley and Simon, 1992; Calem and Rizzo, 1995).

These studies support the value placed on developing services and programs demanded by key constituencies, and therefore taking advantage of the loyalty that is attained for the hospital. Developing superiority in the ASC marketplace, particularly in highly competitive or non-regulated markets will differentiate hospitals from their competitors and provide an image of legitimacy. Based on the institutional theory framework and prior research, the variable, development of ambulatory surgical centers, is hypothesized to be a differentiation strategy under the influence of the competitive and regulatory environmental circumstances and a component of the hypotheses regarding a differentiation orientation.

Community Orientation

Suchman's (1995) major work on institutional theory defined various types of legitimacy and included strategies that organizations could adopt to conform to the specific institutional pressures within their environment. Pragmatic legitimacy occurs when the constituents of the organization perceive that they receive value from the organization, or where a symbiotic relationship develops between the organization and its constituents. Cognitive legitimacy results when the organization has developed such loyalty that other options are not considered. And finally, Suchman used the term, moral legitimacy, and posited that organizations were judged to be legitimate when they were perceived by their constituency as morally responsible, through community, environmental or socially oriented interactions.

In a competitive market or a market that is not regulated by CON to bar entry, hospitals want to be "the" hospital of choice, and gain the loyalty of the patient base. Hospitals will develop strategies to assure positive relationships with their communities, and will select strategies that are mutually beneficial, viewed as socially responsible and that tie the patient to the hospital.

Porter's 1980 work, *Competitive Strategy*, defines the generic strategy of differentiation as creating a unique image that has broad appeal to the customers. The strategy that differentiates the organization from its competitors based on community benefit engenders the loyalty of the customer to the organization. According to Porter's work, the differentiation advantage created

by an organization can be more perception than reality, as long as the public believes that the organization is doing the right thing.

Current strategy and marketing literature describe strategies designed to differentiate an organization from its rivals based on social responsibility or moral legitimacy (Singhapakdi, Kraft, Vitell and Rallapalli, 1995; Drumwright, 1996; Menon and Menon, 1997; Handelman and Arnold, 1999). As organizations operationalize their social and moral legitimacy strategies, they create a positive image and reputation, which in turn, creates a competitive advantage (Fombrun and Shanley, 1990). Differentiation occurs through the development of socially valued programs, which gives the organization its legitimacy within its community (Brown and Dacin, 1997).

Many hospitals view the development of community health programs, health promotion projects and wellness and disease prevention programs as part of their mission and social responsibility to their communities. Hospitals strive to be viewed as the source of health information and the major promoter of health, and it is through these types of programs that hospitals can create the image of legitimacy by complying with community values and expectations (Nath and Sudharshan, 1994). A national focus on health promotion and organizations such as the Department of Health and Human Services Healthy People 2010 provide a coercive institutional environment that legitimizes hospitals' efforts in community health activities (Olden, 2004). In highly competitive environments, organizations focus on those social or environmental issues that their customers

and stakeholders support, creating a differentiation from other competitors (Feurer and Chaharbaghi, 1996).

The preceding discussion highlights the competitive advantage gained by an organization if it is perceived as contributing to the health and welfare of the community. Organizations that take a leadership position in differentiating their organization through community health initiatives can achieve a perception of moral legitimacy. In highly competitive markets or non-CON restricted markets, hospitals will strategically position their organizations to be perceived as the leader in community health initiatives. Therefore the variable, community orientation is included in the development of hypotheses regarding the association of competition and regulation with a differentiation orientation.

Cost Orientation Variables

Porter (1985) defined a cost leadership strategy as one in which an organization establishes an advantage in the market based on cost factors, such as creating efficiencies and maximizing resources and developing operational proficiencies. In aligning strategies with specific environmental situations, hospitals in less competitive markets and hospitals that have CON regulatory protection from new entrants to the market can develop cost oriented strategies to control their resources.

In order to control resources, several strategies have been cited in prior research as effective in establishing cost leadership. Control of the labor component of hospital costs, specifically RN staffing, is a significant cost strategy

(Elixhauser, Steiner and Fraser, 2003). High occupancy rates have consistently been associated with hospital success (McCue, 1991; Goldstein, Ward, Leong and Butler, 2002), and hospitals adopting a cost orientation focus on increasing occupancy rates. Hospitals adopting a cost strategic orientation focus on efficient use of resources by controlling operating expenses (Kumar and Subramanian, 2000; Rivers and Bae, 1999). These variables that have been selected to represent cost oriented strategies are discussed in detail, using the resource dependency theory framework and the conceptual model to develop an expectation of the relationship between the level of competition in the market and the CON regulations in place to the development of this group of cost strategies.

RN FTE Control

Hospitals adopting a cost based strategic orientation will focus on expense reducing strategies to assure their survival and financial success. As labor costs typically represent the largest single component of hospital costs, it is a prime target for cost reduction. Ford and Kaserman (1993) identify RN wages as a major factor affecting costs, and therefore control of RN wages can be a significant determinant of profitability. Becker and Potter (2002) identify several methods to reduce the labor costs in hospitals. Labor costs can be impacted by reducing the overall number of FTEs per hospital bed and also by substituting less costly labor for highly trained and highly compensated employees. Becker and Potter provide the example of substituting less expensive LPNs and aides for the higher salaried registered nurses.

However, reducing the number of RNs or substituting less trained staff can impact patient satisfaction and perceived quality. Mark, Harless, McCue and Xu (2004) found a statistically significant relationship between the number of RNs/1,000 patient days and hospital mortality rates, with higher staffing associated with lower mortality. Otani, Kurz and Barney (2004) evaluated attributes of hospitals and the perceptions of patients regarding satisfaction. In this study, the attribute ranked highest with regard to overall patient satisfaction was nursing care. Numerous studies confirm the importance of staffing, particularly nurse staffing, in assuring patient satisfaction (Paula, Long and Wiener, 2002; Andaleeb, 1998). In a competitive market, hospitals might not have the flexibility to reduce staffing levels due to concerns about patient perceptions and potential competitive disadvantages. But when the market is less competitive, hospitals potentially have more flexibility to reduce or substitute high cost RN labor, and conserve labor resources.

Resource dependency theory emphasizes the control of resources that impact the efficiency of the organization, and the concept of resource control extends to human as well as other operational and financial factors (Conner, 1991). Porter's cost orientation typology clearly encompasses the control of labor cost, as in most industries, the labor factor is one of the dominant costs of production, and one where organizations can exert some control.

In a study comparing the regulatory environment of Maryland to the competitive environment of Minnesota, Anderson, Heyssel and Dickler, (1993)

found that the regulatory environment provided opportunities for greater productivity enhancement. The study compared hospitals in the Baltimore MSA to hospitals in the Minneapolis/St. Paul MSA over the time period 1971 to 1990 to determine cost and productivity differences. These two areas represented opposing environments in the market competition versus regulatory control models. Minnesota had taken a pro-competition stance in the 1980's eliminating CON and rate review, while Maryland had stringent CON regulations and rate review. They found that the regulated Baltimore hospitals had a slower growth in FTEs per occupied bed and lower payroll expenses per FTE. Of interest, they found no significant differences in the growth in overall hospital costs during this time period between the competitive environment and the regulated environment. This could indicate that the less competitive environment of Baltimore where regulation controls entry of and expansion by competitors, provides opportunities for resource conservation with regard to FTEs.

In a more stable, less competitive market, hospitals have more flexibility in making staff-oriented resource reductions. Obviously, there is a level of staffing that is required to meet regulations and quality requirements. However, in an environment where there is less competition for patients, hospitals can control the resources they might have had to allocate to meet expectations for patient satisfaction over and above the required levels. As the regulatory controls of CON exclude new entrants to compete for staff and patients, there is greater opportunity for resource control. Therefore, based on resource dependency

theory and prior research, this variable has been selected for inclusion in the cost orientation hypotheses.

Occupancy

Hospital occupancy rates have been fairly consistently associated with hospital success and survival in current healthcare literature. McCue (1991) evaluated hospitals with failing financial positions relative to cash flow. A common characteristic of the hospitals with poor financial performance was a lower occupancy rate. Langland-Orban, Gapenski and Vogel (1996) examined the determinants of hospital profitability of hospitals in Florida. Their findings indicated that high occupancy rates were positively associated with high profitability.

Occupancy rate is a major focus for hospitals with the presumption that the resources of the organization are being deployed efficiently when occupancy of inpatient beds is high. Conversely, hospitals with low occupancy rates have excess capacity and poor diffusion of overhead costs, with a negative impact on financial performance. It is reasonable to assume that hospitals in less competitive markets have a greater opportunity to control their occupancy rates. Resource dependency theory presumes that organizations will strive for efficient operation and control of their resources. During turbulent times, organizations will develop relationships with other organizations to secure resources. However, in stable conditions, organizations will attempt to control their own internal resource capabilities in order to remain independent and avoid external

dependencies (Pfeffer and Salanick, 1978). By maintaining a high occupancy rate, organizations can generate higher revenues and conserve resources by spreading fixed overhead over a higher base.

Porter's generic cost orientation strategy posits that organizations will focus on strategies that reduce cost and promote efficient operation. Kumar, Subramanian and Strandholm (2002) used Porter's generic strategy model to evaluate the strategic orientation focus that hospitals took based on their perceptions of their environments. The study used a survey instrument that operationalized cost orientation by responses from hospitals indicating a focus on enhancing efficiency and controlling expenses. Their study operationalized market or differentiation orientation based on hospital responses focusing on innovative services, and customer directed strategies. In their sample of hospitals, they found that hospitals that perceived their environment as stable and less competitive predominantly selected cost orientation strategies, while hospitals that perceived their environments as competitive selected market oriented strategies. Within these market conditions, a focus on cost control strategies resulted in improved performance in a stable environment.

Bazzoli, Manheim and Waters (2003) and Alexander and Morrissey (1989) used hospital occupancy as a measurement variable because it is reflective of management capabilities and control. Healthcare research has found a positive correlation between a high occupancy rate and increased profitability and organizational survival (Nath and Sudharshan, 1994). The presence of CON

regulations has been associated with reducing the level of competition by acting as a barrier to new providers (Santerre and Pepper, 2000) and low competition is associated with a relatively stable environment (Alexander and Morrissey, 1989). Grossman and Banks (1998) found that unrestricted entry, where CON was not present, led to increased competition and decreased hospital output in comparison to hospitals where entry barriers were in place. Based on the theoretical framework of resource dependency and prior research supporting the validity of this variable, occupancy is included in the selection of the variables creating the cost orientation hypotheses.

Operating Expenses

Aldrich and Pfeffer (1976), two theorists given much credit for the development of resource dependency theory, compared and contrasted the natural selection theory to resource dependency theory in their 1976 work "Environments of Organizations". One of the major differences, and a key tenant of resource dependency theory is the influence an organization has over environmental conditions. Where natural selection credits the environment for organizational success or failure, resource dependency credits organizational management and strategy development as the key to survival. Resource dependency theory presumes that the organization manages the environment, not vice versa. Therefore, it is assumed that an organization in a non-competitive environment will take advantage of the situation and secure resources while the environment is favorable. Based on resource dependency

theory, where regulations such as CON restrict new competitors from entering the market, existing providers can focus on reducing dependencies by improving profits.

Marlin, Huonker and Sun (2002) used Porter's generic strategy typology to evaluate the relationship between strategic orientation and hospital performance. As with most studies using Porter's model, this study emphasized the importance of the specific environment and the fit between the environmental conditions and strategic orientation. This study was restricted to Florida hospitals in a relatively stable time period. Hospitals were grouped based on their leadership on variables such as staffing costs and operating cost/ patient day to represent a cost orientation. Their results indicated that in the particular environment under study, hospitals pursuing a cost orientation strategy outperformed differentiation oriented hospitals and hospitals with no strategic orientation.

One of the major tenants of Porter's generic strategic model is the importance of controlling all aspects of expenses to maximize profitability. In their study using the Porter generic strategic orientation typology, Kumar and Subramanian (2000) used operating expense as a variable to measure cost orientation because hospitals have the ability to control operating expense. Conner, Feldman and Dowd (1998) used operating expense rather than total expense to focus on an aspect of operations where hospitals can exercise more control. In a major longitudinal study on trends in hospital efficiency, Wang, Ozcan, Wan and Harrison (1999) considered operating expense as a critical

variable in defining hospital inefficiency. In addition, Rivers and Bae (1999) and Rivers and Fottler (2004) used operating expense as a more cost reflective variable in studies on the relationship of competition in the hospital industry.

Several other studies have evaluated the effect of environment, competition and strategy on profitability. Noether (1988) studied the effect of CON regulations and concluded that hospital margins were highest in well established CON controlled states. Dranove, Shanley and White (1993) evaluated the competitive California hospital market and concluded that competition resulted in falling margins. In a study using operating expense to measure hospital cost, Rivers and Bae (1999) found that greater competition is associated with higher costs.

Based on the theoretical framework of resource dependency and prior research, the variable, operating expense was included in the selection of variables used to develop the cost orientation hypotheses.

Research Questions and Hypotheses

The preceding sections defined the variables selected to create an index to measure the strategic constructs of a differentiation strategic orientation and a cost strategic orientation. The differentiation orientation variables include system affiliation, the development of hospital/physician relationships, the development of ambulatory surgical centers and community orientation. The cost orientation variables include RN FTEs, occupancy rate and operating expense. The theoretical basis for the selection of these variables, prior research utilizing these variables and the expected association of competition and regulation were

detailed, and lead to the following expectations. The research questions are re-phrased, and the hypotheses that have been developed to address the research questions follow immediately after each research question.

First Research Question – Strategic Orientation Construct

Is there a grouping of measurable variables that can be supported to approximate the construct, strategic orientation, and its components of differentiation and cost?

H1: The variables; system affiliation, hospital/physician relationships, development of ambulatory surgical centers, and community service orientation will have common characteristics consistent with a differentiation strategic orientation.

H2: The variables; RN/FTEs, occupancy and operating expense will have common characteristics consistent with a cost strategic orientation.

Second Research Question – Competition Construct

Is there an association between the level of competition in hospital markets and the strategic orientation of hospitals?

H3: Given market and organizational factors, hospitals in highly competitive markets will be more likely to be associated with a differentiation strategic orientation index.

H4: Given market and organizational factors, hospitals in less competitive markets will be more likely to be associated with a cost orientation.

Third Research Question – Regulation Construct

Is the Certificate of Need regulatory environment a determinant in hospital strategic orientation?

H5: Given market and organizational factors, hospitals in non-CON regulated states will more likely be associated with a differentiation strategic orientation index.

H6: Given market and organizational factors, hospitals in CON regulated states will be more likely to have a cost orientation compared to hospitals in non-CON regulated states.

Fourth Research Question – Interaction Effect

Is there an interaction effect between competition and regulation in influencing hospital strategic orientation?

H7: Given market and organizational factors, hospitals located in highly competitive markets with no CON regulatory controls will be the most likely to be associated with a differentiation strategic orientation index.

H8: Given market and organizational factors, hospitals located in less competitive markets with CON regulatory controls will have the highest likelihood of association with a cost orientation.

Summary

This chapter provides an integrated theoretical perspective by which to examine the effect of the level of market competition and the CON regulatory environment on hospital strategic orientation. The theoretical framework for this

study combines institutional theory and resource dependency theory in order to take into consideration both the institutional drivers of strategic orientation as well as the resource factors that must be considered in strategic orientation. The institutional perspective includes competitive advantages such as reputation, image, and conformance with legitimized structures and arrangements, while the resource dependency perspective focuses on advantages of resource control of human, operational and financial factors.

A conceptual model has been presented that incorporates the theoretical framework with Porter's generic strategic orientation typology of either a differentiation strategic orientation influenced by legitimacy or a cost strategic orientation influenced by resource advantage. It is proposed in this chapter that certain variables will correlate with a common factor representing either a differentiation orientation or a cost orientation. It is hypothesized that a highly competitive market and a market with no CON regulatory controls drive a differentiation strategic orientation, and hospitals will look for legitimacy enhancing strategies to compete. It is further proposed that hospitals in a less competitive market and a market with CON in place will develop a cost strategic orientation by controlling and securing resources and striving for autonomy.

Eight hypotheses are derived based on a review of the literature and previous research, interpretations of the influences of institutionalism and resource dependency and expectations on the impact of competitive pressures and CON regulatory pressures. Using Porter's generic strategy typology, hypotheses are

presented based on a differentiation strategic orientation and based on a cost strategic orientation. The eight hypotheses are summarized below.

H1: The variables; system affiliation, hospital/physician relationships, development of ambulatory surgical centers, and community service orientation will have common characteristics consistent with a differentiation strategic orientation.

H2: The variables; RN/FTEs, occupancy and operating expense will have common characteristics consistent with a cost strategic orientation.

H3: Given market and organizational factors, hospitals in highly competitive markets will be more likely to be associated with a differentiation strategic orientation index.

H4: Given market and organizational factors, hospitals in less competitive markets will be more likely to be associated with a cost orientation.

H5: Given market and organizational factors, hospitals in non-CON regulated states will more likely be associated with a differentiation strategic orientation index.

H6: Given market and organizational factors, hospitals in CON regulated states will be more likely to have a cost orientation compared to hospitals in non-CON regulated states.

H7: Given market and organizational factors, hospitals located in highly competitive markets with no CON regulatory controls will be the most likely to be associated with a differentiation strategic orientation index.

H8: Given market and organizational factors, hospitals located in less competitive markets with CON regulatory controls will have the highest likelihood of association with a cost orientation.

CHAPTER FOUR: RESEARCH METHODOLOGY

Introduction

This chapter provides an overview of the methodology proposed to examine the relationship between the constructs of competition and regulation with hospital strategic orientation, controlling for market and organizational factors. The study design, the variables used to operationalize the constructs and control factors, the data sources for the variables and the sample description are presented, with prior research provided to support the methodology and variables. The methods used to test the hypotheses presented in Chapter 3 are identified, including a discussion of the statistical analyses used to evaluate the relationships between the independent variables and dependent variables.

Research Design

This study uses a cross-sectional design to assess the relationship between competition and hospital strategic orientation, and regulation and hospital strategic orientation. Further analysis is conducted to determine if there is an interaction effect between competition and regulation with regard to strategic orientation.

The hospital is the unit of analysis in this study. The study population follows prior hospital research by including all short-term, acute care hospitals in the US

as defined in the American Hospital Association Survey Database, and excludes governmental and Federal hospitals and specialty hospitals such as psychiatric, rehabilitation or children's hospitals (Kumar, Subramanian, and Yaeger, 1997; Lee and Alexander, 1999). The observations for the dependent variables for the study were based on 2002 data, with the independent variables lagged one year to 2001 to evaluate a direction of influence between the independent variables defining competition and regulation, market and organizational factors and the dependent variables defining hospital strategic orientation.

Data Sources

Data for this study were taken from five sources, based on the specific variable under consideration. The sources include the 2001 and 2002 American Hospital Association Annual Survey Database, the Centers for Medicare and Medicaid Services (CMS) 2001 and 2002, the Area Resource File (ARF) for 2001 and the American Health Planning Association's National Directory of Health Planning, Policy and Regulatory Agencies, 15th Edition, 2001, and HMO penetration data provided by Dr Gloria Bazzoli, with the Virginia Commonwealth University.

The American Hospital Association collects self-reported data on US hospitals on an annual basis. The majority of US hospitals participate by submitting annual survey forms documenting organizational features and characteristics. Because of the wide participation and the length of time the survey database has been in existence, it is one of the most widely used

secondary data sources for health care research. The AHA database has been extensively used in hospital research on strategic orientation (Douglas and Ryman, 2003), competition (Kessler and McClellan, 2000), and regulation (Cook, Shortell, Conrad and Morrissey, 1983), and is a valuable source for organizational control variable data (Lee and Alexander, 1999).

The Area Resource File (ARF) is a database made available by the Bureau of Health Professionals and provides national data on health facilities including hospitals and HMOs, health professions, detailed demographic data and environmental data. Data are presented by both state and county, and also presented by Metropolitan Statistical Area (MSA) and Primary Metropolitan Statistical Area (PMSA). This is a widely used source for health and demographic information in health care research, particularly in defining measures for the market area of hospitals (Lee, Alexander and Bazzoli, 2003; D'Annuo, Succi and Alexander, 2000).

The Centers for Medicare and Medicaid Services (CMS) provides detail on hospital financial performance, as well as utilization and staffing data through the compilation of data from the Medicare Cost Reports submitted by every hospital in the country that provides services to Medicare patients. The CMS database is used extensively in hospital research, as it is national in scope and hospitals are required to submit appropriate data in order to receive Medicare payment (Cleverly, 1992; Manheim, Bazzoli and Sohn, 1992).

The American Health Planning Association provides an annual directory on health planning, policy and regulatory agencies with extensive detail on Certificate of Need regulations by state. The National Directory produced by the AHPA includes data by state on length of time CON has or has not been part of each state's regulatory environment and the thresholds for review. The AHPA also provides information on the capital threshold amounts, the equipment review caps and the number of services reviewed by state. The AHPA provides the data source for this study on the states with and without CON and the data indicating the volume of the review process based on number of reviewable services and capital thresholds triggering review in the states with CON.

One of the difficulties encountered in conducting a research study using a sample that includes the majority of hospitals in the country is that data elements are sometimes missing or apparently mis-reported based on significant outlier values. The use of secondary national databases that include self-reported elements can skew the results if only partial data are available. To counteract that problem, this study will eliminate some hospitals from the sample if there are missing elements or clear outliers in the database on the variables of interest in the study. However, an analysis is conducted to evaluate the key characteristics of the hospitals that are eliminated compared to the hospitals retained and disclose any abnormal findings.

Measurement of the Variables

One of the primary concerns in conducting health care research is that the variables selected are valid and reliable measures of the unobservable constructs or concepts that underlie the research questions being addressed (Nath and Sudharshan, 1994). Therefore it is important to review prior works that have operationalized and validated the variables and measurements. This section identifies the variables and prior research that supports the use of the variables. Table 1 identifies the variables for the dependent construct, strategic orientation, including differentiation and cost orientation.

Table 1. Dependent Constructs and Variables

Construct	Variable	Measurement	Source
Strategic Orientation *Differentiation	System Affiliation	1 if part of a system, 0 if non system affiliation	AHA 2002
Strategic Orientation *Differentiation	Hosp/Physician Relationship	1 if any one of 7 hosp/physician relationships present, 0 if none	AHA 2002
Strategic Orientation *Differentiation	Presence of Hospital affiliated ambulatory surgery center (ASC)	1 if yes, 0 if no	AHA 2002
Strategic Orientation *Differentiation	Number of Community Orientation responses	0 – 8 indicating number of positive responses to AHA questions on community orientation	AHA 2002
Strategic Orientation *Cost Leadership	# RN FTE's	# RN FTE's/staffed bed	AHA 2002
Strategic Orientation *Cost Leadership	Occupancy	Inpt days/365/total staffed beds X 100	AHA 2002
Strategic Orientation *Cost Leadership	Operating expense	Log of operating expense	CMS 2002

Table 2 presents the independent variables used to define competition and regulation. The variables used to operationalize competition are both individual hospital HHI and system level HHI. The table identifies how these variables are measured and the sources for the data. The variables used to operationalize regulation are both presence and absence of CON and levels of CON review.

Table 2. Independent Constructs and Variables

Construct	Variable	Measurement	Source
Competition Each Hospital	Market competition Individual hospital	Herfindahl index calculated as 1 minus the sum of market share based on distribution of admissions in the hospital market defined as the county	AHA and ARF 2001
Competition System Hospitals	Market competition for system hospitals within same county	Herfindahl index calculated as 1 minus the sum of market share based on distribution of admissions in the hospital system market defined as the county	AHA and ARF 2001
Regulation (Dichotomous)	Presence of CON	1=presence of any level of CON review	APHA 2001
Regulation (Dichotomous)	Absence of CON	1=no CON review	APHA 2001
Regulation (Levels)	CON 0	States without CON	APHA 2001
Regulation (Levels)	CON 1	Lowest ranking CON as indexed by APHA (.4 to 8.4)	APHA 2001
Regulation (Levels)	CON 2	Moderate ranking CON as indexed by APHA (11.7 to 19.2)	APHA 2001
Regulation (Levels)	CON 3	Highest rank CON as indexed by APHA (20.9 to 31.2)	APHA 2001

Table 3 presents the variables used to control for market and organizational factors. Following these tables is a detailed discussion of the variables and

Table 3. Control Constructs and Variables

Construct	Variable	Measurement	Source
Market Factors	HMO penetration	% of population of the MSA enrolled in a HMO, rural =0	ARF 2001
Market Factors	Population 65+	% of the county population that is 65 and older	ARF 2001
Market Factors	Income	Per capita income for each county	ARF 2001
Market Factors	Location of Hospital	Urban = 1, rural = 0 as defined by US Census Bureau	ARF 2001
Organizational Factors	Hospital Size	Number of staffed beds	AHA 2001
Organizational Factors	# Managed Care Contracts	# of HMOs and PPOs	AHA 2001
Organizational Factors	Hospital Ownership	1 if non profit, 0 if for profit	AHA 2001
Organizational Factors	Case Mix	Medicare Case Mix Index	CMS 2001

the identification of prior research that supports the use and definition of each variable. The first section describes the dependent variables used to signify the constructs of strategic orientation. Differentiation orientation is operationalized by the variables; system affiliation, physician/hospital relationships, presence of a hospital affiliated ambulatory surgical center and number of community orientation responses to the AHA annual survey, and cost orientation is defined by the variables; RN FTE's, occupancy and operating expense. The next section describes the independent variables of interest that define the constructs,

competition and regulation. These variables include market competition and regulation. Market competition is measured by the Herfindahl index at the individual hospital level, with a subsequent evaluation with the Herfindahl index measured at the system hospital level. Regulation is measured by the level of CON regulation, and includes three levels based on three levels of reviewability as indexed by the AHPA or no CON. The final section identifies the control variables used in this study. The market variables include; number of managed care contracts, HMO penetration, population 65+, income, and location of the hospital with regard to rural or urban setting. The organizational control variables include; size, number of HMO and PPO contracts, hospital ownership and the Medicare case mix index.

Dependent Variables - Differentiation Orientation

The dependent variables represent the areas of interest of the research, or the effect variables. This study examines the relationship between the level of competition in a market and the strategic orientation of hospitals, and the CON regulatory impact on the strategic orientation of hospitals. Therefore, strategic orientation is the dependent concept. There are two primary aspects of strategic orientation as defined by Porter (1985), differentiation and cost leadership. As differentiation and cost leadership are also constructs, variables have been used to measure these two aspects of strategic orientation. Based on a review of the literature on how hospitals differentiate their organizations, four variables have been selected to define the concept of differentiation including system affiliation,

number of physician/hospital relationships, presence of a hospital affiliated ambulatory surgical center and number of community services. The AHA Annual Survey Database is used as the source for the data. A review of the literature also defines the variables used for the cost leadership aspect of strategic orientation. After review of prior research, three variables have been selected to identify cost orientation including RN FTEs/bed, occupancy rate, and operating expense. Data sources include the AHA annual survey database and the CMS database. The following discussion provides detail on each of these dependent variables, reasons for the inclusion of the variables in this study and prior research supporting the use of the variables in this application. The source and date used for each variable are also described.

System Affiliation

Porter (1985) defined a differentiation orientation as one that creates value to consumers, and in his work on developing competitive advantage, linkages or interrelationships are presented as a major strategy to differentiate an organization to create value or a competitive edge to consumers. Reputational advantage can be gained through strategically affiliating to create a unique, more powerful and valued structure.

There is growing support in the health care literature that affiliation with a system is a strategy that hospitals choose to create an impression of legitimacy by aligning with an accepted organizational structure (Shortell and Zajac, 1990;

Goes and Park, 1997) and to enhance their reputation (Dranove and Shanley, 1995).

In this study, the variable, system affiliation, is defined using the taxonomy of organizational configurations initially developed by Bazzoli, Shortell, Dubbs, Chan and Kralovec, 1999) and updated and expanded by Dubbs, Bazzoli, Shortell and Kralovec, (2004). In the taxonomy of hospital interrelationships, systems are differentiated from networks based on ownership and control. Systems have ownership over all affiliated hospitals and exert more control over standardizing and branding hospitals (Bazzoli, Manheim, Waters, 2003). Therefore, this variable is defined for this study as system affiliation and excludes networks and managed facilities.

Institutional theory and Porter's generic strategy of differentiation form the basis for the use of a system affiliation definition for this variable, as both frameworks highlight the importance of reputation, legitimacy, branding and positive association for competitive advantage. The use of system affiliation in this research study is supported by significant prior research that used this form of hospital interorganizational relationships to evaluate characteristics of hospitals that had affiliated with systems compared with hospitals that had remained independent (Cleverley, 1992; Lee, Alexander, Bazzoli, 2003).

As in prior research, this study uses the variable, system affiliation, as a dichotomous variable, assigning a one to those hospitals responding in the AHA

2002 annual survey that the organization is part of a system and zero if the hospital is not system affiliated.

Hospital/Physician Relationships

Porter's model of differentiation and the use of linkages and interorganizational developments to create competitive advantage are also applicable to the formation of hospital/physician relationships. The development of hospital/physician linkages provides a unity and cohesiveness that can set a hospital apart from its competitors. Within the institutional theory framework, hospital/physician relationships have become legitimized structures (Dyanan, Bazzoli and Burns, 1998). Research by Mark, Evans, Schur and Guterman (1998) cited mimicking behavior as they found that hospitals tended to form hospital/physician relationships in markets where competing hospitals had developed these types of relationships.

The AHA annual survey database categorizes hospital/physician relationships in seven categories including independent practice associations (IPA), group practice without walls, physician/hospital organization (open and closed PHO), management service organization (MSO), integrated salary model, equity model and foundation. Research by Dyanan, Bazzoli and Burns (1998) found little difference in the success of integration among the seven different types of physician/hospital arrangements. Further research by Burns, Walston, Alexander and Zuckerman (2001) also concluded that hospital/physician relationships are still in their infancy and there is little difference among the

models. Therefore many researchers are using the presence of any of the models of hospital/physician relationships listed in the AHA database in studies in research on hospital/physician relationships (Burns, Bazzoli, Dynan and Wholey, 2000; Succi-Lopez, Lee and Alexander, 2003; Esposto, 2004).

This research study follows prior research in defining the variable, hospital/physician relationship, as any one of the seven categories identified in the 2002 AHA annual survey, assigning a binary indicator of one if any of the arrangements are present or zero if no arrangements are present.

Presence of Ambulatory Surgical Center

The differentiation orientation defined by Porter (1985) highlighted the importance of developing the structures and services that are desired by customers and vital stakeholders to the organization. Porter clearly states that development of differentiation strategies can be more costly, but the trade-off is the increase in loyalty that can develop from offering a desired service.

Ambulatory surgical centers are viewed as a competitive strategy focusing on customer service and amenities to attract both customers and physicians, and are often developed to avoid losing customer and physician base to other providers (Lynk and Longley, 2002; Peters and Blasco, 2004). Physicians view hospital ASC's as providing more efficient environments for their practices, as well as potential financial investments, and both factors link physicians to hospitals, turning potential competitors into partners (Luxenberg, 2003; Dobson and Haught, 2005). Lynch (1991) identifies the role of the consumer as a critical

factor in the growth of ambulatory surgical centers. Consumers are demanding the convenience and customer orientation found in ASCs. Kaldenberg and Becker (1999) conducted patient evaluations of ambulatory surgery experiences rating the various attributes of ASCs with findings supporting the importance of the outpatient setting and location. Although consumers rated the friendliness and competency of the physicians and nurses as their highest ratings, differentiation factors such as parking and entry convenience, shorter waiting times and facility amenities also rated high in importance to consumers.

The American Hospital Association annual survey asks hospital respondents about the presence of ambulatory surgical centers, and this data has been used in prior research. Yang, McLaughlin, Vaughan and Aluise (1992) used the AHA data in conjunction with a mail questionnaire to determine specific structural arrangements for ambulatory surgery. In this study, the 2002 AHA database is used, and categorized 1 if the hospital has an ambulatory surgical center and 0 if no ASC.

Number of Community Orientation Responses

Differentiation can be achieved by demonstrating value through reputation, goodwill and the provision of information perceived to be important to consumers (Porter, 1985). Dacin and Brown (1997) concluded that the provision of community services valued by consumers can provide legitimacy to an organization, and Succi-Lopez, Lee and Alexander (2003) defined organizational

legitimacy as a reflection of the number of community services provided, drawing a relationship between involvement in community health and legitimacy.

Hospital community orientation has been the focus for a number of research studies. Bazzoli et al (1997) evaluated community health involvement in their study on public-private partnering potential. Proenca, Rosko and Zinn (2000) operationalized community orientation using the AHA database to define community services as the number of health prevention and promotion services in their study evaluating hospital strategic response to environmental pressures. Lee, Alexander and Bazzoli (2003) evaluated community responsiveness comparing hospitals in interorganizational relationships with non-affiliated hospitals. Lee, Alexander and Bazzoli conducted a factor analysis on the nine questions under the community orientation classification in the AHA annual survey database, and found a high reliability using eight of the nine criteria. The question regarding whether a hospital had a mission statement that includes a focus on community benefit was eliminated from the Lee, Alexander and Bazzoli study to improve the reliability.

As previous research has used and validated the AHA survey questions on community orientation, this research study also uses the number of responses to the 2002 AHA questionnaire to measure community orientation. Following the Lee, Alexander and Bazzoli study, the question on mission is eliminated, leaving a potential of eight factors of community orientation. The variable is measured with a potential range from zero to eight, with eight having the highest community

orientation. Although this measurement is not technically a binary response, because of the small number of responses and the desire to avoid the validity issues of an all or nothing response, the variable will be analyzed using linear regression. However, if there is not a normal distribution, the variable measurement will be revised or a secondary analysis will be performed.

Dependent Variables – Cost Orientation

RN FTEs/ Staffed Bed

Human resource management is a key tenant of Porter's generic strategy of cost leadership. Within the resource dependency framework, organizations will strive to control resources in order to promote individual efficiency and thereby reduce dependencies on other organizations. As labor is the largest single component of a hospital's operating budget, it is a clear target for developing cost leadership strategies. Control of RN FTEs is a major hospital management cost control strategy, with a focus on reducing the number of RN's with lower cost alternatives such as Licensed Practical Nurses (LPNs) and Nursing Assistants (Bordoloi and Weatherby, 1999; Robertson, Dowd and Hassan, 1997), as well as a focus on efficiency in the hours worked or productivity of the RN staff (Leeth, 2004).

Prior research has confirmed the importance of control of staffing in promoting financial success. Gardiner, Oswald and Jahera (1996) found higher staffing levels as a predictor of hospital failure. Confirming the importance of controlling staffing, previous research studies have defined Porter's cost

orientation leadership strategy with staffing numbers. Marlin, Huonker and Sun (2002) operationalized Porter's cost orientation with the variable, man-hours/adjusted patient day. Nath and Sudharshan (1994) relate staffing to strategic orientation, where hospitals can control FTEs for productivity or add staff for market advantages. Their study of strategic orientation uses total RN and LPN FTEs/ total beds to measure human resource intensity for its effect on both financial and market performance. Several studies have isolated out RN staffing as a variable of interest in staffing research. Mark, Harless, McCue and XU (2004) used RN FTEs/1000 inpatient days, in their study examining the relationship of RN staffing and quality. Elixhauser, Steiner and Fraser (2003) used RN FTEs/100 beds in their study on the association of RN staffing with volumes and mortality, and Needleman, Buerhaus, Mattke, Stewart and Zelevinsky (2002) used RN hours/patient day in their study on the relationship between adverse outcomes and RN staffing.

Prior research focuses on the control of RN staffing in strategic decisions that can affect cost orientation. Because of the potential to substitute lower paid staff ie LPNs for RNs (Nath and Sudharshan, 1994) and the association between RN staffing levels and quality (Mark, Harless, McCue and Xu, 2003; Rivers and Fottler, 2004), this research study isolates RN staffing as an operational variable for cost leadership orientation. Following the methodologies of Nath and Sdharshan (1994) and Elixhauser, Steiner and Fraser (2003) this study

measures RN FTEs by the number of RN FTEs/staffed bed. Data are taken from the 2002 AHA annual survey database.

Occupancy

The generic strategic orientation of cost leadership presumes that an organization will strive to be as efficient as possible (Porter, 1985). According to the resource dependency theory, an organization will develop strategies to increase its efficiency and maximize the resources within its own organization in order to decrease dependency on other organizations (Pfeffer and Salancik, 1978). Alexander and Morrissey (1989) use resource dependency in their study of hospital contract management and conclude that the independence of a hospital is related to the efficiency and effectiveness of the organization, and one of the measures used by Alexander and Morrissey to measure organizational performance is hospital occupancy rate.

The occupancy rate for a hospital is viewed as a proxy for efficiency and appropriate capacity utilization (Langland-Orban, Gapenski and Vogel, 1996; Lamont, Marlin and Hoffman, 1993). The use of occupancy rates has become one of the primary measures in the hospital industry to evaluate and compare hospital efficiency and productivity (Nath and Sudharshan, 1994). Occupancy has been used as a measure for hospital efficiency and capacity in numerous prior studies (McCue, Thompson and Dodd-McCue, 2000/01; Rivers and Bae, 1999). In a study by Goldstein, Ward, Leong and Butler (2002), occupancy rate was used as the primary performance measure for their study.

Occupancy rate is an appropriate variable to use in this study on the strategic orientation of hospitals based on the level of competition and CON regulation, as high occupancy rates have been associated with greater market power, higher performance and greater cost focus (Noether, 1989; Ketchen, Thomas and Snow, 1993; Goes and Zhan, 1995). Occupancy rate for this study is measured as total inpatient days/365/total staffed beds times 100. Occupancy based on staffed beds rather than licensed beds is a better indicator of management control and strategic oversight (Langland-Orban, Gapenski and Vogel, 1996). The data for this variable come from the 2002 AHA annual survey.

Operating Expense

One of the critical measures of cost leadership is control of the resources of the organization (Porter, 1985). The better an organization becomes at managing its resources and expenses, the less it must depend on other organizations, therefore cost orientation is a major tenant of resource dependency theory. Organizations focus on sustaining their resources to maintain their independence and avoid reliance on other organizations (Pfeffer and Salanick, 1978).

Operating expense is a more descriptive variable of operating strategies, specifically cost leadership strategies, as defined by Porter (1985). Use of operating expense as a study variable is frequently found in hospital research. Operating expense rather than total expense is used to focus on the core hospital business and the impact of organizational strategy on cost control

(Conner, Feldman and Dowd, 1998; Rivers and Fottler, 2004). Several studies that used Porter's generic strategic orientation typology included operating expense as a variable to define cost leadership strategic orientation, including Marlin, Huonker and Sun (2002), and Kumar and Subramanian (2000).

As this research study is interested in the hospital organization's strategic response to competition and CON regulations (or the lack of competition and CON regulation), operating expense is a more appropriate variable to use as it is not influenced by total expenses, which can include resources beyond the control of the organization. Following research by Manheim, Bazzoli and Sohn (1994) and Rivers and Bae (1999) and Conner, Feldman and Dowd (1998) the log of operating expense is used to provide normal distributions of the variable. A variable with a large scale such as operating expense has the potential for being positively skewed, and using the log can reduce that potential and make the results easier to interpret. Particularly when comparing different groups of subjects as in a study population of both very large and very small hospitals, it is important to have the variability similar within each group, so a logarithmic transformation can make the within-group variability more similar across groups (Dallal, 2005). Data are taken from the 2002 CMS database.

Independent Variables

The independent variables assess what variables are associated with the previously discussed dependent variables and that are the focus of the research study. This study examines the influence of the construct, competition, and the

construct, regulation on hospital strategic orientation, therefore the independent concepts are competition and CON regulation. Based on a review of the literature, the construct, competition has most frequently been operationalized with the variable, market competition as measured by the Herfindahl index, a standard economic measure of market competition (Rosko, 1999; Meltzer, Chung and Basu, 2002). In fact, the HHI is the analytical guideline used in federal antitrust merger evaluations as a determinate of market competition (Hyman and Kovacic, 2004). The regulation of interest in this research study is Certificate of Need regulation, as it is the most intrusive regulation that is applied only to some states and varies even among states that have CON with regard to scope of review and stringency of application. Prior research studies that have used these variables and how they are measured in this study, are detailed in the following section.

Market Competition

For purposes of this study, HHI or market competition, is used as a surrogate measurement of competition. In the initial model development for this study, market competition is measured by the HHI for individual hospitals within the same geographic market. However, system affiliation can affect the concentration of a market and impact the level of competition. Therefore, a calculation of the system level of competition is also included, and HHI calculated for system affiliated hospitals is also used in an evaluation of the models to compare the effect of system hospital competition (HHI) with the effect of

individual hospital competition (HHI). Measuring the HHI for both individual and system hospitals has become the standard for research on competition and used in other studies (Dranove and Ludwick, 1999; Zwanziger and Mooney, 2005).

There are two aspects to the measurement of the Herfindahl Index to determine the level of competition in the hospital market. First, the market area must be defined, and then an index is calculated to determine each hospital's or hospital system's share of the market area. There is considerable debate in health care research on the most appropriate measurement of market area (Gaynor and Haas-Wilson, 1999). There is not a consistently applied or generally accepted method to define hospital markets (Dranove and White, 1994; Douglas and Ryman, 2003). The Federal Trade Commission Report (2004) included a recommendation and a provision for further research to validate a consistent methodology to define geographic markets.

Robinson and Luft (1987), D'Aunno, Succi and Alexander (2000) developed radius measurements where hospitals within 5-15 miles for Robinson and Luft and 10 – 35 miles for D'Aunno et al were considered within the same market areas. However, there is concern that the radius measure does not consider geographic and geopolitical factors (Noether, 1989). Other researchers have developed state specific market areas using discharge data to calculate relational market areas (Sohn, 2002; Gresenz, Rogowski and Escarce, 2004). But this use is limited when national samples are required. Statistical Metropolitan Areas (SMA) have also been used to define hospital market areas (Dranove, Shanley

and Simon, 1992; Douglas and Ryman, 2003) but SMA's are sometimes too large to capture competitive areas and this method eliminates rural hospitals from the sample. The method that seems to be the most common is the use of the county to define market area (Zinn, Proenca and Rosko, 1997; Meltzer, Chung and Basu, 2002; Schneider, 2003; Lee, Alexander and Bazzoli, 2003).

One of the primary focuses of this study is to compare the strategic orientation in hospitals in CON regulated and hospitals in non-CON regulated states. For this reason, this research study uses a national sample of hospitals, including both urban and rural hospitals. Therefore, the most appropriate method is to define the market area at the county level. Another benefit of using county-based market area is that it corresponds to demographic and market data, which is provided at the county level (Lee, Alexander and Bazzoli, 2003).

The second step in the calculation of the variable, market competition is the determination of each hospital or system's share of the market within the defined area. One of the most frequently used measures of market competition, particularly in the strategy literature and research on competition is the Herfindahl Index (Dranove, Shanley and Simon, 1992; Douglas and Ryman, 2003). Most studies calculate the Herfindahl index by using one minus the sum of the squared market shares of the hospitals within the market area in order to define the competitiveness of the market. When the value of the Herfindahl index is zero, the hospital or system has a monopoly, and as the value approaches one, there

is a high level of competition (Lee, Alexander and Bazzoli, 2003; Rivers and Fottler, 2004).

As with the definition of hospital market area, there is significant variation in the health care research literature on how market competition is calculated. Researchers have used the percentage of a hospital's total occupied beds to total occupied beds within the market area (Zinn, Proenca and Rosko, 1997), the percentage of a hospital's inpatient days to total inpatient days in the defined market area (Ketchen, Thomas and Snow, 1993; Santerre and Adams, 2002), and the percentage of a hospital's total admissions to the total admissions in the defined market area (Dranove, Shanley and Simon, 1992; Meltzer, Chung and Basu, 2002).

This study measures market competition as the percentage of total admissions for each hospital and for hospitals within the same system to total admissions in the applicable county and applies the Herfindahl index to calculate the market competition for each hospital and hospital system. Dranove, Shanley and Simon (1992) calculated a Herfindahl index using both beds and admissions and found the two measures highly correlated. Admissions were selected as the most pure measurement of market competition, as the number of beds is a reflection of hospital size, and inpatient days are a reflection of intensity and complexity of patients. In this study, hospital beds are used as a control variable for hospital size and case mix is used as a control variable to account for intensity and complexity of patients. Data on market competition is based on

calendar year 2001. County information comes from the Area Resource File for 2001, and admissions by hospital and system come from the AHA 2001 directory.

Certificate of Need Regulation

CON legislation was mandated by federal law in 1974, and then repealed in 1987. Since that time, states have determined whether to continue or abandon CON on a state-by-state basis. In the 1980's there was considerable activity, with 11 states eliminating CON. Three more states eliminated CON in the 1990's. However, since 1998, CON activity has been stable and the number of states without CON has remained at 14.

There has been extensive research on the effectiveness of CON, and on the impact of CON on competition in the hospital industry. In prior research on CON, researchers have measured CON as either the presence or absence of CON by state, but have also included measures of the length of time CON has been in effect by state, and have included some measure of the breadth or stringency of the regulation by state (Alexander and Morrissey, 1989; Conover and Sloan, 1998; D'Annunzio, Succi and Alexander, 2000). Templensky, Pauly, Kimberly, Hillman and Schwartz (1995) conducted interviews to determine perceptions of stringency, and Cook, Shortell, Conrad and Morrissey (1983) developed a scale based on duration, scope and stringency of review.

The most comprehensive database for CON activity by state is the National Directory compiled by the American Health Planning Association, and this is the

source for the CON variable measurement for this study. Ford and Kaserman (1993) used the AHPA data to determine threshold levels to determine the effect of CON on entry to the dialysis market.

States with and without CON are identified using the 2001 AHPA National Directory data. For states with CON, there is a wide variation in the threshold triggering review and the number of services requiring review. Scope and breadth of review are factored into this study using data provided by the AHPA for 2001. The AHPA counts the number of reviewable services for each CON state and provides a weight for each state based on the dollar threshold of review for capital, major equipment and new services. A rank for each state is developed by multiplying the number of reviewable services for each state by its weight based on the dollar threshold of reviews. Although the ranking provides a valid indication of the scope and breadth of review, the AHPA provides a disclaimer that the rank order relates to the volume of items reviewed and not the severity of review. However, in a study that is national in scope, this is the most comprehensive database available to identify levels of review. In this study, rankings by state are organized in 4 categories ranging from 0 for states without CON regulation, CON 1 = minimal review, CON 2 = moderate review, CON 3 = highest review. There are 14 states with no CON. CON 1 includes 14 states with rankings from 0.4 to 8.4. CON 2 includes 14 states with rankings from 11.7 to 19.2. CON 3 includes 8 states with rankings from 20.9 to 31.2 based on services and capital review. Table 4 provides detail on all 50 states, indicating

Table 4. 2001 CON Relative Scope and Reviewability Thresholds - AHPA

CON Variable	State	Rank	# Reviewable Services	Reviewability Threshold weights
CON 0	Arizona			
CON 0	California			
CON 0	Colorado			
CON 0	Idaho			
CON 0	Indiana			
CON 0	Kansas			
CON 0	Minnesota			
CON 0	New Mexico			
CON 0	North Dakota			
CON 0	South Dakota			
CON 0	Pennsylvania			
CON 0	Texas			
CON 0	Utah			
CON 0	Wyoming			
CON 1	Arkansas	8.4	7	1.2
CON 1	Iowa	8.1	9	0.9
CON 1	Virginia	8.0	20	0.4
CON 1	Florida	7.7	11	0.7
CON 1	Oklahoma	7.0	5	1.4
CON 1	Montana	6.3	7	0.9
CON 1	Massachusetts	4.8	16	0.3
CON 1	Delaware	4.8	8	0.6
CON 1	Wisconsin	4.4	4	1.1
CON 1	Nevada	3.5	7	0.5
CON 1	Nebraska	3.0	2	1.5
CON 1	Oregon	2.4	2	1.2
CON 1	Ohio	1.0	2	0.5
CON 1	Louisiana	0.4	2	0.2
CON 2	North Carolina	19.2	24	0.8
CON 2	Mississippi	18.0	18	1.0
CON 2	Tennessee	16.0	20	0.8
CON 2	Alabama	16.0	20	0.8
CON 2	Maryland	15.3	17	0.9
CON 2	Rhode Island	15.2	19	0.8
CON 2	Hawaii	15.0	25	0.6
CON 2	Michigan	14.4	18	0.8
CON 2	Kentucky	14.4	18	0.8
CON 2	Illinois	13.3	19	0.7
CON 2	New Jersey	13.2	12	1.1
CON 2	New York	13.2	22	0.6
CON 2	Washington	12.6	14	0.9
CON 2	New Hampshire	11.7	13	0.9
CON 3	Maine	31.2	24	1.3
CON 3	Georgia	30.0	25	1.2
CON 3	Connecticut	28.6	26	1.1
CON 3	Alaska	27.0	27	1.0
CON 3	West Virginia	25.2	28	0.9
CON 3	Vermont	22.5	25	0.9
CON 3	Missouri	21.0	21	1.0
CON 3	South Carolina	20.9	19	1.1

AHPA Disclaimer: Rank order relates to volume of items reviewed not severity of decisions

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which states have eliminated CON, and which states are included in the three levels of CON identified by the American Health Planning Association. Table 4 indicates the ranking for each state, the number of services reviewed by state and the weight assigned to the capital threshold reviews for capital, equipment, facilities and services for each state. This table is summarized and produced with permission.

Because of the complexity surrounding the regulatory environment, this study uses a progressive evaluation to explore the effect of CON on strategic orientation. CON is first explored as a dichotomous variable with 1 defined as any level of CON review. In order to avoid making assumptions regarding the omitted variable, a second regression analysis is included to evaluate the effect when no CON is defined as 1 and any level of CON review is the omitted variable. After CON is evaluated independently, the variable is subsequently added with the independent variable, HHI, and the levels of CON review, including minimal, moderate and highest review are analyzed. This analysis provides a more comprehensive evaluation of the effect of CON regulation on strategic orientation.

Market Control Variables

Market factors are those elements in a hospital's external environment that can affect the demand for hospital services, but for the most part, the hospital has little direct influence on these factors (Alexander and Morrissey, 1989; Esposto, 2004). Market factors include the demographic, social and economic

characteristics of communities that can impact health care utilization. These factors are frequently used as control variables in health care research to isolate the effect of these community characteristics from the principal variables of interest. The market factors that could influence the variables of interest in this study are managed care penetration, age of the population, per capita income and rural or urban location.

The managed care penetration in the market area has been found to influence the competitive strategies of hospitals both with regard to cost strategies (Conner, Feldman and Dowd, 1998; Burns, Bazzoli, Dynan and Wholey, 2000) and with regard to differentiation strategies (Kessler and McClellan, 2000; Mukamel, Zwanziger and Tomaszewski, 2001; Young, Burgess and Valley, 2002). In this research study, managed care penetration is the proportion of the population of each county that is enrolled in an HMO. Data comes from Dr. Gloria Bazzoli, who has conducted extensive research in this area. The data is provided based on the HMO penetration in statistical metropolitan areas, with rural areas identified as zero HMO penetration. This data is consistent with prior research on HMO penetration when using a national perspective.

Also influencing demand for hospital services and, consequently influencing the strategic orientation of hospitals is the age of the population served. Higher proportions of people over age 65 in a hospital's market area have been associated with higher hospital utilization (Alexander and Morrissey, 1989) and

with hospital strategic decisions (Bazzoli and Andes, 1995). Therefore the percent of the population age 65 and older is frequently used as a control variable in hospital strategy research (D'Aunno, Succi and Alexander, 2000; Becker and Potter, 2002). For this study, the proportion of the county population 65 and older is used as a control variable. Data for this variable come from the 2001 ARF.

The income of the population served by a hospital can also influence demand as well as strategic decisions made by the hospital. McCue, Thompson and Dodd-McCue (2000/01) identify per capita income as a market factor that can influence a population's ability to access health care, and therefore influence demand for hospital services. Per capita income was considered a measure of the munificence of a hospital's market or the availability of resources, (Lee and Alexander, 1999) and was used as a control variable in their research on hospital organizational change. Per capita income is consistently used as a control variable in hospital strategy research (Rivers and Bae, 1999; D'Aunno, Succi and Alexander, 2000; Meltzer, Chung and Basu, 2002). In this study, per capital income is measured at the county level, and is based on the 2001 ARF data.

Hospital location is the final market variable used in this study. Prior research has found an association between hospital location and hospital strategy (Goldstein, Ward, Leong and Butler, 2002). Marlin, Huonker and Sun, 2002) found that a rural or urban location of a hospital can effect the hospital's strategic orientation because of the different characteristics of the populations including

access and resources. Rural hospitals have also been associated with more precarious financial situations, which can influence their strategic orientation (Trinh and O'Conner, 2000). Therefore rural and urban location by hospital is used as a control variable and is defined by the US Bureau of Census designation of rural or urban communities, and is measured with data on population from the 2001 ARF.

Organizational Control Variables

Prior research has found relationships between hospital organizational characteristics and hospital responses (Gay, Kronenfeld, Baker and Amidon, 1989). As these organizational characteristics can influence the dependent variables under study, most hospital research literature controls the influence of these characteristics by including them in the analysis. Cook, Shortell, Conrad and Morrissey (1983) used control variables in their study on organizational response to regulation citing the potential of hospital characteristics such as size or location to mitigate the effects of regulation on hospital strategies. Based on prior research on the organizational characteristics that can influence a hospital's strategies toward either a cost orientation or a differentiation orientation, the organizational factors used as controls for this study include hospital size, number of managed care contracts, ownership and case mix.

Prior research has identified a positive correlation between hospital size and strategic orientation where more resources are available to pursue differentiation strategies or focus on cost leadership through an enhanced resource base

(Kumar, Subramanian and Yaeger, 1997). Hospital size has been associated with financial performance, and therefore is frequently used as a control variable in hospital research (Douglas and Ryman, 2003). McCue and Ozcan (1992) found an association between hospital size and more assets and revenue, and MCCue, Thompson and Dodd-McCue (2000/01) found that higher bed capacity correlated with less resource constraints. From a differentiation strategy standpoint, larger hospitals have been found to have stronger community orientation (Proenca, Rosko and Zinn, 2000). Ruef and Scott (1998) posited an association between organizational size and perceived legitimacy status, with more beds conferring an image of greater technical sophistication.

Prior research has defined bed size in several ways. Researchers have grouped hospital beds into categories by size creating between three and five groupings (Gay, Kronenfeld, Baker, Amidon, 1989; Kessler and McClellan, 2000; Gresenz, Rogowski and Escarce, 2004; McCue and Ozcan, 1992). Other researchers have measured beds as the total number of beds (Nath and Sudharshan, 1994; Douglas and Judge, 2001). This study uses a continuous measurement for bed size as the total number of staffed beds as defined in the 2001 AHA annual survey database.

The number of HMO and PPO contracts is used as a control variable, as it reflects an organizational focus that hospitals can impact and influence, and a consideration in the strategies adopted by hospitals. Contracting for managed care can require either differentiation strategies or cost strategies (DeMarco,

2002). This control variable is particularly relevant in a study on the effect of competition and strategic orientation (Gaskin and Hadley, 1997; Olden, Roggenkamp and Luke, 2002). McCue (2000) analyzed hospital sponsorship of HMO products, and found a high correlation with competitive factors such as the number of competing HMOs and the level of HMO penetration in the market as well as the market share percentage for the hospitals. There are some research indications that strategically contracting with HMOs and PPOs can be influenced by the level of competition in the hospital's market. Prior research has found an increase in the leveraging capability and market power of hospitals that have a larger number of managed care contracts (Devers, Casalino, Rudell, Stoddard, Brewster, Lake, 2003; Zwanziger and Mooney 2005). This interaction of competition and managed care contracting can also influence the financial ramifications of the HMO/PPO contracts on the hospital. Research on the financial effect of managed care contracts has been mixed. Young, Burgess, Desai and Valley (2002) found a positive relationship between HMO contracts and lower operating margins. But Langeland-Orban, Gapenski and Vogel (1996) found that hospitals with high profitability employed strategies of managed care contracting. Therefore, consideration of the number of HMO's and PPOs, or a hospital's share of the managed care business is an important control variable for consideration in this study.

Data for this variable is taken from the 2001 AHA annual survey and includes both HMO and PPO contracts. For this variable only, missing data elements

were replaced using the mean substitution technique in order to avoid compromising the sample size.

Hospital ownership, or whether a hospital is designated as for profit or non-profit, has also been identified as an organizational characteristic that can influence a hospital's ability to define strategic direction (Zajac and Shortell, 1989). Ownership is used as a control variable, particularly in research on hospital strategy, as there is research that has found for-profit hospitals to be less community oriented and more financially oriented than non-profit hospitals (Proenca, Rosko and Zinn, 2000). Manhein, Bazzoli and Sohn (1994) used ownership as a control variable as for profits may respond differently to competition and strategies directed to maximize profits. For profits have been found to be more strategically oriented toward efficiency and financial performance (Trinh and O'Conner, 2000). Therefore, hospital ownership is used as a control variable in this study, and is defined as 1 if non-profit and 0 if for profit. Data is taken from the 2001 AHA annual survey database.

Medicare case mix index is another organizational characteristic that has been found in the literature to be a confounding factor in hospital strategy research (Zajac and Shortell, 1989; Nath and Sudharshan, 1994). The Medicare case mix indicates a hospital's mix of patients by assigning weights to diagnoses and determining a relative resource utilization. As the Medicare case mix index for all hospitals is relatively easy to obtain, and is indicative of a hospital's intensity of care, it is the most frequently used index.

Esposito (2004) used case mix as an indicator of the complexity of a hospital's patient population, and posited that complexity is a proxy for uncertainty.

Manheim, Bazzoli and Sohn (1992) used Medicare case mix as a proxy for the level of services provided by hospitals. Therefore, the acuity and complexity of patients can influence differentiation strategies. Medicare case mix has also been associated with financial performance, with a higher case mix index associated with greater profitability (Langland-Orban, Gapenski and Vogel, 1996) and greater cash (McCue, Thompson and McCue-Dodd, 2000/01) and therefore could influence cost strategies.

Average case mix is indexed at 1, so weights higher than one indicate a greater intensity and complexity and resource utilization (Gay, Kronenfeld, Baker and Amidon, 1989). The majority of research studies use the Medicare case mix index, as it is difficult to obtain all payer case mix for a national sample of hospitals. The data for case mix index for this study comes from the Medicare Cost Report as reported by CMS in 2001.

Analytic Methodology

This research study assesses the relationship between hospital strategic orientation and the level of competition in the hospital's market and the relationship between hospital strategic orientation and the level of CON activity in the hospital's market. The area of interest in this study is whether hospitals develop strategies focused on either differentiation or cost based on the particular environmental pressures related to competition and regulation in their

market areas. In this study, strategic orientation is the dependent construct, with two components, differentiation strategic orientation and cost leadership orientation. The following expression is used to test the relationship:

$$\text{Strategic Orientation} = f(\text{Competition, Regulation, Market and Organizational Factors})$$

The analytic methods for this study include a descriptive statistical comparison of the hospitals in the sample with regard to each variable and an evaluation of the distribution of the hospitals in each variable measurement. Correlation analysis is conducted to address issues of multicollinearity among the variables.

When multiple variables are identified to measure the dependent variables, researchers will often create an index or scale composed of the factor scores of the variables as a more relevant measure of a construct (Ruef and Scott, 1998; Song, 1995; Kaldenberg and Becker, 1999). The development of an index from factor analysis is particularly relevant in research studies on strategy and hospital orientation.

Wood, Bhuian and Kiecker (2000) used factor analysis to create factors representing perceptions by hospital administrators of the intensity and threat of competition in the hospital industry. Using principal component analysis, Proenca, Rosko and Zinn (2000) developed a measurement of community orientation in hospitals from the factor loadings. Also using factor analysis in their study on community orientation, Lee, Alexander, and Bazzoli (2003) found high reliability of the variables using the AHA community orientation survey

responses. Goldstein, Ward, Leong and Butler (2002) used factor analysis to create a marketing strategy factor score and an operations strategy factor score for each hospital in their study on hospital strategy in an increasingly competitive environment.

The technique of factor analysis to create factor scores has been widely used in research studies using Porter's generic typology. Prior research has found that creating indexes to measure differentiation orientation and cost orientation is a more effective statistical measurement than individual variable measurements. Marlin, Huonker and Hasbrouck (2004) used Porter's generic strategic typology to conduct a longitudinal study of the relationship between strategic group performance and environmental effects. The study identified cost variables and used factor analysis and the subsequent loadings to create an overall measure of low costs. Lamont, Marlin and Hoffman (1993) also used Porter's typology and a principal component analysis with varimax rotation to create a composite score to measure differentiation and cost strategic orientations in a sample of 172 hospitals.

Based on prior research on the use of factor analysis and the development of an index to measure strategic orientation, this study evaluates three factor techniques; principal factor analysis, maximum likelihood factor analysis and principal component analysis with rotation to evaluate the relationship of the seven selected variables with a differentiation factor and cost factor. Factor

scores are created to measure a differentiation orientation and a cost orientation, and these factor scores are the dependent measurements for the study.

After the factor score is developed, it is used in a regression analysis to evaluate the relationship between the dependent and independent variables. Because the dependent variable is based on a continuous factor score, linear regression is used to account for the variance in an interval dependent variable based on combinations of independent variables. Linear regression is used to test the association of the dependent variables with the independent variables.

A series of models are developed to assess the additive effect of the predictor variables, and to assess for interaction effects between the level of competition and the levels of CON regulation. The first model includes CON as a dichotomous variable with 1 indicating the presence of any level of CON review and 0 indicating no CON review with the control variables. In order to assess the association of no CON, the first model also reverses the dichotomous variable with 1 indicating no CON and 0 as any level of CON review. The second model includes the control variables and the independent variable, HHI, or the market share variable used to operationalize competition at the individual hospital level. The third model adds CON regulation as a dichotomous variable, with 1 representing hospitals in states with any level of CON and 0 for hospitals with no CON regulation. The fourth model adds the three levels of CON review with HHI and the control variables, to assess the relationship with strategic orientation of the increasing levels of CON review. The fifth and final model introduces three

new variables including the interaction of HHI and CON1, HHI and CON 2 and HHI and CON 3 to test for interaction effects between the HHI measure of competition and the levels of CON review. The F statistic is used to test each model for significance, and the R² value is used to evaluate the predictive power of each model and to explore the additive effect of adding the predictor variables and the levels of CON review and the interaction effects.

Because of the potential for system affiliation to dilute the level of market competition, HHI has also been calculated at the system level, including all hospitals in the same system within each county. The five model series are run again using system HHI to determine if the level of competition at the system hospital level has a similar or different association with the dependent variables measuring the construct, strategic orientation.

Summary

This chapter provides an overview of the methodology used to evaluate the relationship between competition and strategic orientation and regulation and strategic orientation. The research design, data sources and measurement of the variables used to operationalize the constructs are identified, with supporting prior research that validated the use and measurement of the design, data sources and variables.

This study includes seven dependent variables that are used to create a measurement for the differentiation and a cost strategic orientation constructs. The measurement or factor scores for the dependent variables are continuous

values, and therefore, linear regression is used to test the hypotheses presented in Chapter Three. Results of the empirical analysis are found in Chapter Five.

CHAPTER FIVE: RESULTS

Introduction

This chapter presents the results of the data and statistical analyses undertaken to assess the association of competition and regulation with hospital strategic orientation. The sample selection and criteria are presented and the methods of data management are defined and supported with previous research employing the methodology. Descriptive statistics of the study population are provided to present the distribution and characteristics of the study sample variables.

The results of several statistical analyses are presented. A correlation analysis was performed to assess the linear association between the selected variables and to identify potential collinearity issues. Factor analysis was used to validate that the variables identified through prior research and the theoretical framework are valid representations of the strategic orientation constructs, and to create factor scores for each sample hospital. Multiple linear regression was performed to examine the association of competition and of regulation, with a differentiation orientation and/or a cost orientation, controlling for market and operational influences. A series of models are presented that evaluate the additive effect of the independent variables, and explore the interactions between

the measurements of competition and regulation. Although HHI was calculated at the individual hospital level for the model evaluation, a subsequent analysis was run to assess the effect on the models and on strategic orientation by calculating HHI based on the system affiliated hospitals at the county level. The findings of these statistical techniques are presented in the following sections.

Sample Description

The study population included all short-term, acute care hospitals in the US, excluding governmental, and Federal hospitals as well as specialty hospitals such as psychiatric, rehabilitation and children's hospitals. The initial sample population included 4,568 hospitals, however, data elements for several of the study variables were missing. Missing elements were most prevalent in the American Hospital Association Annual Survey Database, where hospitals self-report data, based on an annual questionnaire. As the variables were critical to the composition of the factor scores that formed the basis for the regression analysis, several methods of data management were assessed. Elimination of missing variables and mean substitution were two methods considered. Based on prior research that also used the AHA Annual Survey Database, data management for this study was accomplished with the elimination of those hospitals with missing data elements.

The only exception was the use of mean substitution for the control variable, number of HMO and PPO contracts. This variable contained a large number of missing responses, and there was a concern that elimination of all hospitals not

responding to this variable would compromise the sample population. Because this was a control variable, and not one of the dependent or independent variables specifically defining this study, mean substitution was used for this variable only.

Another dimension of data management was the consideration of extreme responses that were apparent aberrations in data reporting. In this study, hospitals with data elements or outliers that were beyond 3.5 standard deviations from the mean were also eliminated.

A comparison of characteristics of the initial population of 4,568 hospitals and the final sample population of 3,436 hospitals was conducted to assess the differences among these population groups, and to evaluate the effect of the elimination methodology. Table 5 presents the results of the comparison. The final study population had a slightly higher percentage of for profit hospitals, system affiliated hospitals and hospitals in urban areas than the initial sample population.

Table 5. Comparison of the Population and Sample Hospitals

	Population (n, %)		Sample (n, %)		Chi- square	P Value
Ownership						
For-profit	631	13.8%	521	15.2%	2.898	0.089
Not-for-profit	3,937	86.2%	2915	84.8%		
System						
System-affiliated	2,831	62.0%	2,221	64.6%	5.981	0.015
Freestanding	1,737	38.0%	1,215	35.4%		
Urban/Rural						
Urban	2,439	53.4%	2,033	59.2%	20.521	0.000
Rural	2,129	46.6%	1,403	40.8%		
Total	4,568		3,436			

Table 6 presents a comparison of the final sample population of 3,436 hospitals and the eliminated hospital group consisting of 1,132 hospitals. The group consisting of the eliminated hospitals had slightly fewer for profit hospitals, fewer system affiliated hospitals in the eliminated group, and finally there were fewer hospitals in urban locations in the eliminated group of hospitals.

Table 6. Comparison of Included and Excluded Hospitals

	Included (n, %)		Excluded (n, %)		Chi- square	P Value
Ownership						
For-profit	521	15.2%	110	9.7%	21.209	0.000
Not-for-profit	2,915	84.8%	1,022	90.3%		
System						
System-affiliated	2,221	64.6%	610	53.9%	41.771	0.000
Freestanding	1,215	35.4%	522	46.1%		
Urban/Rural						
Urban	2,033	59.2%	406	35.9%	185.789	0.000
Rural	1,403	40.8%	726	64.1%		
Total	3,436		1,132			

Because the initial database was large, even after the hospitals with missing variable information were eliminated, a significantly large study population remained. The study population after elimination of hospitals with missing responses or outliers beyond 3.5 standard deviations consisted of 3,436 hospitals. The study population was composed primarily of non-profit hospitals (85%), and the majority of the hospitals were system affiliated (65%). Approximately 60% of the study hospitals were located in urban areas.

Descriptive Statistics – Dependent Variables

Based on prior research and the theoretical framework that included both institutional theory and resource dependency theory, seven dependent variables

were selected to operationalize the construct, strategic orientation. Four variables; system affiliation, physician/hospital relationships, development of an ambulatory surgical center, and community service orientation were hypothesized to be associated with a differentiation strategic orientation and three variables; RN/FTEs/bed, occupancy and operating expenses were hypothesized to be associated with cost strategic orientation. Descriptive statistics for the seven dependent variables are found in Table 7. The mean results for the four differentiation variables were; system affiliation, 0.65, hospital/physician relationships, 0.5, ASC development, 0.84, and the mean for community services was 5.3. The mean results for the three cost leadership orientation variables were; RN/FTE/bed, 1.1, Occupancy/staffed bed, 56% and the mean for the log of operating expense was 17.8.

Table 7. Descriptive Statistics – Dependent Variables

Variable	Mean/Percentage	Standard Deviation
Differentiation Variables		
System Affiliation	.646	.478
Hospital/Physician Relationships	.496	.5
Ambulatory Surgical Center	.842	.365
Community Services	5.284	2.926
Cost Variables		
RN FTE/Bed	1.094	.508
Occupancy/Staffed bed	.578	.183
Operating Expense (Log)	17.815	1.192

Descriptive Statistics – Independent Variables

The independent constructs for this study are competition and regulation, and the descriptive statistics for the variables that operationalize these constructs are described herein. The construct, competition, for this study, is measured by the Herfindahl Index calculated at the individual hospital level. Although the

regression models are analyzed based on HHI at the individual hospital level, a subsequent evaluation is conducted to determine if the calculation of HHI at the system level has the same or a different association with strategic orientation. For both analyses, the Herfindahl index is calculated as 1 minus the sum of the squared market share of all hospitals and subsequently, all system hospitals, in the county, which for this study is the geographical designation selected. The Herfindahl index has a value from 0 – 1, and a higher value of this variable indicates that the market is more competitive. In the study population, the mean Herfindahl index at the individual hospital level was 0.555 as seen in Table 8.

Table 8. Descriptive Statistics – Independent Variables

Construct/ Variable	Mean/Percentage	Standard Deviation
Competition Construct		
Hospital Level HHI	.555	.352
Regulation Construct		
No CON	.327	.469
CON 1	.256	.437
CON 2	.312	.463
CON 3	.105	.307

Regulation is measured by four levels of Certificate of Need review based on the number of services deemed reviewable and the capital threshold that triggers CON review. The American Health Planning Association ranks hospitals based on the number of reviewable services and the weight assigned to the capital reviewability thresholds for each state. These ranks are an indication of the amount of regulatory oversight, but obviously cannot equate to actual stringency of review by each state. With regard to the regulatory environment for the study population, 1,122 hospitals, or 32.7% of the sample were located in states with

no Certificate of Need regulation. 881 hospitals, or 25.6% of the sample were in states with the lowest number of reviewable services and highest thresholds for review, 1,072 hospitals, or 31.2% of the sample were located in moderate review states and finally, 361 hospitals, or 10.5% of the sample were in the most regulated states.

Descriptive Statistics - Control Variables

Prior research has indicated several variables with potential influence with regard to the study variables. Eight control variables were selected to assess correlations with the study variables. Table 9 identifies the descriptive statistics for these control variables. The mean number of managed care contracts for the study population was 26.9, with a mean for managed care penetration of 0.19. With regard to the demographics in the study population communities, 60% of the hospitals were in urban areas, the average per capita income was \$27,400, and an average of 13.5% of the population was 65 and older. The mean bed size of the study population was 190, the majority (85%) had a non-profit ownership categorization and the mean case mix index was 1.28.

Table 9. Descriptive Statistics – Control Variables

Variable	Mean/Percentage	Standard Deviation
# Managed Care Contracts	26.9	36.28
Managed Care Penetration	0.188	0.197
Population 65+	0.135	0.037
Per Capita Income	\$27,392	\$8,685
Urban (Urban = 1)	0.59	0.492
Bed Size	190	178
Ownership (NFP = 1)	0.15	0.359
Case Mix Index	1.28	0.48

Correlation Analysis

In order to detect potential collinearity problems, a correlation analysis was performed to assess the linear association between variables. The higher the correlation coefficient between two variables, the more related the variables. In assessing the potential that the variables represent the same construct, a high correlation among the variables is positive. However, when assessing for interaction among presumed unrelated variables, a high correlation indicates concern that multicollinearity exists. A correlation matrix identifies correlations among the proposed dependent study variables. With the exception of system affiliation, the correlation matrix indicates that the variables selected to represent a differentiation construct of hospital/physician relationships, ambulatory surgical center development and community service orientation are somewhat related, and the variables selected to represent a cost orientation construct of RN/FTEs, occupancy and operating expense are somewhat related. The correlation matrix provides an initial indication that the selected variables represent the same differentiation construct, with correlations of 0.7 between system affiliation and ASC development, 0.7 between community service orientation and ASC development, 0.4 between ASC development and hospital/physician relationships, and 0.4 between community service and hospital/physician relationships. With regard to the cost construct variables, there is an indication of a relationship between RN FTE and occupancy with a coefficient of 0.36, between operating expense and RN FTE of 0.57 and between operating expense

and occupancy of .58. There are no high correlations between any of the differentiation variables and the cost variables, as seen in Table 10.

Table 10. Correlation Matrix for Dependent Variables

	System	Hosp/Dr	ASC	Comm Serv	RN FTE	Occupancy	Op Exp
System	1						
Hosp/Dr	.0039	1					
ASC	.684	.3944	1				
Comm Serv	.1323	.4064	.7019	1			
RN FTE	.1322	.1689	.1528	.2077	1		
Occupancy	.162	.1149	.1002	.1747	.3625	1	
Op Exp	.2806	.1884	.1322	.2583	.5675	.5752	1

The following section discusses the correlation of the independent and control variables. The relationships among the independent variables and the control variables are assessed further in the regression analysis. Of particular concern is high collinearity among the control variables, as multicollinearity can skew the subsequent regression results and can cause the interpretation of the regression coefficients to be tenuous. When there is a high coefficient, the potential for variable redundancy exists, as one variable might dominate or repress the other. Because the collinearity means that the variables are highly related, it is possible that one variable can represent the information needed for the research study, and the highly correlated variable can be eliminated. Many researchers become concerned about the potential for multicollinearity as the coefficient between two variables approaches 1. Based on the input of the researcher, the specific study variables involved, and knowledge of potential overlap among variables, correlations over 0.5 become suspect, and higher values such as 0.7 - 0.9 are considered highly correlated variables (Sharma, 1996; Polit and Hungler, 1995).

Table 11 indicates a high correlation between the control variables, urban/rural location and the number of managed care contracts. It is expected that there would be a high correlation between these two variables, as the majority of managed care is concentrated in larger urban areas (Young, Burgess and Valley, 2002). A high correlation was also found between the control variables, case mix index and bed size. Again, this is an expected association, as larger hospitals usually accept the more sophisticated and complex cases, yielding a higher case mix. Because of these high correlations, the variables, urban/rural and case mix index, have been eliminated from the regression analysis.

Factor Analysis

The purpose of this study is to assess the association of competition and of regulation on hospital strategic orientation. Based on prior research and a theoretical framework that encompasses both institutional theory and resource dependency, seven variables were identified as potential measures of strategic orientation. It was hypothesized that four variables; system affiliation, hospital/physician relationships, ambulatory surgery development and community orientation would be associated with a differentiation strategic orientation construct, and hypothesized that three variables; RN FTEs, occupancy and operating expenses would be associated with a cost strategic orientation construct.

However, a critical step in the analysis is the determination of whether the proposed variables are valid representations of these constructs. Factor

Table 11. Correlation Matrix of All Study Variables

	HHI	CON 0	CON 1	CON 2	CON 3	Mgd Care	# HMO/ PPO	Pop 65+	Per Capita Income	Urban	Total Beds	Profit Status	Case Mix
Independent Variables													
HHI	1												
CON 0	.106	1											
CON 1	-.038	-.409	1										
CON 2	.012	-.467	-.395	1									
CON 3	.126	-.239	-.201	-.231	1								
Control Variables													
Mgd Care	.194	.036	-.029	.001	-.016	1							
# HMO/PPO	.634	.135	-.051	-.045	-.067	.0174	1						
Pop 65+	-.26	-.084	.193	-.063	-.05	-.136	-.343	1					
Per capita Income	.521	.007	-.066	.079	-.035	.179	.519	-.205	1				
Urban	.644	.032	-.001	.015	-.057	.200	.792	-.370	.511	1			
Total Beds	.414	-.062	-.001	.08	-.025	.201	.365	-.164	.357	.447	1		
Ownership	.131	.057	.032	-.087	-.002	.014	.086	.0834	-.008	.112	-.0060	1	
Case Mix	.475	-.475	.020	-.008	-.010	.195	.043	-.238	.0409	.549	.694	.0364	1

analysis is a statistical technique that identifies if there is a relationship among the identified variables such that a grouping indicates a unified concept (Polit and Hungler, 1995). This preliminary stage of analysis is used to evaluate if the selected variables cluster together on a common factor or construct. It is also important to determine that the variables are the same sign, indicating all positive or all negative values, in order to support the validity of a differentiation or cost efficiency construct. If there is high correlation among the variables and the variables have the same sign, there is support that the correlated variables represent a common underlying construct (Kachigan, 1991). The focus of this factor analysis was to verify a relationship among the selected variables and the primary study constructs, not to reduce the number of variables.

Three factor analysis techniques were evaluated to detect relationships among the variables, including principal factor analysis, maximum likelihood factor analysis and principal component analysis. For each of these techniques, a varimax rotation was used, as the rotated factor analysis provides the most appropriate interpretation for research studies (Polit and Hungler, 1995).

The three factor analysis techniques provided similar results. Polit and Hungler (1995) and Kachigan (1991) use factor loadings of 0.3 and 0.4 as the lower bounds for meaningful loadings. All three factor techniques related similar factor loadings on the expected factors, loading significantly higher than the accepted lower bounds, with the exception of the variable, system affiliation. However, all three techniques provided similar results for system affiliation.

These results provide confirmation that the selected variables have common characteristics, confirming the factor structure by loading appropriately on two factors. Because the factor analysis was subsequently used to create a factor score or index, prior research was reviewed for the most frequently used factor analysis technique. Principal component analysis was used by Lamont, Marlin and Hoffman (1993), to develop a composite score for Porter's strategic constructs, and by Proenca, Rosko and Zinn (2000) to develop a factor score measurement of community orientation. Therefore, principal component analysis was used in this study to both confirm that a relationship exists among the variables and factors, and to subsequently develop factor scores for each hospital in the sample.

Table 12 presents the results of the factor analysis with regard to the number of factors and the eigenvalues associated with each factor. The most commonly used cutoff for factor extraction is an eigenvalue greater than 1.00 (Polit and Hungler, 1995). The principal component factor analysis provided strong support for the selection of two factors representing strategic orientation, with two factors retained with eigenvalues of 2.59 and 1.55 respectively.

Table 12. Principal Component Factor Analysis – Eigenvalues

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	2.5873	1.033	.3696	.3696
2	1.5541	.6221	.2220	.5916
3	.9320	.2647	.1331	.7248
4	.6673	.0356	.0953	.8201
5	.6318	.2832	.0902	.9104
6	.3486	.0697	.0498	.9602
7	.2789		.0398	1.

The principal component factor analysis for this study resulted in significantly higher factor loadings than the lower bounds for meaningful results for the selected variables except the variable, system affiliation. Although the variables with the exception of system affiliation loaded significantly on the expected factors, the factor analysis also revealed a major discrepancy in the expected sign for one of the cost factor variables. Table 13 presents the factor loadings for the variables selected for this study. The table is followed by a discussion on the results and resolution of the unexpected results.

Table 13. Principal Component Factor Analysis – Varimax Rotation

Variable	Factor 1	Factor 2	Uniqueness
System Affiliation	.0185	.4324	.8127
Hospital/Dr Relationship	.6844	.0978	.5220
Ambulatory Surgical Center	.8797	.0352	.2248
Community Orientation	.8614	.1705	.2289
RN FTE/Bed	.1455	.7303	.4455
Occupancy	.0525	.7674	.4084
Operating Expense	.1317	.8755	.2162

The principal component varimax rotation showed a strong association with factor 1, for the variables hospital/physician relationships, 0.68, ASC development, 0.88 and community service orientation, 0.86, and all of these variables had positive signs. This strong correlation with Factor 1 supports the use of these variables to measure the construct, differentiation orientation. The variable, system affiliation, did not load on the expected differentiation factor with a loading of only .0185, however, in this factor analysis, system affiliation did load minimally with the second factor with a loading of 0.43. With regard to the second factor, cost orientation, the principal component analysis with varimax

rotation confirmed an association of the variables RN FTE, at 0.73, occupancy, at 0.77 and operating expense at 0.88. However, it was anticipated that the sign for occupancy would be negative. Based on prior research, the higher the number of RN FTEs/bed, the more inefficient the hospital. The same relationship is found with the variable, operating expense, where the higher the operating expense, the more inefficient the hospital. The more inefficient hospitals are less likely to be associated with a cost orientation. However, for the variable, occupancy/staffed bed, the higher the occupancy, the more efficient the hospital, and therefore, it was expected that a negative coefficient of occupancy would be associated with the variables, RN FTEs/bed and operating expense. A review of the correlation matrix showed some correlation among all three of the hypothesized cost variables, and that would have been meaningful if the sign of the occupancy coefficient had been negative. This result indicates that a higher occupancy/staffed bed is positively associated with higher operating expenses and higher RN FTE staffing.

The assumption for this study was that a factor score could be created where a higher value would be associated with more efficient hospitals, with all of the selected variables having the same values. However, two of the selected variables, RN FTE's/staffed bed and the log of operating expense had positive values where the higher the factor score the more inefficient the hospital. Because the factor scores become the dependent variables for this study, it is critical that the variables that compose the factor scores all have the same

meaning with regard to their value. A review of research that has used the factor score technique found that the variables selected had the same overall value and meaning in order to interpret the results (Wood, Bhuian and Kiecker, 2000; Douglas and Judge, 2001). This was not the case with the variables, RN FTEs, operating expense and occupancy selected to create the cost factor score for this study, as a higher score indicated inefficiency for RN FTEs and operating expense, but a higher score for occupancy indicated greater efficiency.

Prior research that has created a factor score using Porter's strategic orientation has used a combination of expense and staff variables to operationalize the cost orientation (Marlin, Huonker and Hasbrouck, 2004). Therefore, because the variable, occupancy, had the opposite value from RN FTEs and operating expense, it was eliminated from the study, and the variables, RN FTEs and operating expense were retained. Therefore, the cost factor in this study means that the higher the score, the more inefficient the hospital and the cost factor score measures inefficiency.

To assure that the elimination of occupancy did not materially change the study, another factor analysis was conducted using only six variables, system affiliation, hospital/physician relationships, ambulatory surgery center development, community service orientation, RN FTEs/bed and the log of operating expense. As before, two factors were retained. The first factor had an Eigenvalue of 2.35 and the second factor had an Eigenvalue of 1.37. As in the first factor analysis that included occupancy as a dependent variable,

hospital/physician relationships, ambulatory surgery center development and community service orientation had high loadings on Factor 1 of 0.69, 0.88 and 0.86 respectively, indicating significant correlation with this factor. Again, system affiliation did not load on the differentiation factor (-0.02) as had been expected but had a slight loading on the second factor (0.54). RN FTEs/bed and the log of operating expense had very strong loadings on the second factor of .79 and .86 respectively. Table 14 presents the results of the revised factor analysis. These results were consistent with the previous factor analysis.

Table 14. Principal Component Factor Analysis – Varimax Rotation

Variable	Factor 1	Factor 2	Uniqueness
System Affiliation	-.0206	.5418	.7060
Hospital/Dr Relationship	.6872	.0965	.5184
Ambulatory Surgical Center	.8779	.0408	.2277
Community Orientation	.8580	.1807	.2312
RN FTE/Bed	.1314	.7917	.3560
Operating Expense	.1333	.8621	.2391

Factor Score Correlation With and Without Occupancy

To further assess the impact of eliminating the variable, occupancy, from the factor score for the cost construct, a comparison of the factor scores with and without occupancy was conducted. The correlation matrix shows a very high correlation between the two factor scores of .997 between factor 1 and factor 1 w/o and 0.94 between factor 2 and factor 2 w/o, indicating that the variable, occupancy, can be eliminated with no material effect on the cost orientation factor score. A correlation matrix of the principal component factor scores with

occupancy (factor 1 and factor 2) and the principal component factor scores without occupancy (factor 1 w/o and factor 2 w/o) is found in Table 15.

Table 15. Correlation Matrix of Factor Scores With and Without Occupancy

	Factor 1	Factor 2	Factor 1 w/o	Factor 2 w/o
Factor 1	1.000			
Factor 2	-0.000	1.000		
Factor 1 w/o	0.997	0.005	1.000	
Factor 2 w/o	0.019	0.941	-0.000	1.000

In summary, the principal component factor analysis results support the variables selected to represent the constructs of differentiation strategic orientation and cost inefficiency orientation, with the exception of system affiliation and occupancy. There is strong support for the variables, hospital/physician relationships, ambulatory surgery center development and community service orientation to correlate with the differentiation factor and for the variables, RN FTEs and operating expense to correlate with the cost inefficiency factor. Therefore, the proposed variables are appropriate measures of Porter's generic strategic typology of strategic orientation with its constructs of differentiation and cost orientation, however, in this study, cost orientation equates with inefficiency.

Factor Scores

After factor analysis confirmation that a strong relationship exists between the selected variables and the two constructs of strategic orientation, the variable results for each hospital were compiled to develop factor scores or indexes. The statistical package, SPSS was used to create a factor score for each hospital

representing a differentiation orientation score and a cost orientation score based on the variable data. As in prior research, principal component analysis is used to create the component scores for each hospital that are then used in the subsequent regression analyses as the dependent variables (Goldsmith, Ward, Leong and Butler, 2002). The factor score created by combining the differentiation variables of hospital/physician relationships, ASC development and number of community services, indicates that the higher a hospital's factor score, the greater the differentiation orientation. The factor score created by combining the cost orientation variables of RN FTEs/bed and the log of operating expenses, indicates that the higher the value of a hospital's factor score the more inefficient the hospital, and therefore less cost orientation. In this analysis, the cost factor score indicates that the greater the factor score, the more inefficient and less cost oriented the hospital. Descriptive statistics for the factor scores are found in Table 16.

Table 16. Descriptive Statistics for Factor Scores

Factor	Mean	# Hospitals Above Mean	# Hospitals Below Mean
Factor 1 Differentiation	9.16e-10	2297	1139
Factor 2 Cost	-1.73e-10	1781	1655

Hierarchical Multiple Linear Regression

The development of an index or factor score creates a continuous dependent variable, therefore, linear regression is the statistical method used to test the association of the dependent variable with the independent variables (Sharma, 1996). This study was designed to test the association of the level of competition

in a hospital's market with its strategic orientation, and to test the association of the level of regulation in a hospital's market with its strategic orientation, and then test for interaction effects between competition and regulation. Because of the potential additive effect of subsequent models, a hierarchical multiple regression technique was used as found in prior research (Landau, 1995). Hierarchical multiple regression is a form of step-wise regression where independent variables are added to the model sequentially to assess improvement in the overall model as each variable or modification of a variable is added. The difference in the hierarchical multiple regression is that the researcher determines the order entry of the variables to assess if the addition or combination of variables improves the predictive power.

Model Development

Five models were developed to test the hypotheses outlined in Chapter Three. Control variables including managed care penetration, number of HMO and PPO contracts, the % of the population 65 and older, per capita income, the total number of beds/hospital, and ownership status are included in each model. The first model explores the relationship of just the CON independent variable and the control variables with strategic orientation. In this first model, CON is considered in the aggregate, so if CON is present at any level of review, it is included in this independent variable. CON is a dichotomous variable with 1 including any CON regulation and 0 as no CON. In order to evaluate the relationship of no CON with strategic orientation without making assumptions

about the omitted variable, the first model also considers no CON as a dichotomous variable with 1 indicating no CON and 0 as any CON regulation and the results are found in separate tables.

The second model includes the control variables and the independent variable, HHI. The HHI variable is isolated in this second model to assess the relationship of HHI only with strategic orientation. HHI in this model is based on the competition index at the individual hospital level and is measured by 1 minus the sum of the squared market shares in the county where the individual hospital is located. Therefore, the closer the HHI index is to 1, the more competitive the environment, and conversely, the closer to 0 the value, the closer to a monopoly.

The third model evaluates the additive effect of both CON and HHI on strategic orientation. In this model CON, is defined in the aggregate with all levels of CON review included. CON is a dichotomous variable with 1 including any CON regulation and 0 as no CON. Again, HHI is measured at the individual hospital level.

The fourth model begins to differentiate the CON variable, and inputs levels of CON review. The levels are based on the 2001 AHPA National Directory database, which identifies the relative scope and reviewability thresholds of CON regulated states. A rank is developed for each state by multiplying the number of reviewable services for each state by its weight based on the dollar threshold of reviews. In this study, CON 0 represents no CON regulation and is the omitted group. There are 14 states in this category. CON 1 is the most minimal CON

review, and includes 14 states with rankings from 0.4 to 8.4. CON 2 represents moderate review, and includes 14 states with rankings from 11.7 to 19.2. CON 3 is the highest level of review and includes 8 states with rankings from 20.9 to 31.2 based on services and capital review.

The fifth model in this study tests for interaction effects between HHI and the 3 levels of CON review. HHI is measured at the individual hospital level, and the levels of CON are based on the 2001 AHPA National Directory database as described in the fourth model.

For the following regression models, the coefficients signify weights for relative influence with the dependent variables. In order to provide consistent reporting of the results, a brief description of the values used in this research study are identified. The signs of the model coefficients and the p value are interpreted as follows:

- When the coefficient is positive, it indicates that a higher value of the independent variable increases the likelihood of an association with the dependent variable, in this study, a specific strategic orientation.
- When the coefficient is negative, it indicates that a lower value of the independent variable decreases the likelihood of an association with the dependent variable, or specific strategic orientation.
- A coefficient is considered significant in the model if the p value is .05 or lower.

Multiple Regression Results

Model 1: Association of CON/no CON with Factor 1- Differentiation

The first model provides the regression analysis results for the aggregated independent variable, Certificate of Need, evaluating the relationship of any level of CON review on strategic orientation and then the relationship of no CON review on strategic orientation. The model first examines the association of CON and the association of no CON with the differentiation factor, which was based on factor scores comprised of the variables; presence of hospital/physician relationships, development of ambulatory surgical centers and number of community orientation responses. Table 17 and Table 17a provide the coefficients, standard error, and p significance test for the independent variable, CON. Table 17 presents the results of CON as a dichotomous variable with 1 indicating the presence of any level of CON review, and Table 17a presents the results with the dichotomous variable where 1 indicates no CON review. Both the presence of any level of CON and no CON are shown with the control variables to evaluate the association with Factor 1, differentiation orientation. The results for both the presence of CON and the absence of CON had R-squared values of .5523, and significant F statistics with p values of .000. These results indicate a significant model.

In Model 1, Factor 1, the independent variable of interest is Certificate of Need, and the absence of CON. Table 17 is the presence of any level of CON review and the results show a positive coefficient of .0985 and a p value of .000

Table 17. Factor 1 – CON and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
CON	.0985	.0249	.000
Control Variables			
Managed Care Penetration	.0008	.0003	.014
# HMO/PPO Contracts	.6962	.0735	.000
Pop 65+	-3.463	.3287	.000
Per Capita Income	.0000	1.58e	.000
Bed Total	.0031	.0001	.000
Ownership	.0840	.0322	.009
Constant	-.7903	.0653	.000
Number of Observations = 3436			
F (7, 3428) = 604.08			
Prob F = .000			
R-squared = .5523			

Table 17a. Factor 1 – No CON and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
No CON	-.0985	.0249	.000
Control Variables			
Managed Care Penetration	.0008	.0003	.014
# HMO/PPO Contracts	.6963	.0735	.000
Pop 65+	-3.463	.3287	.000
Per Capita Income	.0000	1.58e	.000
Bed Total	.0031	.0001	.000
Ownership	.0840	.0322	.009
Constant	-.6918	.0649	.000
Number of Observations = 3436			
F (7, 3428) = 604.08			
Prob F = .000			
R-squared = .5523			

indicating significance with the dependent variable, differentiation orientation.

These results indicate that the higher the value of the variable, CON, the greater the likelihood of association with a differentiation orientation. Table 17a is the

absence of CON and the results show a negative coefficient of $-.0985$ and a p value of $.000$ indicating significance with the dependent variable, differentiation orientation. These results indicate that the inverse of no CON is associated with differentiation. Basically these results indicate the same association, however, by using both presence and absence of CON there is confirmation rather than assumption regarding the omitted variable.

Table 17 and 17a also provide coefficients and p values for the control variables and a differentiation orientation. Positive coefficients and p values of less than $.05$ indicating significance with the dependent variable, differentiation orientation were found with all of the control variables with the exception of population age 65 and older, which had a negative coefficient. These regression results indicate that a differentiation orientation is more likely when the market environment for the hospitals includes greater managed care penetration, and a higher per capita income. With regard to organizational control variables, there is a greater likelihood of a differentiation orientation with a larger number of HMO and PPO contracts, higher bed totals and a non-profit ownership status.

The control variable, proportion of the population 65+, had a negative sign, and a significant p value, indicating that a differentiation orientation was more likely to be associated with hospitals located in areas with a younger population.

Model 1: Association of CON with Factor 2- Cost Inefficiency

Table 18 and Table 18a provide the coefficients, standard error, and p significance test for the independent variable, CON. Table 18 presents the results of CON as a dichotomous variable with 1 indicating the presence of any level of review, and Table 18a presents the results with the dichotomous variable where 1 indicates no CON review. Both the presence of any level of CON and no CON are shown with the control variables to evaluate the association with Factor 2, cost orientation. Factor 2 is based on factor scores comprised of the variables, RN FTEs and operating expenses. Because higher values of RN FTEs and higher operating expenses are indicators of inefficiency, associations with Factor Score 2 are considered cost inefficient. The results for both the presence of CON and the absence of CON had R-squared values of .0555, and significant F statistics with p values of .000. These results indicate a significant model.

Table 18. Factor 2 – CON and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
CON	-.0780	.0361	.031
Control Variables			
Managed Care Penetration	.0014	.0005	.002
# HMO/PPO Contracts	-.6353	.1068	.000
Pop 65+	-.7102	.4774	.137
Per Capita Income	2.64e	2.30e	.251
Bed Total	.0003	.0001	.002
Ownership	-.5401	.0468	.000
Constant	.1755	.0949	.064
Number of Observations = 3436			
F (7, 3428) = 28.75			
Prob F = .000			
R-squared = .0555			

Table 18 a. Factor 2 – no CON and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
No CON	.0780	.0361	.031
Managed Care Penetration	.0015	.0005	.002
# HMO/PPO Contracts	-.6353	.1068	.000
Pop 65+	-.7102	.4774	.137
Per Capita Income	2.64e	2.30e	.251
Bed Total	.0003	.0001	.002
Ownership	-.5406	.0468	.000
Constant	.0976	.0943	.301
Number of Observations = 3436			
F (7, 3428) = 28.75			
Prob F = .000			
R-squared = .0555			

The independent variable of interest in this model is CON, aggregated for all levels of CON review, and no CON review. Table 18 presents the results of the regression analysis evaluating the relationship of any level of CON and the control variables with Factor 2, cost inefficiency orientation. Table 18 shows CON with a negative coefficient of -.0780 and a p value of .031, indicating significance with the dependent cost factor. Because CON has a negative coefficient, it is interpreted that lower values of CON, or less regulation, are more likely to be associated with cost inefficiency. Table 18a presents the results when there is no CON review, and shows the opposite results from Table 18 when any CON is present. Table 18a with no CON shows a positive coefficient of .0780 and a significant p value of .031, indicating significance with the cost inefficiency factor. This indicates that when there is no CON, there is a greater likelihood of association with inefficiency.

Four of the control variables had significant p values of less than .05 and were considered to be associated with Factor 2, cost inefficiency. Managed care penetration was positive and significant, indicating that the greater the managed care penetration in the market, the more likely an association with cost inefficiency. However, the organizational control variable, number of HMO/PPO contracts, was negative and had a significant p value. This is interpreted that the fewer the number of HMO/PPO contracts, the more likely that an association with cost inefficiency is present.

The organizational control variables total beds and ownership were also significant with the cost factor. The control variable, total beds, had a positive coefficient and is interpreted as the higher the number of beds, the more likely to be associated with cost inefficiency. Ownership had a negative coefficient and a significant p value, indicating that non-profit hospitals were less likely to be associated with cost inefficiency. Based on this regression analysis, the control variables, population 65+ and per capita income had no association with a cost orientation.

Model 2 - Association of HHI with Factor 1- Differentiation

The regression analysis results are presented for the second model, the association of competition, which is measured by the Herfindahl Index at the individual hospital level, with strategic orientation. This discussion provides the relationships with the dependent variable, Factor 1 or the differentiation orientation, which was based on factor scores comprised of the variables;

presence of hospital/physician relationships, development of ambulatory surgical centers and number of community orientation responses. Table 19 provides the coefficients, standard error, and p significance test for Factor 1. The Factor 1 differentiation orientation model had an R-squared value of .5534, and a significant F value of .000. The results indicate a significant model.

Table 19. Factor 1 –HHI and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	.2235	.0453	.000
Control Variables			
Managed Care Penetration	.00067	.0003	.039
# HMO/PPO Contracts	.46008	.0805	.000
Pop 65+	-3.3562	.3281	.000
Per Capita Income	.00001	1.6	.000
Bed Total	.00309	.00007	.000
Ownership	.05755	.03252	.077
Constant	-.73453	.06385	.000
Number of Observations = 3436			
F (7, 3428) = 606.85			
Prob F = .000			
R-squared = .5534			

In Model 2, Factor 1, the independent variable of interest is the Herfindahl index, which measures the level of competition at the individual hospital level. When the Herfindahl index is closer to 1, there is a greater level of competition, and when the HHI is closer to 0, there is a less competitive environment. Table 19 shows a positive coefficient of .224 and a p value of .000 indicating significance with the dependent variable, differentiation orientation. This is interpreted as a higher HHI, or hospitals in a more competitive environment, are more likely to be associated with a differentiation strategic orientation.

Table 19 also indicates significant associations between several of the control variables and a differentiation orientation. Positive coefficients and p values of less than .05 were found with the control variables; managed care penetration, number of HMOs and PPOs, per capita income, and bed totals. These regression results indicate that the greater the managed care penetration and the greater the number of HMO and PPO contracts, the more likely that there will be a differentiation orientation. There is a positive association where the greater the per capita income, the more likely there will be a differentiation orientation. In addition there was also a positive association where the higher the total number of beds, the more likely there will be a differentiation orientation.

The control variable, proportion of the population 65+, had a negative sign, and a significant p value, indicating that a differentiation orientation was more likely to be associated with hospitals located in areas with a younger population. Based on this regression analysis, the control variable, ownership, had no association with a differentiation orientation.

Model 2: Association of HHI with Factor 2- Cost Inefficiency

The following discussion provides the results indicating the relationships of HHI at the individual hospital level and the control variables with the dependent variable, cost inefficiency orientation, which was based on factor scores comprised of the variables; RN FTEs and operating expenses. The Factor 2 cost inefficiency orientation model had a R squared value of .0583 and a significant F statistic of .000. These results indicate that the model is significant. The

coefficients, standard error and p significance test for Factor 2, which represents an orientation of inefficiency, are found in Table 20.

Table 20. Factor 2 – HHI and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	-.2550	.0657	.000
Managed Care Penetration	.0016	.00047	.001
# HMO/PPO Contracts	-.4041	.1169	.001
Pop 65+	-.8124	.4765	.088
Per Capita Income	4.71	2.37	.047
Bed Total	.0004	.0001	.000
Ownership	-.5118	.0472	.000
Constant	.1306	.0927	.159
Number of Observations = 3436			
F (7, 3428) = 30.32			
Prob F = .000			
R-squared = .0583			

The independent variable of interest is the Herfindahl index, which measures the level of competition at the individual hospital level. The dependent variable is the cost orientation factor, interpreted as the higher the value, the more inefficient the hospital. Table 20 shows a negative coefficient for HHI of -.2550 and a p value of .000 indicating significance with the dependent cost factor. The negative coefficient for HHI is interpreted as a lower HHI or hospitals in a less competitive environment are more likely to be associated with the cost inefficiency factor score. As noted previously, the cost factor in this study indicates that a higher value signifies less efficient hospitals, therefore the results indicate that hospitals in less competitive environments are more likely to be associated with cost inefficiency.

All of the control variables had p values of less than .05, with the exception of the variable, percentage of the population over 65, which was not associated with the cost factor. The managed care penetration control variable had a positive and significant relationship with cost orientation, indicating that the greater the managed care penetration, the more likely an association with cost inefficiency. The number of HMO and PPO contracts was negatively associated with a cost orientation, interpreted as the fewer the number of HMO and PPO contracts, the more likely that an inefficient cost orientation is present. The variable, per capita income, was positively associated with a cost orientation, indicating that hospitals in areas with a wealthier population have a greater association with inefficiency. The control variable, ownership had a negative and significant relationship with cost orientation, indicating that non-profit hospitals were less likely to be inefficient.

Model 3 - Association of HHI and CON with Factor 1- Differentiation

The third model adds the dichotomous independent variable, Certificate of Need regulation, where 1 indicates that CON is present in some form, and 0 indicates that there is no CON regulation. When the second predictor variable, CON, is entered into the model with HHI, it is expected that the addition of a second predictor variable will increase the percentage of the model explained by the variables. However, the R-squared value of the third model, with regard to the differentiation factor did not increase appreciably. The R-squared value for the third differentiation factor model with both HHI and CON was .5558 compared

to a R-squared value for the first differentiation factor model with just CON of .5523 and with the second differentiation factor model with just HHI of .5534.

Table 21 presents the regression analysis results for the differentiation factor of Model 3, which evaluates the association of competition measured by the Herfindahl Index and regulation measured by a dichotomous CON variable, with the dependent factor of differentiation strategic orientation. The F statistic had a p value of .000 indicating that the model is significant. Table 21 presents the coefficients, standard error and p values for Factor 1, which is composed from the variables, hospital/physician relationships, development of ambulatory surgery and number of community orientation services.

Table 21. Factor 1 – HHI and CON and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	.2367	.0453	.000
CON	.1072	.0248	.000
Control Variables			
Managed Care Penetration	.0007	.0003	.029
# HMO/PPO Contracts	.5180	.0808	.000
Pop 65+	-3.415	.3276	.000
Per Capita Income	.0000	1.63	.000
Bed Total	.0031	.0001	.000
Ownership	.0602	.0324	.063
Constant	-.7927	.0651	.000
Number of Observations = 3436			
F (8, 3427) = 536.06			
Prob F = .000			
R-squared = .5558			

Table 21 presents the regression results when both of the independent variables, CON and HHI are included. The CON variable had a positive coefficient of .107 and a significant p value. This indicates that the presence of

CON is positively associated with the differentiation factor. These results are the same as the results in Model 1, where only CON was included in the model.

Table 21 shows that HHI has a positive coefficient (.2367) and a p value of less than .05, indicating that the higher the HHI, or the more competitive the environment, the more likely that there is a differentiation orientation. This is the same result found in Model 2, when just HHI was included in the model.

Five of the control variables were found to be significant with regard to the differentiation factor. Positive coefficients and p values of less than .05 were found with the control variables; managed care penetration, number of HMOs and PPOs, per capita income, and bed totals. These regression results indicate that the greater the managed care penetration and the greater the number of HMO and PPO contracts, the more likely that there will be a differentiation orientation. There is a positive association where the greater the per capita income and the higher the bed totals, the more likely there will be a differentiation orientation. There was a negative coefficient but a significant association between the variable, percentage of the population 65+ and the differentiation factor, indicating that a younger population is more likely to be associated with a differentiation orientation. The control variable, ownership, was not found to be significant with a differentiation strategic orientation.

Model 3: Association of HHI and CON with Factor 2- Cost Inefficiency

In Model 3, Factor 2, both HHI and CON were included as independent variables, with the expectation that there would be an additive effect. However,

the comparison of R-squared values for the cost inefficiency factor showed no significant increase in predictive power. The first cost factor model with just CON as a predictor had a R-squared value of .0555, and the second model with just HHI as a predictor had a R-squared value of .058. The third cost factor model with both HHI and CON had a R-squared value of .0599. However, the model had a F statistic with a p value of .000, indicating that the model itself was significant. Table 22 provides the relationships with the dependent variable, cost inefficiency orientation, which was based on factor scores comprised of the variables RN FTEs and operating expenses.

Table 22. Factor 2 –HHI and CON and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	-.2658	.0658	.000
CON	-.0878	.0361	.015
Control Variables			
Managed Care Penetration	.0016	.0005	.001
# HMO/PPO Contracts	-.4351	.1175	.000
Pop 65+	-.7647	.4767	.109
Per Capita Income	5.11	2.37	.032
Bed Total	.0004	.0001	.000
Ownership	-.5140	.0472	.000
Constant	.1783	.0947	.060
Number of Observations = 3436			
F (8, 3427) = 27.31			
Prob F = .000			
R-squared = .0599			

Table 22 presents the results of the associations with the cost inefficiency orientation factor. Just as in Model 1, the CON variable has a negative coefficient, but is also significant, with a p value of .000 with regard to the cost factor. This indicates that when CON is not present, there is a greater likelihood of association with a cost orientation of inefficiency.

As in Model 2, HHI has a negative coefficient, but a significant p value of .000, which indicates that the lower the HHI or the less competition in the market, the more likely there is an association with a cost orientation of inefficiency.

All of the control variables had p values of less than .05, with the exception of the variable, percentage of the population over 65, which was not associated with the cost factor. The managed care penetration control variable had a positive and significant relationship with a cost inefficiency orientation, indicating that the greater the managed care penetration, the more likely that a cost orientation signifying inefficiency is present. The number of HMO and PPO contracts was negatively associated with a cost orientation, interpreted as the fewer the number of HMO and PPO contracts, the more likely that an inefficient cost orientation is present. The per capita income was positively associated with a cost orientation, indicating that hospitals in areas with a wealthier population have a greater association with inefficiency. The control variable, ownership had a negative and significant relationship with cost orientation, indicating that non-profit hospitals were less likely to be inefficient.

Model 4: Association of HHI and Levels of CON with Factor 1-Differentiation

In the fourth model, the levels of Certificate of Need review are introduced. CON 1 is the most minimal review, CON 2 represents moderate review, and CON 3 represents the highest number of reviewable services and the most stringent requirements for capital threshold review.

When the predictor variables identifying CON ranks are entered into the model, it is expected that the addition of the three CON predictor variables will increase the percentage of the model explained by the variables. However, the R-squared value of the fourth model, with regard to the differentiation factor did not increase appreciably. The R-squared value for the fourth differentiation factor model with both HHI and three levels of CON was .5591 compared to a R-squared value for the first differentiation factor model with just CON of .5523, the second differentiation model with just HHI of .5534, and the third differentiation model with both CON and HHI of .5558. However, the third model did have a F result with a significant p value, indicating that the fourth model was significant.

Table 23 presents the regression analysis results for Model 4, Factor 1, which evaluates the association of competition measured by the Herfindahl Index and regulation measured by three levels of CON variables, with the dependent factor of a differentiation strategic orientation. Table 23 provides the coefficients, standard error, and p significance test for Factor 1, which represents a differentiation orientation. Table 23 presents the results when the levels of CON are added. CON 1 and CON 3 both have positive coefficients and significant p values. However, CON 2, representing moderate CON is not associated with the differentiation factor, which is an unexpected result. These results indicate that both the minimal level of review and the maximum level of CON review are positively associated with a differentiation strategic orientation.

Table 23. Factor 1 – HHI and Levels of CON and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	.2524	.04536	.000
CON 1	.1571	.0306	.000
CON 2	.0330	.0290	.256
CON 3	.2045	.0409	.000
Control Variables			
Managed Care Penetration	.0007	.0003	.031
# HMO/PPO Contracts	.4899	.0908	.000
Pop 65+	-.5425	.3326	.000
Per Capita Income	.0000	1.63	.000
Bed Total	.0031	.0001	.000
Ownership	.4856	.0324	.134
Constant	-.7884	.0653	.000
Number of Observations = 3436			
F (10, 3425) = 434.35			
Prob F = .000			
R-squared = .5591			

Table 23 shows results that HHI has a positive coefficient and a p value of less than .05, indicating that the higher the HHI, or the more competitive the environment, the more likely that there is a differentiation orientation. This is the same result found in Model 2, when just HHI was included in the model and in Model 3 when CON as a dichotomous variable was included.

The control variables; managed care penetration, number of HMO and PPO contracts, per capita income and bed size, showed a relationship with the dependent differentiation factor, with positive correlations and significant p values. These regression results indicate that for both the variable, greater the managed care penetration and the variable, greater the number of HMO and PPO contracts, the more likely that there will be a differentiation orientation. A positive association also indicates that both the variable, greater the per capita

income, and the variable, higher the bed totals, are more likely to have a differentiation orientation. There was a negative coefficient but a significant association between the variable, percentage of the population 65+ and the differentiation factor, indicating that a younger population is more likely to be associated with a differentiation orientation. The control variable, ownership, was not found to be significant with a differentiation strategic orientation.

Model 4: Association of HHI and Levels of CON with Factor 2- Cost Inefficiency

As previously noted, the addition of the levels of CON review did not increase the explanatory power of the model with regard to the differentiation factor. The comparison of R-squared values for the cost inefficiency factor showed similar results. The first cost factor model with just CON as a predictor had a R-squared value of .0555, the second cost factor model with just HHI as a predictor had a R-squared value of .0583, and the third cost factor model with both HHI and CON had a R squared value of .0599. The fourth cost factor model with both HHI and the three levels of CON had a R-squared value of .0645. However, the fourth model did have a F statistic with a significant p value, indicating that the model itself was significant. Table 24 provides the coefficients, standard error and p significance test for Model 4, Factor 2, which represents a cost inefficiency.

Table 24 presents the results of the associations with the cost inefficiency orientation factor. The associations between the three CON variables and the cost inefficiency factor had mixed results. CON 1 and CON 2 had negative

Table 24. Factor 2 –HHI and CON levels and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	-.2378	.0661	.000
CON 1	-.0914	.0445	.040
CON 2	-.1461	.0423	.001
CON 3	.0963	.0596	.106
Control Variables			
Managed Care Penetration	.0016	.0005	.001
# HMO/PPO Contracts	-.4515	.1176	.000
Pop 65+	-.6871	.4845	.156
Per Capita Income	5.21	2.38	.028
Bed Total	.0004	.0001	.000
Ownership	-.5221	.0472	.000
Constant	.1561	.0952	.101
Number of Observations = 3436			
F (10, 3425) = 23.61			
Prob F = .000			
R-squared = .0645			

coefficients and were statistically significant with regard to the cost inefficiency orientation factor. However, CON 3, the highest ranking of CON review, had a high p value and was not significant with the cost inefficiency orientation factor. These results indicate that there is a difference in the level of CON review with regard to a cost inefficiency orientation. Minimal and moderate CON review have the same relationship to cost orientation as found in the dichotomous CON variable in Model 1, a negative coefficient with a significant p value. CON 3, the highest level of CON review was not significant with regard to the cost inefficiency factor.

Just as in Model 2 and Model 3, HHI has a negative coefficient, but a significant p value (.000), which indicates that the lower the HHI or competition in

the market, the more likely there is an association with a cost inefficiency orientation.

All of the control variables were statistically significant with the cost orientation factor, with the exception of the percentage of the population 65 +. Positive coefficients and significant p values were found for the variables; managed care penetration, per capita income and bed size, and negative coefficients and positive p values were found for the variables, number of HMO and PPO contracts and ownership. These results suggest that the greater the managed care penetration, the more likely to be an inefficient cost orientation, and hospitals in areas with a higher per capita income are more likely to have a cost inefficiency orientation. The positive coefficient also indicates that the higher the bed size, the more likely to be inefficient.

The negative coefficients for the variables, number of HMO and PPO contracts, and ownership, suggest that hospitals with a larger number of managed care contracts and non-profit hospitals are less likely to be associated with inefficiency.

Model 5: Interaction of HHI and Levels of CON with Factor 1- Differentiation

The fifth model tests for interaction effects between the HHI measure of competition at the individual hospital level and the three levels of CON review. The HHI independent variable and the three levels of CON review are included in this model as in Model 4. However, three new variables are introduced, including

the interaction of HHI with CON 1, the interaction of HHI and CON 2 and the interaction of HHI and CON 3.

It was expected that the addition of the interaction effect to Model 5 would improve the model, but the results indicate a R squared value for the differentiation factor similar to the first four models. The R squared for the interaction model with the differentiation factor was 0.5602, compared to the R squared values for Models 1 through 4 of 0.5523, 0.5534, 0.5558 and 0.5591 respectively. However, the results show a significant F statistic with a p value of .000, indicating that the model itself is significant.

This discussion presents the regression analysis results for Model 5, Factor 1, which not only evaluates the association of competition measured by the Herfindahl Index and regulation measured by three levels of CON variables with the differentiation factor score, but also adds the interaction effects of HHI and CON. The coefficients, standard error, and p significance test for Factor 1, which represents a differentiation orientation, are provided.

Table 25 shows that HHI has a positive coefficient and a p value of less than .05, indicating that the higher the HHI, or the more competitive the environment, the more likely that there is a differentiation orientation. This is the same result found in the previous models. Table 25 also presents the results when the levels of CON are added. Again, as in Model 4, CON 1 and CON 3 both have positive coefficients and significant p values. CON 2, representing moderate CON is again, not associated with the differentiation factor. These results

Table 25. Factor 1 – Interaction HHI/CON levels and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	.2320	.0663	.000
CON 1	.1090	.0494	.027
CON 2	.0673	.0478	.159
CON 3	.1280	.0599	.033
Interaction HHI/CON			
HHI/CON 1	.1109	.0871	.203
HHI/CON 2	-.0807	.0831	.332
HHI/CON 3	.2305	.1228	.061
Control Variables			
Managed Care Penetration	.0007	.0003	.034
# HMO/PPO Contracts	.4755	.0826	.000
Pop 65+	-3.602	.3341	.000
Per Capita Income	.0000	1.66	.000
Bed Total	.0031	.0001	.000
Ownership	.0455	.0327	.164
Constant	-.7715	.0724	.000
Number of Observations = 3436			
F (13, 3422) = 335.35			
Prob F = .000			
R-squared = .5602			

indicate that both the minimal level of review and the maximum level of CON review are positively associated with a differentiation strategic orientation.

Table 25 presents the results of the interaction effect between HHI and the levels of CON regulation with the differentiation factor score. All three interactions were found to have high p values and therefore not significant with regard to the differentiation factor.

All of the control variables in Model 5, continued the same relationship with the dependent differentiation factor as in the previous models, with managed

care penetration, number of HMO and PPO contracts, per capita income and bed size with positive correlations and significant p values.

These regression results indicate that the greater the managed care penetration and the greater the number of HMO and PPO contracts, the more likely that there will be a differentiation orientation. There is a positive association for both of the variables, per capita income and higher bed totals, where there is a greater likelihood of a differentiation orientation. Again, as in previous models, there was a negative coefficient but a significant association between the variable, percentage of the population 65+ and the differentiation factor, indicating that a younger population is more likely to be associated with a differentiation orientation. The control variable, ownership, was again not found to be significant with a differentiation strategic orientation.

Model 5: Interaction of HHI and Levels of CON with Factor 2- Cost Inefficiency

As in the previous model, Model 5 explores the association of HHI and the three levels of competition with a cost inefficiency orientation. However, Model 5 adds the interaction of HHI with CON 1, the interaction of HHI and CON 2 and the interaction of HHI and CON 3. It was expected that the addition of the interaction effect to Model 5 would improve the model, but the results in Table 26 indicate a R squared value for the differentiation factor similar to the first four models. The Model 5 cost factor model with the interaction effects had a R-squared value of .0678, compared to R squared values of 0.0535, 0.0583, 0.0599, and 0.0645 for Models 1, 2, 3 and 4 respectively. However, the F

statistic continues to be significant with a p value of .000 indicating that the model itself is significant. Table 26 provides the coefficients, standard error and p significant test for Factor 2, which represents a cost inefficiency orientation.

Table 26. Factor 2 –Interaction of HHI/CON levels and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
Herfindahl Index	-.3321	.0965	.001
CON 1	-.0631	.0719	.380
CON 2	-.2322	.0696	.001
CON 3	-.0765	.0872	.381
Interaction HHI/CON			
HHI/CON 1	-.0791	.1269	.533
HHI/CON 2	.1911	.1210	.114
HHI/CON 3	.5033	.1787	.005
Control Variables			
Managed Care Penetration	.0016	.0005	.001
# HMO/PPO Contracts	-.4048	.1202	.001
Pop 65+	-.7224	.4865	.138
Per Capita Income	4.10	2.41	.089
Bed Total	.0004	.0001	.000
Ownership	-.5034	.0476	.000
Constant	.2227	.1054	.035
Number of Observations = 3436			
F (13, 3422) = 19.14			
Prob F = .000			
R-squared = .0678			

Table 26 presents the results of the associations with the cost inefficiency orientation factor. Just as in the previous models, HHI has a negative coefficient, but a significant p value (.000), which indicates that the lower the HHI or lower the competition in the market, the more likely there is an association with a cost inefficiency orientation.

The three CON variables again had mixed results. CON 1 and CON 3 were not statistically significant with regard to the cost inefficiency orientation factor. However, CON 2 had a negative coefficient but a significant p value. Again, a difference in the moderate level of review from the minimum and maximum review was a surprising result.

Table 26 explores the interaction effect between HHI and the three levels of CON with the cost factor. HHI/CON1 and HHI/CON 2 were not significant with the dependent variable, as both had p values that greatly exceeded .05. However, HHI/CON 3 had a positive coefficient and was statistically significant with a p value of .005. These results indicate when there is greater competition in the market and the most stringent level of CON review, there is a greater likely of cost inefficiency. These results seem to indicate an interaction effect when the environment includes both a highly competitive market and the most stringent CON review.

In Model 5, one of the control variables had a different result from previous models. The per capita income was not statistically significant in this model, although it had been significant with the cost factor in the first three models. The percentage of the population 65 + continued to be not significant in Model 5 with regard to the cost inefficiency factor as in the previous three models.

However, all of the other control variables were statistically significant with the cost inefficiency orientation factor, and had the same relationships as in the first four models, with positive coefficients and significant p values for the variables;

managed care penetration, and bed size, and negative coefficients and significant p values for the variables, number of HMO and PPO contracts and ownership.

System HHI Evaluation

In the initial study, system affiliation was considered as a differentiation orientation variable, however, the results of the factor analysis did not support that consideration. It is apparent from the results of the factor analysis that system affiliation could be a confounding factor in an analysis of the relationship of competition and of regulation on hospital strategic orientation. Because of the significant number of system-affiliated hospitals, healthcare markets are becoming more concentrated (Conner, Feldman and Dowd, 1998).

In this study, the individual hospital was the area of interest and the focus for the initial model development. In the first five models, competition was measured by the Herfindahl Index at the individual hospital level, providing each hospital's market share of admissions of the total admissions in the county where the hospital was located. However, because this study evaluates the association of competition on hospital strategic orientation, an evaluation of the effect of system affiliation must also be considered. As hospitals form systems in a common market area, the market competition and concentration can be significantly altered, and can distort the measurement and research results.

Current research on the association of competition includes the effect of system affiliation on market concentration (Bernstein and Gauthier, 1998; Keeler,

Melnick and Zwanziger, 1999). Studies have shown that system development can dilute the level of competition by uniting system hospitals under common ownership and therefore controlling a larger market share. (Cuellar and Gertler, 2003). Calculating the Herfindahl Index by combining all hospitals within the same system in the same geographical area of interest is becoming recognized as an important consideration, particularly in research on the effects of competition (Dranove and Ludwick, 1999).

Tables 27 through 32 analyze models two, three and four, but use HHI based on a system level measurement rather than an individual hospital level measurement. Of note, in comparing the coefficients for system HHI with the coefficients for individual hospital HHI, the coefficients had slightly smaller values, indicating that system affiliation did dilute the market concentration. However, in the re-evaluation of the models using system HHI, the results are identical to the individual hospital HHI calculation results. All of the models are significant with F statistics with p values of .000, however, as in the initial models, there is no additive effect, as the R squared values remain similar throughout all of the models. When system HHI is measured against the factor scores, in all models, HHI remains positive and significant with regard to the differentiation factor, and negative and significant with the cost factor. When CON and the levels of CON were added, the results with system HHI and individual hospital HHI were identical, indicating that system measurement of HHI was not a significant factor in strategic orientation.

Table 27. Model 2 a, Factor 1 – System HHI and Differentiation

Independent Variables			
System Herfindahl	.1970	.0472	.000
Control Variables			
Managed Care Penetration	.0007	.0003	.031
# HMO/PPO Contracts	.5082	.0804	.000
Pop 65+	-3.40	.3283	.000
Per Capita Income	.0000	1.63e	.000
Bed Total	.0031	.0001	.000
Ownership	.0606	.0326	.063
Constant	-.7213	.0640	.000
Number of Observations = 3436			
F (7, 3428) = 604.64			
Prob F = .000			
R-squared = .5525			

Table 28. Model 2a, Factor 2 –System HHI and Cost Inefficiency

Independent Variables			
System Herfindahl	-.2169	.0685	.002
Control Variables			
Managed Care Penetration	.0016	.0005	.001
# HMO/PPO Contracts	-.4419	.1168	.000
Pop 65+	-.7615	.4767	.110
Per Capita Income	4.20e	2.37e	.076
Bed Total	.0004	.0001	.000
Ownership	-.5161	.0473	.000
Constant	.1161	.0929	.211
Number of Observations = 3436			
F (7, 3428) = 29.56			
Prob F = .000			
R-squared = .0569			

Table 29. Model 3 a, Factor 1 – System HHI and CON and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	.2084	.0471	.000
CON	.1048	.0248	.000
Control Variables			
Managed Care Penetration	.0007	.0003	.023
# HMO/PPO Contracts	.5468	.0807	.000
Pop 65+	-3.460	.3278	.000
Per Capita Income	.0000	1.63e	.000
Bed Total	.0031	.0001	.000
Ownership	.0634	.0325	.051
Constant	-.7774	.0652	.000
Number of Observations = 3436			
F (8, 3427) = 533.87			
Prob F = .000			
R-squared = .5548			

Table 30. Model 3 a, Factor 2 –System HHI and CON and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	-.2261	.0686	.001
CON	-.0848	.0361	.019
Control Variables			
Managed Care Penetration	.0015	.0005	.001
# HMO/PPO Contracts	-.4731	.1174	.000
Pop 65+	-.7133	.4768	.135
Per Capita Income	4.56e	2.37e	.054
Bed Total	.0004	.0001	.000
Ownership	-.5183	.0473	.000
Constant	.1616	.0949	.089
Number of Observations = 3436			
F (8, 3427) = 26.59			
Prob F = .000			
R-squared = .0584			

Table 31. Model 4 a, Factor 1 – System HHI and CON levels and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	.2326	.0473	.000
CON 1	.1593	.0306	.000
CON 2	.0281	.0290	.333
CON 3	.1995	.0409	.000
Control Variables			
Managed Care Penetration	.0007	.0003	.005
# HMO/PPO Contracts	.5115	.0808	.000
Pop 65+	-3.607	.3327	.000
Per Capita Income	.0000	1.63e	.000
Bed Total	.0031	.0001	.000
Ownership	.0504	.0325	.121
Constant	-.7695	.0654	.000
Number of Observations = 3436			
F (10, 3425) = 432.83			
Prob F = .000			
R-squared = .5583			

Table 32. Model 4 a, Factor 2 –System HHI and CON levels and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	-.1948	.0688	.005
CON 1	-.0927	.0446	.038
CON 2	-.1415	.0423	.001
CON 3	.1043	.0596	.080
Control Variables			
Managed Care Penetration	.0015	.0004	.001
# HMO/PPO Contracts	-.4893	.1177	.000
Pop 65+	-.6257	.4845	.197
Per Capita Income	4.64e	2.37e	.050
Bed Total	.0004	.0001	.000
Ownership	-.5263	.0473	.000
Constant	.1397	.0953	.143
Number of Observations = 3436			
F (10, 3425) = 23.08			
Prob F = .000			
R-squared = .0631			

When the Model 5 interaction effect of system HHI and the three levels of CON were evaluated, there was only one slight difference. In the individual hospital HHI calculation, there was no significance with any of the three interactions between HHI and the levels of CON with regard to the differentiation factor, however, individual HHI/CON 3 had a p value of .06, just missing the cut off for significance of .05. Table 33 shows that in the system HHI/CON 3 model, a p value of .03 was found, indicating a significant result.

Table 33. Model 5 a, Factor 1 – Interaction System HHI/CON levels and Differentiation

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	.2338	.0692	.001
CON 1	.1346	.0454	.003
CON 2	.0716	.0443	.106
CON 3	.1264	.0558	.024
Interaction HHI/CON			
HHI/CON 1	.0749	.0935	.423
HHI/CON 2	-.1168	.0870	.179
HHI/CON 3	.2856	.1325	.031
Control Variables			
Managed Care Penetration	.0007	.0003	.027
# HMO/PPO Contracts	.4877	.0827	.000
Pop 65+	-3.688	.3349	.000
Per Capita Income	.0031	1.66e	.000
Bed Total	.0458	.0001	.000
Ownership	-.7585	.0327	.162
Constant		.0718	.000
Number of Observations = 3436			
F (13, 3422) = 334.52			
Prob F = .000			
R-squared = .5596			

With regard to the cost inefficiency factor and the interaction effects, both individual and system HHI results were the same, with only HHI/CON 3 with significant p values, as shown in Table 34. As with the individual HHI results, these system HHI results indicate that when there is greater competition in the market and the most stringent level of CON review, there is a greater likelihood of cost inefficiency.

Table 34. Model 5 a, Factor 2- Interaction System HHI/CON levels and Cost Inefficiency

Variable	Coefficient	Std Error	P Value
Independent Variables			
System Herfindahl	-.2626	.1008	.009
CON 1	-.0614	.0661	.353
CON 2	-.1955	.0645	.002
CON 3	-.0161	.0813	.843
Interaction HHI/CON			
HHI/CON 1	-.1054	.1362	.439
HHI/CON 2	.1441	.1267	.256
HHI/CON 3	.4455	.1930	.021
Control Variables			
Managed Care Penetration	.0015	.0005	.001
# HMO/PPO Contracts	-.4517	.1204	.000
Pop 65+	-.6544	.4880	.180
Per Capita Income	3.73e	2.41e	.122
Bed Total	.0004	.0001	.000
Ownership	-.5118	.0477	.000
Constant	.1845	.1046	.078
Number of Observations = 3436			
F (13, 3422) = 18.45			
Prob F = .000			
R-squared = .0655			

The consistent results of the models, regardless of the calculation of HHI, indicate that system affiliation does not materially change the association with

strategic orientation in relation to the association found when HHI is calculated at the individual hospital level. So although system HHI did dilute the market concentration, it did not appear to be a significant factor in this study of strategic orientation.

Summary

Chapter Five presented the results of the analyses used to evaluate the association of competition with strategic orientation and with regulation and strategic orientation and to assess interaction effects between the measurements used for competition and regulation. The sample population was fully described with descriptive statistics compared to the initial population of hospitals as well as the eliminated hospitals. A correlation matrix was presented that identified several multicollinearity issues, and based on those results, several of the initial control variables were eliminated. Results of a factor analysis were described that identified two factors and the variables that loaded on the two factors. Based on the results of the factor analysis, one variable was eliminated and two factor scores were created from the remaining variables.

Five models were identified, and the results of the regression analyses on these models were also presented. The initial models were developed based on individual hospital level HHI. To assess the effect of system affiliation on the models, a system level HHI was calculated and the models were re-run based on system HHI. The results are discussed and interpreted in Chapter 6, with conclusions, implications, limitations and recommendations for future research.

CHAPTER SIX: DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study is to evaluate the effect of competition and the effect of regulation on the strategic orientation of hospitals. Porter's strategic orientation typology provides the definition of strategic orientation as the tendency of organizations to develop strategies focusing on either differentiation or cost leadership based on the environmental context within which they operate (Porter, 1980). This study examines the strategic tendencies of hospitals operating within the various environments of competition and regulation, as operationalized by the level of market competition and the level of CON activity within the environment respectively. Four research questions were proposed to determine relationships among the constructs of strategic orientation, competition and regulation.

This is a particularly relevant and timely subject, as the effectiveness of competition in the health care market versus the effectiveness of regulation in the health care market has been hotly debated in all sectors, including academic, healthcare management and political and policy making sectors. There is no consensus in the literature supporting either mechanism of control of the health care sector (French, 2002). In addition, there is little prior research on the

relationship of these environmental constructs on the strategic orientation of hospitals, nor is there a strong body of research that provides a theoretical framework to examine the influences of institutional and resource dependency forces on hospital strategic orientation.

The previous five chapters established the purpose and relevance of this research study and provided a review of both the literature and previous empirical research on the constructs of competition, regulation and strategic orientation. A rationale for the use of a theoretical framework that combined institutional theory and resource dependency theory was presented with discussion of prior research using these theoretical underpinnings in research on competition, regulation and strategy. Based on prior research and the theoretical framework, a series of hypotheses were presented to address the research questions posed in the first chapter. The first two hypotheses related to measurements of the constructs for strategic orientation for the health care industry. Hypotheses were developed based on the literature and theoretical framework on the expectation of the most likely strategic orientation of hospitals, given a competitive or non-competitive environment and a CON regulated or non-regulated environment. Hypotheses were also developed regarding an expected interaction effect between competition and regulation. This chapter discusses the major findings relative to the research questions, the proposed hypotheses, as well as the conclusions and implications of the research. The

chapter concludes with the limitations of this study and proposes recommendations for future research on this topic.

Results of Hypothesis Testing

First Research Question and Hypotheses – Strategic Orientation Construct

This section discusses the results of the statistical analyses that were undertaken to address the first research question regarding the validity and justification of creating an index of measurable variables for the two constructs of strategic orientation; differentiation strategic orientation and cost orientation. A comprehensive analysis of prior empirical research on competition, regulation and strategic orientation, in conjunction with a theoretical approach that combined institutional theory and resource dependency theory provided the rationale for the selection of a series of variables to measure strategic orientation. Two hypotheses were developed with regard to the formation of indexes that would represent a differentiation orientation and a cost orientation. The review of prior research and the theoretical framework led to the selection of a series of variables to represent the construct of strategic orientation. The following discussion presents the results and conclusions regarding these hypotheses.

H1: The variables; system affiliation, hospital/physician relationships, development of ambulatory surgical centers, and community service orientation will have common characteristics consistent with a differentiation strategic orientation.

The results of the principal component factor analysis validated three of the four hypothesized variables selected to be associated with a differentiation strategic orientation. The factor representing the differentiation orientation construct had an eigenvalue of 2.35 providing strong support for the creation of the factor. The variables hospital/physician relationships, development of ambulatory surgical centers and community service orientation showed a strong correlation with factor loadings of 0.68, 0.88, and 0.86 respectively, supporting the hypothesis regarding these variable measurements.

The results of these correlations among the variables, hospital/physician relationships, development of ambulatory surgery centers, and community orientation as measurements of a differentiation orientation are consistent with prior research. Hospitals will use the development of hospital/physician relationships to distinguish their organizations (Burns, Bazzoli, Dynan and Wholey, 2000) and to create a partnership that could not be duplicated by competing hospitals (Kohn, 2000). The development of collaborative hospital/physician relationships is a prime determinate in a successful hospital (LeTourneau, 2006). Prior research has also found a positive relationship with the development of ambulatory surgical centers as a strategy to create an identity and loyalty with both physicians and patients (Lynch, 1991, Casalino, Devers and Brewster, 2004). Numerous prior studies have found a positive correlation between community involvement activities and a reputation of legitimacy (Brown and Dacin, 1997, Feurer and Chaharbaghi, 1996).

The variable, system affiliation, did not support the hypothesis that there would be an association with a differentiation orientation, and in fact, system affiliation actually loaded somewhat significantly with the cost factor. This result, although inconsistent with the hypothesis, does seem to reflect the wide diversity in research on the effectiveness of systems. Even with the dramatic growth in system development, there is significant debate on whether hospitals affiliate for cost effectiveness factors or for institutional factors of mimicking or the establishment of legitimacy (Shortell and Zajac, 1990). A review of prior research on system affiliation has found mixed results. Research by Conner, Feldman and Dowd, (1998) and Alexander, Halpern and Lee (1996) found that systems were cost effective and improved operating efficiencies. However, Clement, McCue and Luke (1997) and Melnick, Keeler and Zwanziger (1999) found hospital alliances no more effective at cost control. These conflicting conclusions have led to a growing body of literature suggesting that system affiliation has become an accepted institutional norm (Song, 1995) and a strategy to gain legitimacy (Goes and Park, 1997).

The results of this factor analysis and the factor loadings indicate major support for H1, specifically with regard to the variables, physician/hospital relationships, development of ASCs and community orientation, but that additional research is needed on the strategy of system affiliation to determine its effectiveness as either a reputation enhancing strategy or a cost efficiency strategy.

H2: The variables; RN/FTEs, occupancy and operating expense will have common characteristics consistent with a cost strategic orientation.

The results of the principal component factor analysis validated two of the three hypothesized variables selected to be associated with a cost strategic orientation. However, two of the three variables had positive factor loadings indicating that greater values were associated with inefficiency, and therefore, the cost orientation factor was defined as an inefficiency factor. The factor representing the cost inefficiency orientation construct had an eigenvalue of 1.37 providing strong support for the creation of the factor.

The variables, RN/FTEs/bed, occupancy based on staffed beds, and the log of operating expenses all showed a correlation with factor loadings of 0.73, 0.76, and 0.88 respectively. The assumption for this study is that a factor score could be created where a higher value would be associated with more inefficient hospitals. Based on prior research, the higher the number of RN FTEs/bed, the more inefficient the hospital. The same relationship is found with the variable, operating expense, where the higher the operating expense, the more inefficient the hospital. However, for the variable, occupancy/staffed bed, the higher the occupancy, the more efficient the hospital, and therefore, it was expected that a negative coefficient of occupancy would be associated with the variables, RN FTEs/bed and operating expense. Instead, the factor analysis result indicated that a higher occupancy/staffed bed is positively associated with higher operating expenses and higher RN FTE staffing, and therefore, the results supported only

part of the hypothesis. Although occupancy has been used in prior research as a cost strategy (Bazzoli, Manheim and Waters, 2003), it has also been used as a performance variable, indicating that it is the result of effective cost strategies (Goldstein, Ward, Leong and Butler, 2002). The results of this factor analysis indicate that occupancy would perhaps be a better indicator of performance rather than a cost strategy.

The variables RN FTE/staffed bed and the log of operating expense did have a strong correlation with the cost inefficiency orientation factor, providing partial support for the hypothesis. These results are consistent with prior research suggesting that control of staffing and control of expenses are strategies that hospitals can choose to adopt to create efficiencies and maximize resources. Hospitals addressing a cost orientation identify RN FTEs as a major factor affecting cost (Ford and Kaserman, 1993). Hospitals will strategically reduce the number of RN FTEs to control labor costs (Beckman and Potter, 2002). As hospitals try to maximize their resources, evaluating the mix of RNs can be an appropriate cost effective strategy. However, hospitals have to balance RN cost savings with patient satisfaction (Paula, Long and Wiener, 2002). Hospitals that do not manage RN FTEs or are unable to control RN FTEs based on their specific environmental constraints are more likely to be inefficient and less profitable (Ford and Kaserman, 1992).

The results categorizing operating expense as a cost orientation are also supported by prior research. Kumar and Subramanian (2000) and Rivers and

Bae (1999) used operating expense as a measure of hospital efficiency that is under the control of hospitals from a strategy standpoint. Control of expenses was defined as a critical variable in hospital efficiency (Wang, Ozcan, Wan and Harrison, 1999) and is an aspect of costs that hospitals can influence (Conner, Feldman and Dowd, 1998). When operating expenses are high, hospitals are more likely to be inefficient, and less profitable (Wang, Ozcan, Wan and Harrison, 1999).

These results indicate major support for H2, but that occupancy does not provide a compatible mix for the cost factor as defined in this study as inefficiency.

Second Research Question and Hypotheses – Competition Construct

The second research question addresses the construct, competition and inquires as to whether there is an association between the level of competition in a hospital's market and either a differentiation orientation or a cost orientation. Two theoretical approaches, institutional theory and resource dependency theory provided a framework for development of the hypotheses. Prior research on competition and strategy were examined to determine the possible direction of the relationship between competition and strategic orientation. Two hypotheses were developed with regard to the association of the level of competition with either a differentiation orientation or a cost orientation. The following discussion presents the results and conclusions regarding these hypotheses.

H3: Given market and organizational factors, hospitals in highly competitive markets will be more likely to be associated with a differentiation strategic orientation index.

This hypothesis is supported by the research results. A series of five models were developed to test the hypotheses regarding an association of competition and a differentiation orientation. For these models, competition was measured by the Herfindahl Index (HHI), calculated at the individual hospital level. Because of the potential confounding effect of system hospitals on the level of market concentration, a subsequent evaluation was conducted using system HHI in place of individual hospital HHI, and repeating the regression analyses for all five models. This subsequent analysis was conducted to determine if system affiliation changed the market concentration and the association with a differentiation orientation. In this study, both the individual hospital HHI and the system level HHI were calculated based on percentage of admissions at the county level and calculated as one minus the sum of the market shares. Therefore, the closer the HHI value is to one, the more competitive the market, and conversely, the closer the HHI value is to zero, the less competitive the market.

In both studies, the first model calculated HHI and the control variables only to determine the association with the differentiation factor. In subsequent models, CON as a dichotomous variable was added, then three levels of CON review was added, and the final models evaluated HHI with three levels of CON

review and added the interaction effect of HHI/CON 1, HHI/CON 2 and HHI/CON

3. In every model regardless of whether HHI was measured at the individual hospital level or the system level, a positive HHI, was significantly associated with a differentiation factor score. These results support the hypothesis with an interpretation that hospitals in more highly competitive environments are more likely to be associated with a differentiation strategic orientation.

The hypothesis and results are supported by the institutional theory framework and prior research. Although the topic of competition and its effect on the health care industry remains very controversial, there has been a shift in market forces that now seem to favor differentiation over low costs in competitive markets (Altman, Shactman, and Eilat, 2006). A large body of current research has found that hospitals respond to increasing competition by developing strategies to increase services, amenities and consumer focused care to enhance the brand, and image and increase patient and physician loyalty (Devers, Brewster and Casalino, 2003; Rivers and Fottler, 2004). In response to more competition, hospitals are developing strategies to align with physicians, create structures and develop a community orientation focus that will enhance their perceived legitimacy and create an advantage that is difficult to duplicate (Shortell, 2005).

H4: Given market and organizational factors, hospitals in less competitive markets will be more likely to be associated with a cost orientation.

Hypothesis 4 was not supported by any of the regression models, regardless of whether HHI was calculated at the individual hospital level or at the system level. The hypothesis assumed that cost orientation indicated leadership in low costs, however, when the factor score was calculated with RN FTEs and operating occupancy, the cost factor was established so that a higher score indicated less efficient hospitals. The regression analyses for all of the models, for both individual and system HHI, consistently showed that a negative HHI was significantly associated with the cost inefficiency factor. These results indicate that hospitals in less competitive markets are more likely to be associated with cost inefficiency.

This hypothesis was developed within a resource dependency theoretical framework. Resource dependency theory posits that organizations will focus on controlling resources to maintain autonomy, and reduce the need for external dependency (Pfeffer and Salanick, 1978). There is some research supporting strategies that focus on resource control in non-competitive, stable environments (Alexander and Morrissey, 1989; Kumar, Subramanian and Strandholm, 2002). A non-competitive market can provide an incentive to promote cost saving strategies such as staff reductions and lower operating costs, where these strategies are not as effective in highly competitive markets (Hirth, Chernew and Orzol, 2000).

However, this research did not support a relationship between a stable, low competition environment and a cost efficient orientation. In fact, the opposite

results were found. It is interesting to note that the correlation matrix of the variables found in Table 11 indicated a high correlation between HHI and the control variable, urban. It is logical that the converse would indicate that a low HHI value would be more prevalent in a rural environment, and this is supported in health care literature on rural environments. Prior research has found a correlation between a rural location and financial difficulty (Trinh and O'Conner, 2000; Drain, Godkin and Valentine, 2001). Mick and Wise (1996) noted that the difficult environment for rural hospitals created a survival mode rather than a strategy oriented mode, and rural hospitals were not proficient with regard to financial strategies. In addition, rural hospitals are often sole community providers with obligations to provide community services that create operational inefficiencies. (Fleming, Williamson, Hicks, and Rife, 1995). The lack of support for the hypothesis that hospitals in low competition environments would focus on cost efficiencies could be confounded by the predominance of rural hospitals in low competitive environments, where there is no flexibility to control resources, and perhaps no need or motivation to control costs and operate efficiently.

The correlation matrix found in Table 11 also indicates a correlation between competition and the number of HMO and PPO contracts. Again, this correlation could indicate that hospitals in highly competitive markets must compete on both cost and differentiation strategies. Table 11 also indicates a high correlation between the number of HMO and PPO contracts and an urban area. These correlations among competition, number of HMO and PPO contracts and urban

and rural locations could be significant factors in the determination of strategic orientation. These results indicate that there is a need for further research in these areas.

Third Research Question and Hypotheses – Regulation Construct

The third research question addresses the construct, regulation, and inquires as to whether there is an association between the level of regulation in a hospital's market as defined by Certificate of Need regulatory oversight and either a differentiation orientation or a cost orientation. Institutional theory and resource dependency theory provided a framework for development of the hypotheses. Prior research on regulation and strategy were examined to determine the possible direction of the relationship between regulation and strategic orientation. Two hypotheses were developed with regard to the association of the level of CON regulation with either a differentiation orientation or a cost orientation. The following discussion presents the results and conclusions regarding these hypotheses.

H5: Given market and organizational factors, hospitals in non-CON regulated states will more likely be associated with a differentiation strategic orientation index.

This hypothesis was not supported by the regression models. In fact, the opposite relationship was found where hospitals in CON regulated states were more likely to be associated with a differentiation orientation. The first regression model evaluated the association of Certificate of Need and the control variables

only with the differentiation factor in order to isolate its relationship. CON was first inputted into the regression model as a dichotomous variable with 1 indicating presence of CON and 0 indicating no CON regulation. This model had a positive coefficient and a significant p value with regard to the differentiation factor, indicating that hospitals in CON regulated states were more likely to be associated with a differentiation orientation relative to hospitals in non-CON regulated states. In order to avoid making assumptions about no CON as the omitted variable, this model reversed the order of the variable so that 1 indicated no CON and 0 indicated that CON was present at any level. In this analysis, no CON had a negative coefficient and was significant with differentiation, which is interpreted that hospitals in non-CON regulated states were not likely to have a differentiation orientation. These results were not supportive of the hypothesis.

When the three levels of CON review and the interaction effects were added to the model, the results showed a positive correlation for CON 1, and CON 3, with the differentiation factor, however, CON 2 was not significant.

This study used institutional theory and prior research to predict that when there were no regulatory controls in place, a proliferation of providers would occur, and hospitals would need to develop strategies to differentiate their organizations from other providers in order to achieve a competitive advantage. Although these results do not support the hypothesis, there is such controversy in the research regarding the impact of CON, that it is not an entirely unexpected result.

Of note, there is no consistency in the results with regard to the levels of CON review, as the most minimal review (CON 1) and the maximum level of review (CON 3) were associated with differentiation, but the middle level, (CON 2) was not significant. The AHPA cautions that the levels created by ranking hospitals based on number of services and capital threshold reviews do not necessarily reflect the severity of analysis and CON decision making from state to state, and these results seem to indicate that the use of the levels of CON to distinguish states is somewhat problematic.

H6: Given market and organizational factors, hospitals in CON regulated states will be more likely to have a cost orientation compared to hospitals in non-CON regulated states.

This hypothesis is supported by the research results for the most part. The hypothesis assumed that cost orientation indicated leadership in low costs, however, when the factor score was calculated with RN FTEs and operating occupancy, the cost factor was established so that a higher score indicated less efficient hospitals.

The regression results showed that when CON was entered into the model as a dichotomous variable with 1 signifying that any level of CON review was present, a negative coefficient of CON was significant with the cost inefficiency factor. These results indicate that at lower levels of CON, there is a greater likelihood of cost inefficiency. These results indicate that hospitals in CON regulated states were less likely to be associated with cost inefficiency. These

results substantiate the hypothesis, indicating a greater likelihood of efficiency in CON regulated states. Again, in order to avoid making assumptions about no CON as the omitted variable, this model reversed the order of the variable so that 1 indicated no CON and 0 indicated that CON was present at any level. In this analysis, no CON had a positive coefficient and was significant with inefficiency, which is interpreted that hospitals in non-CON regulated states were more likely to be associated with inefficiency.

Of particular interest, when the three levels of CON were placed into the model, CON 1 and CON 2 had the same results as the dichotomous CON variable, with negative coefficients and significance with the cost inefficiency factor. However, CON 3, the most regulated level with regard to the number of services reviewed and the capital threshold for review, had a positive coefficient, but not significant with the cost inefficiency factor. This is interpreted that as the level of CON review decreases, there is a greater likelihood of an association with the cost inefficiency factor. These results indicate partial support for the hypothesis.

The theoretical framework for this hypothesis is resource dependency, suggesting that organizations will maximize and gain control of their resources, particularly internal resources to reduce dependency on other organizations (Song, 1995). When the environment is more stable and controlled, organizations concentrate on internal resource control (Alexander and Morrissey, 1989). Therefore, it was hypothesized that the control exerted by the Certificate

of Need regulatory environment would allow concentration on internal resource control. These results are also supported by prior research. Anderson, Heyssel and Dickler (1993) found the CON regulatory environment associated with greater hospital productivity, and Grossman and Banks (1998) found the converse relationship with decreased hospital output in non-CON regulated areas.

Fourth Research Question and Hypotheses – Interaction Effect

The fourth research question addresses the interaction effect between the constructs of competition and regulation, and inquires as to whether there is an association between the interaction of the two constructs and either a differentiation orientation or a cost orientation. Institutional theory and resource dependency theory provided a framework for development of the hypotheses. Prior research on competition, regulation and strategy were examined to determine the possible direction of the relationship with strategic orientation.

A progressive series of five models were developed that first evaluated CON independently, then evaluated HHI independently then added the independent variables of interest sequentially, where each model compared the independent variables to both the differentiation factor and the cost factor. The first model examined CON as a dichotomous variable with the control variables to determine the association with the two strategic orientation factors. Competition measured by the individual hospital HHI was examined with the control variables only in Model 2. CON was added to HHI in Model 3 as a dichotomous variable, then

examined further in Model 4 with the three levels of CON review. Model 5 added the interaction of HHI and the three levels of CON. An examination of the F statistic for all variations of the models found p values of .000, indicating that all individual models were significant. However, an examination of the R squared values of the sequential models indicated that the addition of predictor variables did not appreciably improve the percentage of the model explained by the variables, and this was found for both the differentiation orientation models as well as the cost orientation models. A subsequent evaluation was conducted where system HHI was calculated and used in all models to determine if the consolidation of hospitals into systems within the same county influenced the models and the interaction effect, and again the R squared values did not appreciably change.

Two hypotheses were developed with regard to the association of the interaction of competition with the level of CON regulation with either a differentiation orientation or a cost orientation. The following discussion presents the results and conclusions regarding these hypotheses.

H7: Given market and organizational factors, hospitals located in highly competitive markets with no CON regulatory controls will be the most likely to be associated with a differentiation strategic orientation index.

In the fifth model, the interaction of HHI and the three levels of CON were added to examine interaction effects with regard to the differentiation orientation. In this model, an examination of HHI by itself or a competitive market, indicated a

positive association with a differentiation orientation, and the three levels of CON indicated that when CON was present in levels 1 and 3, there was a positive association with differentiation.

When the interaction of HHI, calculated at the individual hospital level, and the three levels of CON were evaluated, the results showed no significance with a differentiation orientation at any level. However, when HHI was calculated at the system level and evaluated with regard to the interaction effect, a significant result was found with HHI (system) and CON 3, the highest level of review. The positive coefficient with regard to system HHI//CON 3 and significant p value indicates that when there is greater competition combined with the highest level of CON review, there is an association with a differentiation orientation. It appears that there is some interaction between HHI and CON, with regard to differentiation orientation but that it is influenced by the stringency of CON review.

These results indicate that more research is needed, or a different model used to more carefully examine the relationship between highly competitive markets and a non-CON regulated environment or different levels of CON review and the propensity of hospitals to be associated with a differentiation orientation.

H8: Given market and organizational factors, hospitals located in less competitive markets with CON regulatory controls will have a greater likelihood of a cost orientation.

This hypothesis is not supported by the regression model. The hypothesis assumed that cost orientation indicated leadership in low costs, however, when the factor score was calculated with RN FTEs and operating occupancy, the cost factor was established so that a higher score indicated less efficient hospitals.

In the fifth model, the interaction of HHI (calculated at both the individual hospital and the system hospital level) and the three levels of CON were added to examine interaction effects with regard to the cost inefficiency factor.

When the interaction effect between HHI and the three levels of CON review was added, an interesting result was found. In both the individual hospital HHI model and the system hospital HHI model, there was no significance when HHI was combined with the first two levels of CON, (HHI/CON 1 and HHI/CON 2). However, a positive and significant relationship was found with HHI and the highest ranking of CON review, CON 3 with both individual hospital HHI and system HHI. This indicated that when a higher degree of competition is combined with the highest level of CON review (HHI/CON 3), there is an association with the cost inefficiency factor.

This is not an expected result. However, a similar result was found when system HHI was combined with CON 3 (HHI system/CON 3) with regard to the differentiation factor. System HHI had a positive coefficient and had a significant p value with regard to the differentiation factor. These results indicate that perhaps when a higher level of competition in a market is combined with a highly restrictive regulatory environment, hospitals might compete on amenities and

differentiation strategies that increase the level of RN staffing or create additional operational costs, as the regulatory environment might restrict other less costly strategies to compete. When these two environmental constructs are both present in a market, cost oriented strategic options for hospitals might be limited.

However, the development of a model that is more reflective of a competitive market and a more definitive description of the CON regulatory stringency might add to the analysis. Additional research is needed to more accurately reflect the interaction effect of competition in a market that is highly regulated.

Association of Control Variables with Differentiation Orientation

The control variables also provided interesting insights with regard to their association with a differentiation orientation. There were positive coefficients and significant p values with regard to a differentiation orientation for the variables, managed care penetration, number of HMOs and PPOs, per capita income and bed totals. There was a negative coefficient but a significant association between population 65+ and the differentiation factor, indicating that as population age decreases there is a greater likelihood of association with a differentiation orientation. The control variable, ownership, where 1 indicated non-profit ownership had no association with a differentiation orientation.

The findings regarding the positive relationship of managed care penetration and number of HMOs and PPOs with a differentiation orientation are consistent with literature on the changing focus of managed care (Swartz, 1999; Rodwin, 1999). Research has found a shift from a cost only orientation with regard to

managed care to a growing consumer orientation as well (Pawlson and O'Kane, 2002; Greenwald, Chen and Johnson-Zamora, 2002). In areas of higher managed care and higher number of HMOs and PPOs, the increased competition for managed care has forced hospitals to look for differentiation strategies as well as cost strategies (Ginsburg, 2005).

The finding of an association of higher per capita income and a younger population with a differentiation orientation is also consistent with current research. The growth in the baby boomer population, with higher incomes, higher education levels and higher expectations has driven a consumer focus with regard to health care decisions. In fact, Future Scan-2006-2011 has identified the growth in consumer demand as one of the top trends facing hospitals, with the focus on creating consumer oriented strategies, creating unique strengths, and branding image and reputation. (Morrison, 2006; Herzlinger, 2006).

Association of Control Variables with Cost Inefficiency

All of the control variables were significant with the cost inefficiency factor, with the exception of the variable, percentage of the population over 65. The managed care penetration control variable had a positive and significant relationship with cost inefficiency orientation, indicating that the greater the managed care penetration, the more likely that inefficiency is present. As the national goal of managed care is to reduce cost, the finding that greater managed care penetration is associated with inefficiency is unexpected.

However, the finding that managed care penetration is also positively associated with the differentiation factor, and the growing pressure to address consumer demands and quality demands in addition to cost, could be impacting efficiency.

The number of HMO and PPO contracts was negatively associated with a cost orientation, interpreted that as the number of HMO and PPO contracts decreases, the more likely there is an inefficient orientation. The per capita income was positively associated with a cost inefficiency orientation as well as a differentiation orientation, indicating that hospitals in areas with a wealthier population have a greater association with both differentiation and inefficiency. Of note, both the number of HMO and PPO contracts and per capita income were both highly correlated with the urban variable, as indicated in the correlation matrix found in Table 11. All three of these control variables show a high correlation with HHI, indicating that competition is correlated with the variables, number of HMOs and PPOs, higher per capita income and an urban location.

The control variable, ownership had a negative and significant relationship with cost orientation, indicating that non-profit hospitals were less likely to be inefficient. There is some research that supports efficiency in non-profit hospitals (McKay, Deily and Dorner, 2002/2003).

Summary of Hypothesis Testing

Table 35 presents a summary of the results of the research with regard to the stated hypotheses. The table identifies the construct, and the hypotheses associated with the construct and the anticipated direction based on the

Table 35. Results of Hypotheses Testing

Hypothesis	Differentiation Factor	Cost Factor	Expected Direction	Support for Hypothesis
Strategic Orientation				
H:1	System, Hosp/Dr, ASC, Comm Service		Correlated	Correlated - System
H:2		RN FTE, Occupancy, Op Expense	Correlated	Correlated - Occupancy
Construct: Competition				
H:3	Positive HHI= Differentiation		Significant	Supported
H:4		Negative HHI= Cost	Significant	Not Supported
Construct: Regulation				
H:5	No CON= Differentiation		Significant	Not Supported
H:6		CON = Cost	Significant	Supported
Interaction Effect				
H:7	High HHI with No CON		Significant	Not Supported
H:8		Low HHI with CON	Significant	Not Supported

theoretical framework and prior research. Each hypothesis is identified as to either a differentiation expectation or a cost expectation compared to the actual results.

Implications of the Study

The results of this research study provide additional insights in a variety of arenas, including theoretical and strategy typology implications, and policy implications. The following section provides the perspectives gained from this research.

Theoretical Implications

This research study used an integrated dual theoretical approach, combining institutional theory and resource dependency theory. Both theories provide an overarching element of the environment, and the more recent literature on both institutional theory, which focuses on the creation of legitimacy, and resource dependency theory, which focuses on internal control of resources, infuse a strategic component. Researchers are finding that neither theory alone can provide a continuum of strategic choices, and are including both perspectives to provide a more comprehensive explanatory framework (Oliver, 1997; Child, 1997). This dual theory perspective is becoming particularly relevant in hospital strategy research where environmental concerns are a major factor (Proenca, Rosko and Zinn, 2000; Balotsky, 2005).

This research study supports the use of the combination of these two theoretical perspectives to provide a framework for both a differentiation orientation and a cost orientation. The factor analysis results, high eigenvalues for the two factors, and the high factor loadings of the variables provide additional support for the dual theoretical approach.

A key tenant of institutional theory is the influence of an uncertain environment, which encourages mimetic behavior in organizations to conform to structures and processes that have become legitimized within the organizational field (DiMaggio and Powell, 1983; Selznick, 1996). Uncertainty and competitive pressures dictate strategies directed toward creating legitimacy, and hard to duplicate image, reputation and structures valued by constituents (Suchman, 1995; Bloodgood and Morrow, 2000).

This research study has demonstrated a positive association between competition and strategies that differentiate and legitimize a hospital. The components of the differentiation factor score created in this study all have elements that are associated with legitimacy in conformance with institutional theory. Burns, Walston, Alexander, Zuckerman et al, (2001), and Dynan, Bazzoli and Burns, (1998), refer to hospital/physician relationships as legitimized structures that have recognized deemed status. The development of ambulatory surgery centers has significant appeal to constituents including both patients and physicians, and is a legitimized structure (Casalino, Devers and Brewster, 2003). Community orientation creates the image of legitimacy to the public and is a reputation enhancing strategy (Nath and Sudharshan, 1994; Feurer and Chaharbaghi, 1996).

Resource dependency theory addresses the resource control aspect of strategy responses, and posits that organizations will concentrate on securing and increasing their resources to secure stability (Pfeffer and Salancik, 1978;

Alexander and Morrissey, 1989). Organizations will adopt strategies that increase their resources and protect their autonomy (McCue, Thompson and Dodd-McCue, 2000/01).

This research study has demonstrated that as CON review decreases, there is a greater likelihood of inefficiency. This indicates a positive association between a CON regulated environment and strategies that focus on resource control and cost efficiency. CON regulation is viewed as having an influence that protects the franchise of existing providers and creates a more stable environment for hospitals. The components of the cost factor score created in this study all have elements that are associated with resource control in conformance with resource dependency theory. As labor costs represent the largest component of hospital costs, control of RN staffing is considered a major strategy in cost control (Becker and Potter, 2002; Elixhauser, Steiner and Fraser, 2003). Operating expense is consistently used in hospital research as a major indicator of managerial control and efficiency (Wang, Ozcan, Wan and Harrison, 1999). In this study, as RN FTEs/staffed bed increase and as operating expenses increase, cost inefficiency results.

This study provides additional support for a combined theoretical approach for research on hospital strategy with a continuum of institutional theory for differentiation and legitimacy enhancing strategies, and resource dependency theory for cost and resource control strategies.

Implications for Porter's Strategic Orientation Typology

This study also provides additional support for the use of Porter's strategic orientation typology. The major premise in Porter's 1985 work, *Competitive Advantage*, is that organizations will develop either a differentiation orientation or a cost leadership orientation, and the environment will play a vital role in which strategy is more prevalent and more advantageous. Although this research study did not evaluate the effectiveness of either a differentiation orientation or a cost orientation with regard to organizational performance, the analysis did confirm that variables associated with reputation, legitimacy and conformance with recognized structures did load on a common factor representing a differentiation orientation, and variables associated with cost and resource control also loaded on a common factor representing a cost orientation. This research provided further evidence that the strategies of either differentiation or cost were associated with the environmental contexts of either market competition or CON regulatory control. Supporting Porter's supposition, this research found an association between a competitive or more turbulent environment and a differentiation orientation. In environments with decreased CON regulation, hospitals were more likely to be associated with cost inefficiency. Additional study is needed to assess if there is a resulting association of a particular environment or strategic orientation with performance.

Policy Implications

The controversy regarding the most effective policy direction for control of the healthcare industry continues to be one of the most problematic issues facing the country. Health care costs are spiraling out of control, and projections predict a continued drain on the American economy. The US healthcare system is the most expensive in the world, averaging approximately \$10,000 per person and comprising about 15% of the gross domestic product (Shortell, 2005). Based on a continuation of current trends, it is predicted that the Medicare Trust Fund will be depleted by 2019 (Coyle, 2005).

To address the competition versus regulation dilemma, the Department of Justice favors a competitive model where free enterprise and market factors control prices (Federal Trade Commission Report, 2004). However, the majority of states have determined that the regulatory controls of Certificate of Need are needed to control the proliferation of health care resources. Although federal legislation mandating CON expired in 1986, leaving the decision to individual states, only 14 states have eliminated Certificate of Need.

Clearly, this is one of the most controversial areas of health care policy, referred to as the “bellwether question” (Shactman, 2005), a “daunting and overwhelming” issue (Federal Trade Commission Report, 2004) and the “biggest ideological battle” facing the health care industry (Folland, Goodman and Stano, 1994).

This research study adds to the body of knowledge on this controversial subject, however, as the study is a cross-sectional design, with a focus on strategic orientation rather than performance in various competitive or regulated environments, there are limited policy implications. In this study, there was a consistent association of a competitive environment with a differentiation orientation. This implies that hospitals facing high competition are more likely to turn to strategies that differentiate their organization, by creating structures, arrangements, and affiliations that enhance their reputation and image and create a uniqueness and distinctness for their organization. There is a body of research that has found that these differentiation strategies can be duplicative and sometimes cost increasing (Goes and Zhan, 1995; Casalino, Devers and Brewster, 2003; Calem and Rizzo, 1995; Feurer, and Charharbaghi, 1996). However, in this study, lower competition is more likely to be associated with inefficiency, indicating that additional study must take place on the effect of increasing competition in healthcare.

There is significant research indicating that the healthcare industry does not respond to the economic marketplace model of competition and that increasing competition can lead to dilution of resources with a negative impact on quality (Devers, Brewster and Casalino, 2003; Grossman and Banks, 1998). Before changing national policy to embrace competition, additional research is needed to fully assess the potential impact on cost and quality (Devers, Brewster and Casalino, 2003; Grossman and Banks, 1998).

The other aspect of the great philosophical battle is CON regulation and the impact on cost effectiveness. Again, although the focus of this study was strategic orientation, the results did indicate that as CON regulation decreases, there is a greater association with inefficiency, based on the factor score.

The results also indicated that there is an interaction effect between competition and regulation. When HHI was calculated at both the individual hospital level and at the system hospital level, there was a significant association with a highly competitive market and the most highly regulated CON level with regard to number of services reviewed and capital thresholds. The results showed a positive coefficient with the interaction of HHI (both individual and system) and CON 3 with both the differentiation factor and the cost inefficiency factor. When hospitals are in highly competitive environments combined with stringent CON regulations, both differentiation and cost inefficiencies are more prevalent.

As states evaluate and make decisions on their CON regulatory environment, it is clear that additional research should be undertaken to determine the effectiveness of regulation in controlling cost and restricting competition.

Limitations

This study uses a cross-sectional design to assess the relationship between competition and hospital strategic orientation, and regulation and hospital strategic orientation. However, as a cross-sectional design, there is no

determination of directionality or cause and effect. The study is limited to an examination of relationships among the independent and dependent variables.

This research study is dependent upon secondary data, which creates limitations in terms of completeness and accuracy. The AHA data is self reported by hospitals, and must rely on the accuracy and understanding of those individuals that submit the data. There is certainly the potential for misinterpretation of the data requests. Proenca, Rosko and Zinn (2000) identify the limitations with self-reported data that have the potential to be manipulated or exaggerated from a public relations standpoint.

This study created focused but limited measures of the constructs; competition, regulation and strategic orientation. The construct, competition, is measured only by the Herfindahl Index, both at the individual hospital level and at the system level, although there are a large variety of competitive pressures on hospitals today. The construct, regulation, is measured by CON and the levels of CON review only, although there are numerous regulatory constraints on hospitals. The construct of strategic orientation is measured by a selected group of variables to measure a differentiation orientation and a cost orientation, although there are many additional strategies that could be defined as differentiating or cost reducing in the hospital industry. Clearly these are multi-dimensional concepts, with many other pressures and strategies that could impact hospitals. However, this study provides a national perspective on one of the most controversial topics in health care today, and these variables and

measures were specifically selected to create a focus on a narrow aspect of competition, regulation and strategic orientation.

It is important to note that even the measurements of competition and regulation are controversial in the health care literature. There continues to be significant debate on the appropriate measurement of market competition, both with regard to the definition of the geographic market and the measurement of market competition. All of the measurements have certain limitations, and are not capable of incorporating local variations and actual patient patterns (Sohn, 2002). This is particularly problematic in defining HHI at both the individual hospital level and at the system hospital level, with a county level designation. A designation of the county level as in this study can be an artificial boundary that is not reflective of cross-county migration, however, the alternatives such as SMA designation or radius boundaries have limitations when using a national perspective including rural areas (Bernstein and Gauthier, 1998, Gresenz, Ragowski and Escarce, 2004). In addition, a major limitation is the definition of the Herfindahl Index based on only hospitals as competitors and based on only inpatient market share. The major competitors in a market are no longer just other hospitals, but also, physicians developing free standing ambulatory imaging centers and surgical centers, and for profit boutique providers pulling specific profitable outpatient services from hospitals. Although these competitors have a dramatic impact on hospitals and the strategies hospitals need to adopt, the data

on utilization and measurable comparable variables for these non-traditional competitors are difficult to obtain.

Also, there is no consistent delineation of Certificate of Need stringency. Prior research studies on CON regulation have used a variety of designations, and many studies only compare states with CON to states without CON. Although the American Health Planning Association (AHPA) provides data on thresholds and services reviewed by state, the data are based on volumes only, and are not necessarily reflective of the stringency of review by individual states or how different states interpret their CON regulations. AHPA provides a clear disclaimer in their data that the rank order of CON regulation by state is based on the volume of items reviewed and the dollar threshold of reviews, and cannot take into consideration the actual stringency of review and administrative processes for each state. In addition, the CON regulation levels in this study do not take into consideration additional mandatory regulations that can be either associated with CON in some states or otherwise legislated such as mandated reporting of financial data and requirements for mandated levels of charity or uncompensated care, which could influence strategic orientation.

Data on HMO penetration by county is very difficult and costly to obtain. Therefore the variable for HMO penetration is based on SMAs, with the HMO variable set at zero for rural hospitals using the assumption that there is very little HMO penetration in rural communities, although the other market variables are

measured at the county level. This follows other research, but is identified as a limitation to this study.

This study does not address outcomes or performance related to the strategies used within the market competition and regulatory environments to determine if the strategies are effective. This is an area for further research.

Considerations for Future Research

This study presents a cross-sectional design and therefore does not evaluate a causal relationship between the independent variables and strategic orientation. Because of the importance of the environment in developing effective strategies, future research should evaluate a longitudinal view of the relationship of competition and of regulation on hospital strategy. Clearly the environmental pressures change over time, particularly the environmental factors of competition and regulation. Future research should evaluate strategic orientation over time and evaluate predictors of changes in strategic orientation.

This research study took a narrow focus and definition of the constructs; competition, regulation and strategic orientation. Future research could consider additional measurement variables that would strengthen the analysis and conclusions.

In addition, this research used a factor score approach to the measurement of the dependent variables to define strategic orientation. A group of correlated variables or strategies were indexed to represent a differentiation orientation and a group of correlated variables or strategies were indexed to represent a cost

orientation. Future research could evaluate the impact of specific strategies or the additive effect of different strategies.

There were several areas where the potential for collinearity existed among several variables, particularly with regard to urban or rural location. As there is greater competition, larger hospitals, and more managed care in urban areas, and more financial difficulties in rural hospitals, future strategy research should consider more effective control of the location variable to assure that collinearity does not negatively impact the study implications.

Another weakness of this study was the model configuration developed to assess the interaction effect of competition and regulation. Future research should evaluate additional methodologies to add to the predictive value of interaction models.

The focus of this study was an evaluation of an association between aspects of a hospital's environment, specifically, the constructs of competition and regulation, on hospital strategic orientation. Future research should evaluate the effect of specific strategic orientations on the performance of hospitals based on their environment and strategic orientation. Research that takes the next level could evaluate whether a specific strategic orientation affects hospital outcomes including both performance indicators such as market share, occupancy, and operating margin and quality indicators such as mortality, length of stay, satisfaction and other measurable indicators of performance.

Summary

This chapter presented the conclusions of the research undertaken to assess a relationship between the construct, strategic orientation and competition and regulation. A discussion of the results compared to the initial hypotheses provided additional insight on a very timely but complex topic. Not only are competition and regulation critical aspects in a hospital's environment, but the development of appropriate strategies within the particular environment in which the organization is embedded is vital.

The findings of this study indicate an association between a competitive environment and a differentiation orientation. The study also finds an association where lower competition is associated with inefficiency. The results also indicate that when there are no CON regulations or as CON regulation decreases, there is a greater likelihood of association with cost inefficiency. The results also indicate that there is an interaction effect when the highest level of competition in the market is combined with the highest level of Certificate of Need review, and that there is a positive correlation with both a differentiation orientation and cost inefficiency. It is clear from this study, that additional efforts are needed on this very critical subject. The limitations found with this study as well as potential aspects for further research are defined in this chapter. It is hoped that there will be significant future research on this topic before major national policy decisions are made.

BIBLIOGRAPHY

- Aaker, D. (1992). Developing Business Strategies. New York: John Wiley & Sons.
- Abernethy, M., and Chua, W., (1996), A Field Study of Control System Redesign: The Impact of Institutional Processes on Strategic Choice, Contemporary Accounting Research, 13:2, 569.
- Albright, K. S., (2004), Environmental Scanning: Radar for Success, Information Management Journal, 38(3) 38-45.
- Aldrich, H., and Pfeffer, J., (1976). Environments of Organizations, Annual Review of Sociology.
- Alexander, J., Halpern, M., Lee, S., (1996), The Short Term Effects on Hospital Operations. Health Services Research, 30: 827-847.
- Alexander, J. A., and Morrissey, M. A., (1989), A Resource-Dependence Model of Hospital Contract Management, Health Services Research, 24:2, 261-284.
- Alexander, J., Burns, L., Morrissey, M., Johnson, V., (2001), CEO Perceptions of Competition and Strategic Response in Hospital Markets, Medical Care Research and Review, 58: 2, 162-193.
- Altman, S. H., and Rodwin, M. A., (1988), Halfway Competitive Markets and Ineffective Regulation: The American Health Care System, Journal of Health Polit Policy Law, 13(2): 323-339.
- Altman, S., Shactman, D., and Eilat, E., (2006), Could U.S. Hospitals Go the Way of U.S. Airlines?, Health Affairs, 25:1, 11-22.
- American Health Planning Association: 2001 National Directory of Health Planning, Policy and Regulatory Agencies, 15th Edition.
- Andaleeb, S. S., (1998), Determinants of Customer Satisfaction with Hospitals: A Managerial Model, International Journal of Health Care Quality, 11(6): 181.

- Anderson, G., Heyssel, R., and Dickler, R., (1993). Competition versus Regulation: Its Effect on Hospitals, Health Affairs 12(1): 70-81.
- Ashby, J. L., (1984). The Impact of Hospital Regulatory Programs on Per Capita Costs, Utilization, and Capital Investment, Inquiry 21: 45-59.
- Autrey, P., and Thomas, D., (1986), Competitive Strategy in the Hospital Industry, Health Care Management Review, 11:1, 7-14.
- Balotsky, E., (2005), Resources, Habit of Both: Interpreting Twenty Years of Hospital Strategic Response to Prospective Payment, Health Care Management Review, 30:4, 337 – 346.
- Barringer, B., and Harrison, J.,(2000), Walking a Tightrope: Creating Value Through Interorganizational Relationships, Journal of Management, 26:3, 367.
- Bazzoli, G., Andes, S., (1995), Consequences of Hospital Financial Distress , Hospital and Health Services Administration, 40 :4, 472-496.
- Bazzoli, G., Chan, B., Shortell, S., D'Aunno, T., (2000). The Financial Performance of Hospitals Belonging to Health Networks and Systems, Inquiry 37, 234-252.
- Bazzoli, G., Manheim, L., Waters, T., (2003), U. S. Hospital Industry Restructuring and the Hospital Safety Net, Inquiry, 40:1, 6.
- Bazzoli, G. Shortell, S., Dubbs, N., Chan, C., Kralovec, P., (1999), A taxonomy of Health Networks and Systems: Bringing Order out of Chaos, Health Services Research, 33:6, 1683-1717.
- Bazzoli, G., Stein, R., Alexander, A., Conrad, D., Sofaer, S., Shortell, S., (1997), Public-Private Collaboration and Human Service Delivery: Evidence from Community Partnerships, The Milbank Quarterly, 75:4, 533-561.
- Becker, E. R., and Potter, S. J., (2002), Organizational Rationality, Performance, and Social Responsibility: Results from the Hospital Industry, Journal of Health Care Finance, 29(1): 23-48.
- Begun, J., Heatwole, K. B., (2004), Strategic Cycling: Shaking Complacency in Healthcare Strategic Planning, In Health Services Management: Readings, Cases and Commentary, edited by A. R. Kovner and D. Neuhaer, 263-76, Chicago: Health Administration Press.

- Begun, J. W., Kaissi, A. A., and Sweetland, D. L., (2005), An Exploratory Study of Healthcare Strategic Planning in Two Metropolitan Areas, Journal of Healthcare Management, 50(4): 264-276.
- Bernstein, A. B., and Gauthier, A. K., (1998), Defining Competition in Markets: Why and How?, Health Services Research, 33(5): 1421-1439.
- Birnbaum, W. (1990), If Your Strategy is so Terrific, How Come it Doesn't Work?, New York: American Management Association
- Bloodgood, J., and Morrow, J.L., (2000), Strategic Organizational Change Within an Institutional Framework, Journal of Managerial Issues, 12:2, 208-226.
- Bolon, D. S., (1998), Bureaucracy, Institutional Theory and Institutionaucracy : Applications to the Hospital Industry, JHSA, Summer70-79.
- Bordoloi, S. K., Weatherby, E. J., (1999), Managerial Implications of Calculating Optimum Nurse Staffing in Medical Units, Health Care Management Review, 24:4, 35-45.
- Brown, T., and Dacin, P., (1997), The Company and the Product: Corporate Associations and Consumer Product Responses, Journal of Marketing, 61:1, 68-84.
- Burns, L., Walston, S., Alexander, J., Zuckerman, H., Anderson, R., Torrens, P., Hilberman, D., (2001), Just How Integrated are Integrated Delivery Systems? , Health Care Management Review, 26:1, 20-39.
- Burns, L., Bazzoli, G., Dynan, L., Wholey, D., (2000), Impact of HMO Market Structure on Physician-Hospital Strategic Alliances, Health Services Research, 35:1, 101.
- Butler, S. M., (2004), A New Policy Framework for Health Care Markets, Health Affairs, 23(2): 22-24.
- Calem, P. S., and Rizzo, J. A., (1995), Competition and Specialization in the Hospital Industry: An Application of Hotelling's Location Model, Southern Economic Journal, 61(4): 1182-1198.
- Campbell, E. S. and Ahern, M. W., (1993), Have Procompetitive Changes Altered Hospital Provision of Indigent Care?, Health Economics, 2: 281-289.

- Carter, N. M., (1990), Small Firm Adaptation: Responses of Physicians' Organizations to Regulatory and Competitive Uncertainty, Academy of Management Journal, 33(2): 307-333.
- Casalino, L., (2005), Physicians: Competitors or Collaborators?, in Futurescan: Healthcare Trends and Implications, Health Administration Press, p. 27-31.
- Casalino, L., Devers, K. J., Brewster, L. R., (2003), Focused Factories? Physician-owned Specialty Facilities, Health Affairs, 22(6): 56.
- Caudill, S. B., Ford, J. M., and Kaserman, D. L., (1995), Certificate of Need Regulation and the Diffusion of Innovations: A Random Coefficient Model, Journal of Applied Econometrics, 10(1): 73-78.
- Child, J., (1997), Strategic Choice in the Analysis of Action, Structure, Organizations and Environment, Organizational Studies, 18:1, 43-76.
- Clement, J., McCue, M., Luke, R., et al (1997), Strategic Hospital Alliances: Impact on Financial Performance. Health Affairs, 16: 193-203.
- Cleverley, W., (1992), Financial and Operating Performance of Systems: Voluntary Versus Investor-Owner, Topics in Health Care Financing, 18(4): 63-74.
- Cook, K., Shortell, S., Conrad, D., Morrissey, M., (1983), A Theory of Organizational Response to Regulation: The Case of Hospitals, Academy of Management Review 8 (2): 193-205.
- Conner, K. R., (1991), A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Organization Economics : Do we Have a New Theory of the Firm?, Journal of Management, 17(1): 121-154.
- Conner, R., Feldman, R., Dowd, B., (1998), The Effects of Market Concentration and Horizontal Mergers on Hospital Costs and Prices, International Journal of the Economics of Business, 5(2): 159-181.
- Conover, C., Sloan, F., (1998) Does Removing Certificate of Need Regulations Lead to a Surge in Health Care Spending?, Journal of Health, Policy and Law, 23(3): 455-481.
- Coyte, P. C., (1987), Alternative Methods of Reimbursing Hospitals and the Impact of Certificate of Need and Rate Regulation for the Hospital Sector, Southern Economic Journal, 53(4): 858-873.

- Coyle, C., (2005), The State of the Nation's Health Policy, in Futurescan: Healthcare Trends and Implications 2005-2010, Health Administration Press, p 6-10.
- Cuellar, A. E., Gertler, P., J., (2003), Trends in Hospital Consolidation: The Formation of Local Systems, Health Affairs, 22:6, 77.
- D'Aunno, T., Succi, M., Alexander, J., (2000), The Role of Institutional and Market Forces in Divergent Organizational Change, Administrative Science Quarterly, 45:4, 679-704.
- Dallal, G., (2005), <http://www.tufts.edu/~gdallal/logs.htm>.
- Day, G. S., and Nedungadi, P., (1994), Managerial Representations of Competitive Advantage, Journal of Marketing, 58(April): 31-44.
- Deephouse, D., (1996), Does Isomorphism Legitimate? Academy of Management Journal, 39: 1024-1032.
- DeMarco, B., (2002), Optimizing Growth Opportunities during the Managed Care Revolution, Healthcare Financial Management, 56:5, 42-46.
- DiMaggio, P., Powell, W., (1983), The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields, American Sociological Review, 48: 147-160.
- Devers, K., Casalino, L., Rudell, L., Stoddard, J., Brewster, L., Lake, T., (2003), Hospitals' Negotiating Leverage with Health Plans: How and Why Has It Changed?, Health Services Research, 38:1, 419-446.
- Devers, K. J., Brewster, L. R., and Casalino, L. P., (2003), Changes in Hospital Competitive Strategy: A New Medical Arms Race?, Health Services Research, 38(1): 447-468.
- Dickson, P., and Weaver, K., (1997), Environmental Determinants and Individual-Level Moderators of Alliance Use, Academy of Management Journal, 40: 404-425.
- Dobson, A., Haught, R., (2005), The Rise of the Entrepreneurial Physician, Health Affairs, 24, 494-498.
- Douglas, T., and Judge, W., (2001), Total Quality Management Implementation and Competitive Advantage: The Role of Structural Control and Exploration, Academy of Management Journal, 44:1, 158.

- Douglas, T., and Ryman, J., (2003), Understanding Competitive Advantage in the General Hospital Industry: Evaluating Strategic Competencies, Strategic Management Journal, 24:4, 333.
- Drain, M., Godkin, L., and Valentine, S., (2001), Examining Closure Rates of Rural Hospitals: An Assessment of a Strategic Taxonomy, Health Care Management Review, 26:4, 27-52.
- Dranove, D., (1998), Economies of Scale in Non-Revenue Producing Cost Centers: Implications for Hospital Mergers. Journal of Health Economics, 17: 69-83.
- Dranove, D., and Ludwick, R., (1999), Competition and Pricing by Nonprofit Hospitals: a Reassessment of Lynk's Analysis, Journal of Health Economics, 18(1): 87-98.
- Dranove, D., and Shanley, M., (1995), Cost Reductions or Reputation Enhancement as Motive for Mergers: The Logic of Multihospital Systems, Strategic Management Journal, 16(1): 55-74.
- Dranove, D., Shanley, M., and Simon, C., (1992), Is Hospital Competition Wasteful? RAND Journal of Economics, 23:2, 247-261.
- Dranove, D., Shanley, M., and White, W. D., (1993), Price and Concentration in Hospital Markets: The Switch From Patient-Driven to Payer-Driven Competition, Journal of Law and Economics, 36(1): 179-205.
- Dranove, D., and White, W. D., (1994), Recent Theory and Evidence on Competition in Hospital Markets, Journal of Economics and Management Strategy, 3(1): 169-209.
- Draper, D. A., Hurley, R. E., Lesser, C. S., and Struck, B. C., (2002), The Changing Face of Managed Care, Health Affairs, 21(1): 11-23.
- Drumwright, M. E., (1996), Company Advertising with a Social Dimension: The Role of Noneconomic Criteria, Journal of Marketing, 60(4): 71-87.
- Dubbs, N, Bazzoli, G., Shortell, S., Kralovec, P., (2004), Reexamining Organizational Configurations: an Update, Validation, and Expansion of the Taxonomy of Health Networks and Systems, Health Services Research, 39(1): 207-221.

- Dynan, L., Bazzoli, G., Burns, L., (1998), Assessing the Extent of Integration Achieved Through Physician-Hospital Arrangements, Journal of Healthcare Management, 43(3): 242.
- Elixhauser, A., Steiner, C., Fraser, I., (2003), Volume Thresholds and Hospital characteristics in the United States, Health Affairs, 22(2): 167.
- Ellis, B., and Brockman, B., (1993), Changing Competition in Health Care Marketing: A Method for Analysis and Strategic Planning, Health Marketing Quarterly, 10(3): 5-21.
- Enthoven, A. C., (2004), Market Forces and Efficient Health Care Systems, Health Affairs, 23(2) : 25-27.
- Esposto, A., (2004), Contractual Integration of Physician and Hospital Services in the U.S., Journal of Management and Governance, 8(1): 49-69.
- Federal Trade Commission (July 2004) Improving Health Care: A Dose of Competition: A Report by the Federal Trade Commission and the Department of Justice, <http://www.ftc.gov/reports/index.htm>
- Feurer, R., Chaharbaghi, K., (1996), Competitive Environments, Dynamic Strategy Development Capabilities and Business Performance, Benchmarking for Quality Management and Technology, 3(3): 32.
- Fleming, S., Williamson, H., Hicks, L., Rife, I., (1995), Rural Hospital Closures and Access to Services, Hospital & Health Services Administration, 40:2, 247-263.
- Folland, Goodman and Stano, (1994), The Economics of Health and Health Care, Prentice Hall, New Jersey.
- Fombrun, C., Shanley, M., (1990) What's in a Name? Reputation Building and Corporate Strategy, Academy of Management Journal, 33(2): 233-258.
- Ford, J., and Kaserman, D., (1993), Certificate of Need Regulation and Entry: Evidence from the Dialysis Industry, Southern Economic Journal, 59(4): 783-791.
- Fournier, G. M., and Campbell, E. S., (1997), Indigent Care as Quid Pro Quo in Hospital Regulation, The Review of Economics and Statistics, 79(4): 669-673.
- French, H., (2002), The Competitive Revolution, Regulation, 25:2, 52-58.

- Friedman, B., (1999), Commentary: Excess Capacity, A Commentary of Markets, Regulation and Values, Health Services Research, 33(6): 1669
- Gallagher J. A., and Goodstein, J., (2002), Fulfilling Institutional Responsibilities in Health Care: Organizational Ethics and the Role of Mission Discernment, Business Ethics Quarterly, 12(4): 433-450.
- Gardiner, L., Oswald, S., Jahera, J., (1996), Prediction of Hospital Failure: A Post-PPS Analysis, Hospital and Health Services Administration, 41(4): 441-461.
- Gaskin, D., and Hadley, J., (1997), The Impact of HMO Penetration on the Rate of Hospital Cost Inflation, Inquiry-Blue Cross, 34:3, 205-216.
- Gay, E., Kronenfeld, J., Baker, S., Amidon, R., (1989), An Appraisal of Organizational Response to Fiscally Constraining Regulation: The Case of Hospitals and DRGs, Journal of Health and Social Behavior, 30: 41-55.
- Gaynor, M., and Hass-Wilson, D., (1999), Change, Consolidation, and Competition in Health Care Markets, The Journal of Economic Perspectives, 13(1): 141-165.
- Gaynor, M., and Vogt, W. B., (2003), Competition Among Hospitals, The Rand Journal of Economics, 34(4): 764-785.
- Gift, T. L., Arnould, R., De Brock, L., (2002), Is Healthy Competition Healthy? New Evidence of the Impact of Hospital Competition, Inquiry – Blue Cross and Blue Shield Association, 39(1): 45-56.
- Ginsburg, P., (2005), Competition in Health Care: Its Evolution Over the Past Decade, Health Affairs, 24:6, 1512-1523.
- Goes, J., Park, S., (1997), Interorganizational Links and Innovation: The Case of Hospital Services, Academy of Management Journal, 40(3): 673-696.
- Goes, J., Zhan, C., (1995), The Effects of Hospital-Physician Integration Strategies on Hospital Financial Performance, Health Services Research, 30(4): 507-531.
- Goldsmith, J., (1994) The Illusive Logic of Integration, Healthcare Forum Journal, Sept/Oct. 26-31.

- Goldstein, S., Ward, P., Leong, G., Butler, T., (2002), The Effect of Location, Strategy, and Operations Technology on Hospital Performance, Journal of Operations Management, 20, 63-75.
- Goodstein, J., (1994), Institutional Pressures and Strategic Responsiveness: Employer Involvement in Work-Family Issues, Academy of Management Journal, 37: 350-382.
- Goodrick, E., Salancik, G., (1996), Organizational Discretion in Responding to Institutional Practices, Administrative Science Quarterly, 41(1): 1 – 28.
- Gowrisankaran, G., Town, R., (2003), Competition, Payers, and Hospital Quality, Health Services Research, 38(6): 1403-1422.
- Grabowski, D., Obsfeldt, R., Morrissey, M., (2003) The Effects of CON Repeal on Medicaid Nursing Home and Long-Term Care Expenditures, Inquiry, 40(2): 146-157.
- Graham, G., Cowing, T., (1997), Hospital Reserve Margins: Structural Determinants and Policy Implications Using Cross-Section Data, Southern Economic Journal, 63(3): 692-710.
- Greenwald, H., Chen, R., and Johnson-Zamora, M., (2002), Putting a New Face of Managed Care, Marketing Health Services, 22:1, 14-20.
- Gresenz, C., Rogowski, J., Escarce, J., (2004), Updated Variable-Radius Measures of Hospital Competition, Health Services Research, 39(2): 417-430.
- Grossman, J. M., and Banks, D. A., (1998), Unrestricted Entry and Nonprice Competition: The Case of Technological Adoption in Hospitals, International Journal of the Economics of Business, 5(2): 223-246.
- Hackley, R. B., (1993), New Wine in Old Bottles: Certificate of Need Enters the 1990's. Journal of Health Politics, Policy and Law, 18(4): 927-935.
- Hambrick D. C., (1983), High Profit Strategies in Mature Capital Goods Industries: A Contingency Approach, Academy of Management Journal, 26(4); 687-707.
- Hamilton, R., (1985), Barriers to Hospital Diversification: The Regulatory Environment, Duquesne Law Review, 24(2): 425-453.

- Handelman, J. M., and Arnold, S. J., (1999), The Role of Marketing Actions with a Social Dimension: Appeals to the Institutional Environment, Journal of Marketing, 63(3): 33-48.
- Hannan, E., Racz, M., Ryan, T., McCallister, B., Johnson, L., Arani, D., Guerci, A., Sosa, J., Topol, E., (1997), Coronary Angioplasty Volume-Outcome Relationships for Hospitals and Cardiologists, JAMA, 227(11) : 892-898.
- Harrington, R. J., Lemak, D. J., Reed, R., Kendall, K., W., (2004), A Question of Fit: The Links among Environment, Strategy Formulation, and Performance, Journal of Business and Management, 10(1): 15-39.
- Harrison, M. G. and Montalvo, C. C., (2002), The Financial Health of California Hospitals: A Looming Crisis, Health Affairs, 21(1): 118-127.
- Hax, A., and Majluf, N., (1991), The Strategy Concept and Process. Englewood Cliffs, NJ: Prentice-Hall.
- Herzlinger, R., (2006), Consumer-Driven Healthcare: Transforming the Delivery of Health Services, in Futurescan: Healthcare Trends and Implications 2006-2011, Health Administration Press, p. 13-19.
- Hill, C. W. (1988), Differentiation Versus Low Cost or Differentiation and Low Cost: A Contingency Framework, Academy of Management Journal, 13(3): 401-412.
- Hirth, R., Chernew, M., Orzol, S., (2000), Ownership, Competition and the Adoption of New Technologies and Cost Saving Practices in a Fixed Price Environment, Inquiry, 37(3): 282-294.
- Ho, V., (2004) Certificate of Need, Volume, and Percutaneous Transluminal Coronary Angioplasty Outcomes, American Heart Journal, 147(3): 442-8.
- Hurley, R., and Kaluzney, A.,(1987), Organizational Ecology and Health Services Research: New Answers for Old and New Questions, Medical Care Review, 44(2): 235-255.
- Hyman, D. A., and Kovacic, W. E., (2004), Monopoly, Monopsony, and Market Definition: An Antitrust Perspective on Market Concentration Among Health Insurers, Health Affairs, 23(6): 25-28.
- Jacobs, M. O., (1983), Competition and Regulation: Do They Make a Difference in Hospital Reimbursement?, Health Care Management Review, 8(3): 53-56.

- James, A. E., Perry, S., Warner, S. E., Chapman, J. E., and Zaner, R. M., (1991), The Diffusion of Medical Technology: Free Enterprise and Regulatory Models in the USA., Journal of Medical Ethics, 17: 150-155.
- Jollis, J., Peterson, E., DeLong, E., Mark, D., Collins, R., Muhlbaier, L., Pryor, D., (1994), The Relation Between the Volume of Coronary Angioplasty Procedures at Hospitals Treating Medicare Beneficiaries and Short Term Mortality, New England Journal of Medicine, 331(24): 1625-1629.
- Joskow, P., (1980), The Effects of Competition and Regulation on Hospital Bed Supply and the Reservation Quality of the Hospital, The Bell Journal of Economics, Autumn, 421-447.
- Kachigan, S., (1991), Multivariate Statistical Analysis, Radius Press, New York.
- Kaldenberg, D. O., Becker, B., (1999), Evaluations of Care by Ambulatory Surgery Patients, Health Care management Review, 24(3): 73-84.
- Katz, G., Zavodnik, L., and Markezian, E., (1983), Strategic Planning in a Restrictive and Competitive Environment, Health Care Management Review, 8(4): 7-13.
- Keeler, E. B., Melnick, G., and Zwanziger, J., (1999), The Changing Effects of Competition on Non-Profit and For-Profit Hospital Pricing Behavior, Journal of Health Economics, 18(1): 69-86.
- Kessler, D. McClellan, M., (2000), Is Hospital Competition Wasteful?, Quarterly Journal of Economics, 115(2): 577.
- Ketchen, D. J. Thomas, J.B., and Snow, C.C. (1993). Organizational Configurations and Performance: a Comparison of Theoretical Approaches, Academy of Management Journal, 36(6): 1278-1313.
- Kim, L., and Lim, Y., (1988), Environment, Generic Strategies, and Performance in a Rapidly Developing Country: A Taxonomic Approach, Academy of Management Journal, 31(4): 802-827.
- Kimmel, S. E., Berlin, J. A., and Laskey, W. K., (1995), The Relationship Between Coronary Angioplasty Procedure Volume and Major Complications, JAMA, 274(14): 1137-1166.
- Kirby, E., Sebastian, J., Hornberger, K., (1998), The Effect of Normative Social Forces on Managed Care Organizations: Implications for Strategic Management, Journal of Healthcare Management, 43(1): 81-96.

- Kohn, L. T., (2000), Organizing and Managing Care In a Changing Health system, Health Services Research, 35(1): 37.
- Kumar, K., Subramanian, R., (2000), Navigating the External Environment Through a Market Orientation, S.A.M. Advanced Management Journal, 65(1): 16-23.
- Kumar, K., Subramanian, R., Strandholm, K., (2002), Market and Efficiency-Based Strategic Responses to Environmental Changes in the Health Care Industry, Health Care Management Review, 27(3): 21-32.
- Kumar, K., Subramanian, R., Yauger, C., (1997), Pure Versus Hybrid : Performance Implications of Porter's Generic Strategies, Health Care Management Review, 22(4): 47-60.
- Lamont, B., Marlin, D., Hoffman, J., (1993) Porter's Generic Strategies, Discontinuous Environments, and Performance: A Longitudinal Study of Changing Strategies in the Hospital Industry, Health Services Research, 28(5): 623-641.
- Landau, J., (1995), The Relationship of Race and Gender to Manager's Ratings of Promotional Potential, Journal of Organizational Behavior, 16(4): 391-401.
- Langland-Orban, B., Gapenski, L., Vogel, W., (1996), Differences in Characteristics of Hospitals with Sustained High and Sustained Low Profitability, Hospital and Health Services Administration, 41(3): 385-400.
- Lawrence, T., (1999), Institutional Strategy, Journal of Management, 25(2): 161-188.
- Lee, S., Alexander, J., (1999), Managing Hospitals in Turbulent Times: Do Organizational Changes Improve Hospital Survival, Health Services Research, 34(4): 923.
- Lee, S., Alexander, J., Bazzoli, G., (2003), Whom Do They Serve? Community Responsiveness Among Hospitals Affiliated with Health Systems and Networks, Medical Care, 41(1): 165-179.
- Leeth, L., (2004), Are You Fiscally Fit?, Nursing Management, 35:4, 42-49.
- LeTourneau, B., (2006), Physicians and Hospitals: Operational and Strategic Partners, in *Futurescan: Healthcare Trends and Implications 2006-2011*, Health Administration Press, p29-32.

- Lewin-IFC and Alpha Center (1991), Evaluation of the Ohio Certificate of Need Program, Washington, DC: Lewin-IFC.
- Lewin-IFC (1992), Evaluation of the Pennsylvania Certificate of Need Program, by Judith Arnold and Daniel Mendelson, Washington, DC: Lewin-IFC.
- Lopex, J., Parini, M., (2004), Physician Office Space in an Ambulatory Surgical Center, Journal of Health Care Finance, 30(3): 75-80.
- Luft, H., Miller, R., (1988), Patient Selection in a Competitive Health Care Environment, Health Affairs, 7: 97-119.
- Luke, R., and Begun, J., (1994), Strategy Making in Health Care Organizations. In Health Care Management, ed 3, edited by S. M. Shortell and A. D. Kaluzny, Albany, NY: Delmar. 355-391.
- Lundy, R. S., (1984), Current Developments in Health Planning and Certificate of Need Legislative Activities, Whittier Law Review, 6(3): 833-837.
- Luxenberg, S., (2003), Invest in a Surgicenter?, Medical Economics, 80(23) 60-63.
- Lynch, B. S., (1991), Free-Standing Surgery Centers: The Wave of the Future, Hospital Material Management Quarterly, 13(2): 86-89.
- Lynk, W. J., (1987), Antitrust Analysis and Hospital Certificate of Need Policy, Antitrust Bulletin, 32(1): 61-85.
- Lynk, W., (1995), The Creation of Economic Efficiencies in Hospital Mergers. Journal of Health Economics, 14: 507-550.
- Lynk, W., Longley, C., (2002), The Effect of Physician-Owned Surgicenters on Hospital Outpatient Surgery, Health Affairs, 21(4): 215.
- MacEachern, L., (2003), Providers Issue Brief: Certificate of Need: Year End Report – 2003, Issue Brief Health Policy Track Service Dec 31: 1-8.
- Madison, K., (2004), Hospital-Physician Affiliations and Patient Treatments, Expenditures, and Outcomes, Health Services Research, 39(2): 257-279.
- Mannheim, L., Bazzoli, G., Sohn, M., (1994), Local Hospital Competition in Large Metropolitan Areas, Journal of Economics and Management Strategy, Vol. III, 143-167.

- Mano-Negrin, R., (2003), Spanning the Boundaries: A Stakeholder Approach to Effectiveness Gaps and Empowerment in Public and Independent Human Service Organizations, Administration in Social Work, 27(3): 25-45.
- Mark, B., Harless, D., McCue, M., Xu, Y., (2004), A Longitudinal Examination of Hospital Registered Nurse Staffing and Quality of Care, Health Services Research, 39(2): 279-301.
- Mark, T., Evans, W., Schur, C., Guterman, S, (1998), Hospital-Physician Arrangements and Hospital Financial Performance, Medical Care, 36(1): 67-78.
- Marlin, D., Huonker, J., Hasbrouck, R., (2004), Navigating Turbulent Times: Strategic Groups and Performance in the Hospital Industry, 1983 to 1993. Organizational Analysis, 12(2): 91-108.
- Marlin, D., Huonker, J., Sun, M., (2002), An Examination of the Relationship Between Strategic Group Membership and Hospital Performance, Health Care Management Review, 27(4): 18-30.
- Marren, P., (2005), The Migrating Locus of Strategy, The Journal of Business Strategy, 26(2): 4-7.
- Mayo, J. W., and McFarland, D. A., (1989), Regulation, Market Structure and Hospital Costs, Southern Economic Journal, 55(3): 559-569.
- McArthur, A. W., and Nystrom, P. C., (1991), Environmental Dynamism, Complexity, and Munificence as Moderators of Strategy-Performance Relationships, Journal of Business Research, 23: 349-361.
- McCue, M. J., (1991), The Use of Cash Flow to Analyze Financial Distress in California Hospitals, Hospital and Health Services Administration, 36(2): 223.
- McCue, M., (2000), What Determines Hospital Sponsorship of an HMO?, Inquiry-Blue Cross, 37:3, 268-281.
- McCue, M., Thompson, J., Dodd-McCue, D., (2000/01), Association of Market, Mission, Operational, and Financial Factors with Hospital's Level of Cash and Security Investments, Inquiry, 37(4): 411-422.
- McCue, M., Ozcan, Y., (1992), Determinants of Capital Structure, Hospital and Health Services Administration, 37(3): 333.

- McGrath, P., Wennberg, D., Dickens, J., Siewere, A., Lucas, F., Malenka, D., Kellett, M., Ryan, T., (2000), Relation Between Operator and Hospital Volume and Outcomes Following Percutaneous Coronary Interventions in the Era of the Coronary Stent, JAMA, 284(24): 3139-3144.
- McKay, N., Deily, M., Dorner, F., (2003/2004), Ownership and Changes in Hospital Inefficiency, Inquiry – Blue Cross and Blue Shield Association, 39:4, 388 – 400.
- Melnick, G., Keeler, E., and Zwanziger, J., (1999), Market Power and Hospital Pricing: Are Non-Profits Different? Health Affairs, 18: 167-173.
- Meltzer, D., Chung, J., and Basu, A., (2002), Does Competition under Medicare Prospective Payment Selectively Reduce Expenditures on High-Cost Patients?, RAND Journal of Economics, 33(3): 447-468.
- Mendelson, D., and Arnold, J., (1993), Certificate of Need Revisited, Spectrum, 66(1): 36-45.
- Menon, A., Menon, A., (1997), Enviropreneurial Marketing Strategy: The Emergence of Corporate Environmentalism as Market Strategy, Journal of Marketing, 61(1): 51-67.
- Meyer, J., Rowan, B., (1977), Institutionalized Organizations: Formal Structure as Myth and Ceremony. American Journal of Sociology, 83: 340-365.
- Mick, S. S., and Wise, C. G., (1996), Downsizing and Financial Performance in Rural Hospitals, Health Care Management Review, 21:2, 16-25.
- Miles, R. E., and Snow, C. C., (1978), Organizational Strategy, Structure and Process, McGraw-Hill, New York.
- Miller, D., (1988), Relating Porter's Business Strategies to Environment and Structure Analysis and Performance Implications, Academy of Management Journal, 31(2): 280-308.
- Mintzberg, H., (1994). The Rise and Fall of Strategic Planning. New York: Free Press.
- Misek, G., Reynolds, R., (1982), Effects of Regulation on the Hospital Industry, The Quarterly Review of Economics and Business, 22(3): 66-81.

- Morrison, I., (2006), The Atomization of Healthcare: Balancing Consumerism and Community, in Futurescan: Healthcare Trends and Implications 2006-2011, Health Administration Press, p. 5-8.
- Mukamel, D., Zwanziger, J., Tomaszewski, K., (2001), HMO Penetration, Competition and Risk-Adjusted Hospital Morality, Health Services Research, 36(6): 1019-1036.
- Nath, D., and Sudharshan, D., (1994), Measuring Strategy Coherence Through Patterns of Strategic choices, Strategic Management Journal, 15,: 43-61.
- Needleman, J., Buerhaus, P., Mattke, S., Stewart, M., Zelvinsky, K., (2002), Nurse-Staffing Levels and the Quality of Care in Hospitals, New England Journal of Medicine, 346(22): 1715-1721.
- Nichols, L. M., Ginsburg, P. B., Berenson, R. A., Christianson, J., and Hurley, R. E., (2004), Are Market Forces Strong Enough to Deliver Efficient Health Care Systems? Confidence is Waning, Health Affairs, 23(2): 8-21.
- Noether, M., (1988), Competition Among Hospitals, Journal of Health Economics, 7: 259-284.
- Olden, P. C., (2004), Health Promotion and Disease Prevention by Small Rural Hospitals: Reasons, Obstacles and Enablers, Journal of Healthcare Management, 49(2): 89-103.
- Olden, P., Roggenkamp, S., Luke, R., (2002), A Post-1990s Assessment of Strategic Hospital Alliances and Their Marketplace Orientations: Time to Refocus, Health Care Management Review, 27:2, 33-50.
- Oliver, C., (1991), Strategic Responses to Institutional Processes, Academy of Management Review, 16: 145-179.
- Oliver, C. (1997), Sustainable Competitive Advantage: Combining Institutional and Resource-Based Views, Strategic Management Journal, 18(9): 697-713.
- Osborn, R., Hagedoorn, J., (1997), The Institutionalization and Evolutionary Dynamics of Interorganizational Alliances and Networks, Academy of Management Journal, 40(2): 261-278.
- Otani, K., Kurz, R. S., and Barney, S. M., (2004), The Impact of Nursing Care and Other Healthcare Attributes on Hospitalized Patient Satisfaction and Behavioral Interventions, Journal of Healthcare Management, 49(3): 181-197.

- Paula, A., Long, R., and Wiener, D. (2002), Are Your Patients Satisfied?, Marketing Health Services, 22(3): 28-33.
- Pauly, M. V., (2004), Competition in Medical Services and the Quality of Care: Concepts and History, International Journal of Health Care Finance and Economics, 4: 113-130.
- Pawson, L., and O'Kane, M., (2002), Professionalism, Regulation, and the Market: Impact on Accountability for Quality Care, Health Affairs, 21:3, 200.
- Peters, J., Blasco, T., (2004), Enhancing Hospital Performance Through Perioperative Services, Physician Executive, 30(6): 26-31.
- Pfeffer, J., Salanick, G., 1978. The External Control of Organizations, NY: Harper and Row.
- Polit, D., and Hungler, B., (1995), Nursing Research Principles and Methods, J. B. Lippincott Co. Philadelphia.
- Porter, M., (1980), Competitive Strategy, The Free Press, Macmillan Publishing Co. Inc. NY. NY.
- Porter, M., (1985), Competitive Advantage, The Free Press, Macmillan Publishing Co. Inc, NY. NY.
- Porter, M., (1991), Towards a Dynamic Theory of Strategy, Strategic Management Journal, 12: 95-117.
- Primozic, K., Primozic, E., and Leben, J., (1991). Strategic Choices: Supremacy, Survival or Sayonara. New York: McGraw Hill.
- Proenca, E., Rosko, M., Zinn, J., (2000) Community Orientation in Hospitals: An Institutional and Resource Dependence Perspective, Health Services Research, 35(5): 1011-1035.
- Rivers, P., Bae, S., (1999), Hospital competition in Major U.S. Metropolitan Areas: An Empirical Evidence, The Journal of Socio-Economics, 28(5): 597.
- Rivers, P., Fottler, M., (2004), Do HMO Penetration and Hospital Competition Impact Quality of Hospital Care, Health Services Management Research, 17(4): 237-248.
- Robertson, R. H., Dowd, S. B., Hassan, M., (1997), Skill-Specific Staffing Intensity and the Cost of Hospital Care, Health Care Management Review, 22:4, 61-72.

- Robinson, J., Luft, H., (1987), Competition and the Cost of Hospital Care, Journal of the American Medical Association, 257 (23): 3241-3245.
- Robinson, J, Nash, Moxley, E., and O'Conner, J., (2001), Certificate of Need and the Quality of Cardiac Surgery, American Journal of Medical Quality, 16(5): 155-160.
- Rodwin, M., (1999), Backlash as Prelude to Managing Managed Care, Journal of Health Politics, Policy and Law, 24:5, 1115-1127.
- Rosko, M., (1999), Impact of Internal and External Environmental Pressures on Hospital Inefficiency, Health Care Management Science, 2(2): 63-74.
- Ruef, M., Scott, W., (1998), A Multidimensional model of Organizational Legitimacy: Hospital Survival in Changing Institutional Environments, Administrative Science Quarterly, 43(): , 877-905.
- Sage, W. M., (2003), Protecting Competition and Consumers : A Conversation with Timothy J. Muris, Health Affairs, 22(6): 101.
- Santerre, R., Adams, A., (2002), The Effect of Competition on Reserve Capacity: The Case of California Hospitals in the Late 1990s, International Journal of Health Care Finance and Economics, 2(3): 205-218.
- Santerre, R., Pepper, D., (2000), Survivorship in the US Hospital Services Industry, Managerial and Decision Economics, 21 (5): 181.
- Schaeffer, L. D., (2005), Value Enters the Equation, in *Futurescan: Healthcare Trends and Implications*, Health Administration Press, p 23-26.
- Schneider, J., (2003), Changes in the Effects of Mandatory Rate Regulation on Growth in Hospital Operating Costs, 1980-1996, Review of Industrial Organization, 22(4): 297-313.
- Scott , S., and Foo, M., (1999), New Firm Survival: Institutional Explanations for New Franchisor Mortality, Management Science, 45(2): 142-160.
- Selznick, P., (1996), Institutionalism Old and New, Administrative Science Quarterly, 41(2): 270.
- Shactman, D., (2005), Update Conference Report: Specialty Hospitals, Ambulatory Surgery Centers, and General Hospitals, Charting a Wise Policy Course, Health Affairs, 24(3): 868-874.

- Sharma, S., (1996), *Applied Multivariate Techniques*, John Wiley & Sons, Inc. New York, New York.
- Sherer, P. D., and Lee, K., (2002), Institutional Change in Large Law Firms: A Resource Dependency and Institutional Perspective, Academy of Management Journal, 45(1): 102-119.
- Shortell, S., Hughes, E., (1988), The Effects of Regulation, Competition, and Ownership on Mortality Rates Among Hospital Inpatients, New England Journal of Medicine, 318:17, 110-1107.
- Shortell, S. M., (2005) *Competitive Forces*, in *Futurescan: Healthcare Trends and Implications*, Health Administration Press, p 42-46.
- Shortell, S., Morrison, E., and Friedman, B., (1992), Strategic Choices for America's Hospitals, San Francisco, Jossey-Bass.
- Shortell, S., Zajac, E., 1990, Health Care Organizations and the Development of the Strategic Management Perspective, in Innovations in Health Care Delivery: Insights for Organizational Theory, Mick, S. and Associates, Jossey Bass Publishers.
- Shukla, R., Pestian, J., Clement, J., (1997), A Comparative Analysis of Revenue and Cost-Management Strategies of Not for Profit and For-Profit Hospitals, Hospital and Health Services Administration, 42(1): 117-135.
- Simendinger, E., Powell, B., and Vizzi, D., (2002), Managing Threats from Venture Capitalists, Journal of Healthcare Management, 47(1): 608.
- Simpson, J. B., (1986), Full Circle : The Return of Certificate of Need Regulation of Health Facilities to State Control, Indiana Law Review, 19(4): 1025-1127.
- Singhapakdi, A., Kraft, K., Vitell, S., and Rallapalli, K., (1995), The Perceived Importance of Ethics and Social Responsibility on Organizational Effectiveness: A Survey of Marketers, Journal of the Academy of Marketing Science, 23(1): 49-56.
- Sloan, F. A., (1981), Regulation and the Rising Cost of Hospital Care, Review of Economics and Statistics, LXIII(4): 479-487.
- Sloan, F. A., and Steinwald, A. B., (1980), Effects of Regulation on Hospital Costs and Input Use, The Journal of Law and Economics, (April): 81-109.

- Smith, B., (2002), Strategic Responses to Market Changes, International Journal of Medical Marketing, 3(1): 80-86.
- Sohn, M., (2002), A Relational Approach to Measuring Competition Among Hospitals, Health Services Research, 37(2): 457-483.
- Solomon, L., (1998), Rules and the Game: How Public Policy Affects Local Health Care Markets, Health Affairs, 17(4): 140-149.
- Song, Y., (1995), Strategic Alliances in the Hospital Industry: A Fusion of Institutional and Resource Dependence Views, Academy of Management Journal, Best Papers Proceedings, 1995, 271.
- Succi-Lopez, M., Lee, S., Alexander, J., (2003), The Effects of Relative Resource Configuration, Organizational Legitimacy and Integration on Divestiture Decisions Among Health Systems, Health Care Management Review, 28(4): 307.
- Suchman, M. (1995), Managing Legitimacy: Strategic and Institutional Approaches, Academy of Management Review, 20: 571-610.
- Swartz, K., (1999), The Death of Managed Care as We Know It, Journal of Health Politics, Policy and Law, 24:5, 1201-1206.
- Taylor, M., (2004), Surveying the Competition, Modern Health Care, July 26, 2004.
- Teplensky, J., Pauly, M., Kimberly, J., Hillman, A., Schwartz, J., (1995), Hospital Adoption of Medical Technology: An Empirical Test of Alternative Models, Health Services Research, 30(3): 437-465.
- Tierney, J. T., Waters, W. J., and Rosenberg, W. H., (1982), Certificate of Need – No Panacea But Not Without Merit, Journal of Public Health, 3: 178-181.
- Trinh, H., O'Connor, S., (2000), The Strategic Behavior of US Rural Hospitals: A Longitudinal and Path Model Examination, Health Care Management Review, 25(4): 48-64.
- Vaughan-Sarrazin, M., Hannan, E., Gormley, C., Rosenthal, G., (2002), Mortality in Medicare Beneficiaries Following coronary Artery Bypass Graft Surgery in States With and Without Certificate of Need Regulation, JAMA, 288(15): 1859-1866.

- Veliyath. R. and Shortell, S. M., (1993), Strategic Orientation, Strategic Planning System Characteristics and Performance, Journal of Management Studies, 30(3): 359-381.
- Venkatraman, N., and Camillus, J. C., (1984), Exploring the concept of "Fit" in Strategic Management, Academy of Management Review, 9: 513-525.
- Wang, B. B., Ozcan, Y. A., Wan, T. T., Harrison, J., (1999), Trends in Hospital Efficiency Among Metropolitan Markets, Journal of Med Systems, 23(2): 83-97.
- Weil, T. P., (1985), Procompetition or More Regulation, Health Care Management Review, 10(3): 27-36.
- Weingarten, J. P., (1999), Cooperative Ventures in a Competitive Environment: The Influence of Regulation on Management Decisions, Journal of Healthcare Management, 44(4): 282-301.
- Wells, R., (2001), How Institutional Theory Speaks to Changes in Organizational Populations, Health Care Management Review, 26(2): 80-84.
- Winter, A., (2003), Comparing the Mix of Patients in Various Outpatient Surgery Settings, Health Affairs, 22(6): 68.
- Wood, V., Bhuian, S., Kiecker, P., (2000), Market Orientation and Organizational Performance in Not-For-Profit Hospitals, Journal of Business Research, 48(3): 213.
- Woolley, J., (1989) The Competitive Effects of Horizontal Mergers and Acquisitions. Journal of Health Economics, 8: 271-291.
- Yamoah, F. A., (2004), Sources of Competitive Advantage: Differential and Catalytic Dimensions, Journal of American Academy of Business, 4(1/2): 223.
- Yang, S., McLaughlin, C., Vaughan, R., Aluise, J., (1992) Factory Focus in Hospital-Owned Ambulatory Surgery, International Journal of Service Industry Management, 3(4): 63-74.
- Young, D. W., (1991), Planning and Controlling Health Capital: Attaining an Appropriate Balance Between Regulation and Competition, Medical Care Review, 43(3), 261-293.

- Young, G., Burgess, J., Valley, D., (2002), Competition Among Hospitals for HMO Business: Effect of Price and Non-Price Attributes, Health Services Research, 37(5): 1267.
- Young, G., Burgess, J., Desai, K., Valley, D., (2002), The Financial Experience of Hospitals with HMO Contracts: Evidence from Florida, Inquiry-Blue Cross, 39:1, 67-76.
- Zajac, E. J., Kraatz, M. S., and Bresser, R. K., (2000), Modeling the Dynamics of Strategic Fit: A Normative Approach to Strategic Change, Strategic Management Journal, 21: 429-453.
- Zajac, E., Shortell, S., (1989), Changing Generic Strategies: Likelihood, Direction, and Performance Implications, Strategic Management Journal, 10(5): 413-430.
- Zinn, J. S., Mor, V., Castle, N., Intrator, O., and Brannon, D., (1999), Organizational Factors Associated with Nursing Home Participation in Managed Care, Health Services Research, 33(6): 1753-1767.
- Zinn, J., Proenca, J., Rosko, M., (1997), Organizational and Environmental Factors in Hospital Alliance Membership and Contract Management: A Resource-Dependence Perspective, Hospital and Health Services Administration, 42(1): 67-87.
- Zinn, J., Weech, R., Brannon, D., (1998), Resource Dependence and Institutional Elements in Nursing Home TQM Adoption. Health Services Research, 33(2): 261-273.
- Zucker, L., (1987). Institutional Theories of Organization. Annual Review of Sociology, 13: 443-464.
- Zuckerman, H., D'Aunno, T., (1990), Hospital Alliances: Cooperative Strategy in a Competitive Environment, Health Care Management Review, 15(2): 21-30.
- Zwanziger, J., Melnick, G. A., and Bamezai, A., (1994), Costs and Price Competition in California Hospitals, 1980-1990, Health Affairs, 13(4): 118-127.
- Zwanziger, J., Mooney, C., (2005), Has Competition Lowered Hospital Prices?, Inquiry – Excellus Health Plan, 42(1): 73-86.

VITA

Kathleen Heatwole was born in 1951, in Waynesboro, Virginia and is a US citizen. Heatwole is currently the Vice President for Planning and Development for Augusta Medical Center in Fishersville Virginia, a position she has held since 1990. Prior to that position, Mrs. Heatwole was the Assistant Administrator for the Waynesboro Community Hospital in Waynesboro, Virginia.

Mrs. Heatwole received a B.S. degree from Mary Washington College in 1973, and a Masters in Health Administration from Virginia Commonwealth University in 1980. Mrs. Heatwole has published several articles in health care journals, including "Strategic Cycling: Shaking Complacency in Healthcare Strategic Planning", published in the Healthcare Management Journal. This article, co-authored with Dr Jim Begun, received the Hayhow Award in 2001 as the best article of the year. The article was incorporated as a chapter in Health Services Management: Readings, Cases and Commentary, edited by A. R. Kovner and D. Neuhaer in both the 2002 and 2004 editions. She has been a guest speaker at several state conferences, and has participated as a guest speaker at James Madison University and Mary Baldwin College.