UNDERSTANDING COMPETITIVE ADVANTAGE IN THE GENERAL HOSPITAL INDUSTRY: EVALUATING STRATEGIC COMPETENCIES

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This study examines the drivers of competitive advantage within the hospital industry. Specifically, we examine both the direct and joint effects of market structure, firm-level competencies, and interorganizational relationships on organizational performance. The results of this approach indicated that managers, through their strategic actions related to the capabilities and relationships they develop and deploy, can establish advantageous competitive positions and influence the negative effects of market structure by developing important strategic competencies. Copyright © 2003 John Wiley & Sons, Ltd.

During the 1990s a number of works appeared in the strategic management literature that reviewed the development of this field of study. Each offered insightful suggestions concerning its future directions (e.g., Hoskisson *et al.*, 1999; McGahan and Porter, 1997; Porter, 1991; Rumelt, Schendel, and Teece, 1994). The authors called attention to the importance of both external and internal environments to organizations and the potential for success or failure of firms based on the decisions made by senior executives in dealing with positioning the firm in its industry.

Porter (1991) identified two key components of firm success as industry structure and firm core competencies. Thus, a firm must not only develop competencies that allow it to successfully position itself within its industry, but a firm must also be active with respect to 'influencing industry structure' (Porter, 1991: 101). Hoskisson *et al.* (1999) reviewed both the I/O theory focusing on industry structure (Bain, 1959) and the resource-based view

(RBV) of the firm (Penrose, 1959; Barney, 1991; Wernerfelt, 1984), stating that, while these theories are the cornerstones of future research in strategic management, few studies have accomplished the integration of the two.

One complementary concept to both the external and internal venues that may help explain today's complex relationships is that of 'cooperative strategies,' first introduced by Thompson (1967). While the RBV focuses on the use of internal organizational resources and capabilities (Barney, 1991) to achieve competitive advantage in a selected environment, it doesn't consider the use of strategic alliances that allow the combining of resources across organizational boundaries in pursuit of competitive advantage. Recently, Dyer and Singh (1998) presented the relational view, which incorporates the concept of resources shared across cooperating or networked organizations. These combined resources are potential sources of competitive advantage and aid a firm seeking an effective position in its industry.

The purpose of our research is to evaluate the ability of firms to select and use value-creating internal and shared resources to gain competitive advantage and to mitigate the pressures

that industry structure puts on firm profitability. According to Priem and Butler (2001), studies that utilize this type of contingency approach are important in order to clarify the role and contributions of the RBV and to inform practitioners concerning resource decisions. Since the value of resources is directly related to industry and market (Amit and Schoemaker, 1993; Combs and Ketchen, 1999), it is important to focus on a single industry (Hoskisson *et al.*, 1999). We use the general hospital industry since the health care field represents many unique markets, maintains detailed data, and continues to undergo significant change, making it a 'fertile ground for testing theory' (Dranove and White, 1994). In studying the hospital industry, we will use concepts from the I/O economic, resource-based, and relational views.

THEORETICAL DEVELOPMENT

Industry structure

Important to an understanding of competitive advantage in the hospital industry is an evaluation of its industry environment. Each hospital should consider the relevant industry forces as it positions itself competitively and evaluates the resources and capabilities necessary to achieve competitive advantage. Much work has been completed in this area in both the economic and strategy literatures.

Hoskisson *et al.* (1999) identified one of the most significant theoretical contributions to strategic management literature as the incorporation of industrial organization economics, primarily the structure–conduct–performance (SCP) paradigm. According to this important I/O economic model, a firm's performance is related to the strength of forces that define the structure of the industry environment. Building on the foundational work of Bain (1959), Mason (1939), and others, Porter (1980) introduced the five forces model, which provided an important conceptual framework for understanding and analyzing the various effects of industry structure on the profit potential of firms within an industry.

A number of empirical studies have added to our knowledge of the significance of the relationship between industry structure and firm performance (Schmalensee, 1985; Rumelt, 1991). Especially pertinent to our study of hospitals, McGahan and

Porter (1997) found that the portion of variance in business unit performance explained by industry effects was larger for service industries than for manufacturing industries.

With respect to the general hospital industry, major changes in its structure have occurred in recent decades. Managed care, introduced in the early 1980s as a way to address the exploding growth in health care expenditures, has encouraged the creation of large purchasers of health care services who then coordinate with hospitals and other relevant organizations (Teisberg, Porter, and Brown, 1994). Consequently, managed care has had a profound impact on the structure of the health care industry as these empowered health care buyers have stimulated intense competition with and between hospitals. Scholars have described and studied significant changes in the make-up and power of the payers of health care services (Dranove and White, 1994; Dranove, Simon, and White, 1998; Ozcan and Luke, 1993), in the level of competition within the local markets (Dranove, Shanley, and Simon, 1992; Manheim, Bazzoli, and Sohn, 1994), and in the degree of partnering with inter- and intra-industry organizations (Burns *et al.*, 2000; Dranove and Shanley, 1995; Luke, Ozcan, and Olden, 1995). Managed care and hospital rivalry are the two primary competitive forces that are transforming the structure of the health care industry and having a significant impact on the profitability of hospitals. Therefore, we will explore in more detail the impact of these competitive forces.

Managed care buyer power

Managed care has been defined on a broad basis as the organized efforts that began in the early 1980s to control costs (Burns *et al.*, 2000) or improve quality (Dranove *et al.*, 1998) in the health care industry. These efforts can be in the form of selective contracting (e.g., HMOs, PPOs), utilization reviews (Dranove *et al.*, 1998), or other mechanisms that organizations across this industry use to achieve these objectives.

Pressure on the industry to control costs while maintaining reasonable, consistent levels of quality (Dranove and Shanley, 1995) has come from both the private and public sectors. These forces materialized in the form of increasing enrollments in managed care systems (MCS) like health maintenance organizations (HMOs) or preferred provider

organizations (PPOs) (Burns *et al.*, 2000) that attempt to negotiate favorable contracts with hospitals in order to meet their employee or customer needs (Dranove and White, 1994). From the public sector, federally funded programs like Medicare and Medicaid, where the ratio of payments to costs has been declining over time (Dranove and White, 1994), again apply downward pressure on profits.

In essence, managed care is predicated on the concept of enhancing buyer power relative to health care service providers such as hospitals. The effectiveness of this buyer power, however, may vary widely across the industry due to significant differences in the percentage enrollments in MCS and in the percentage of patients covered by Medicare and Medicaid payments in the various hospital markets. However, a negative relationship between buyer power and hospital profitability is expected.

Hospital rivalry

Managed care has succeeded not only in enhancing the market power of health care buyers; it has also stimulated increased rivalry between hospitals that are vying for managed care patients. One would suspect that in an environment of increasing rivalry organizations must increase the value of their products or services by increasing quality or reducing costs to maintain profit margins (Teisberg *et al.*, 1994). However, historical depictions of the hospital industry have painted a different picture, with costs and prices thought to be positively related to hospital competition (Dranove and White, 1994; Manheim *et al.*, 1994). The recent shift of responsibility of payment to the large, highly informed MCS has seemingly put this industry back under the umbrella of standard economic theory (Dranove and White, 1994).

Contradictory evidence still exists, however. For instance, Gapenski, Vogel, and Langland-Orban (1993) found no relationship between increasing hospital rivalry and lower profitability. Other studies have found that markets characterized by higher levels of competition had lower rates of cost inflation (Melnick and Zwanziger, 1988; Robinson and Luft, 1988; Robinson and Phibbs, 1989). A more recent study by Rivers and Asubonteng (1999) found that rivalry has been associated with *higher* not lower costs, supporting the results of studies completed prior to significant implementations of managed care. This result may be due to the fact

that rivalry has pushed hospitals to try to differentiate themselves by investing in expensive high-technology-based services (Anderson and Steinberg, 1994).

One of the characteristics of the majority of these studies is that they focus on the singular relationships between competition and price or competition and costs. Given the conflicting pressure on hospitals to provide additional value in the form of higher quality, lower costs, or a combination of the two, the relevant question with regard to industry structure is whether hospitals striving to increase value are less *profitable* in markets that are more rivalrous. It may be that the focus on providing increased value results in both higher prices and higher costs in increasingly rivalrous markets, with the question of changes in relative profits within the market providing the critical information. Assuming that current hospital markets function as described by Bain (1956) in his discussion of the strategy–structure–performance relationship within industries, we would expect that markets exhibiting higher levels of rivalry would also display relatively lower levels of profits. Individual firms in market areas with relatively smaller firms (less concentration) will have a more difficult time recouping the additional costs of differentiation.

Within this industry framework, hospitals can set strategies that attempt to mitigate some of this pressure on profits (Porter, 1991). While the SCP model suggests variables that may influence industry performance, for example, raising entry barriers or decreasing rivalry, the RBV focuses on organizational choices concerning the acquisition or use of resources and capabilities to generate rents while recognizing these external pressures (Conner, 1991).

Strategic competencies and hospital financial performance

Consistent with the earliest works within the strategic management field (Wernerfelt, 1984; Penrose, 1959), RBV provides a theoretical foundation to test the relationships between organizational resources, environmental context, and firm performance (Barney and Zajac, 1994). In the general hospital industry, the ability of a hospital in a specific local market to develop capabilities relatively superior to its competitors is critical for success. In order to result in superior rents, the capabilities

utilized by the hospital must meet the RBV criteria of value, rareness, and inimitability (Barney, 1995; Black and Boal, 1994). Hospitals must focus on meeting the needs of their customers with services that have significant value within the industry environment, are sufficiently different from other hospitals in their local market, and require physical and human assets that are difficult to imitate.

One important consideration within this industry is that a 'service' is being delivered as opposed to a product being manufactured. Most of the terminology within the RBV literature has focused on manufacturing. Within a service industry, many of the capabilities in question work directly on or with the customer to produce the service. The use of the service occurs simultaneously with its production (Bowen and Ford, 2002). Capabilities used to deliver services in service industries, like the general hospital industry, that result in superior rents will be called *strategic competencies*. This will distinguish them from similar terms used in the literature that describe sources of competitive advantage in manufacturing, such as *core competencies* (Prahalad and Hamel, 1990) or *distinctive competencies* (Grant, 1991; Snow and Hrebiniak, 1980). Strategic competencies pertain to the services offered by an organization that are superior in the marketplace and result in competitive advantage.

For the hospitals capable of formulating and utilizing strategic competencies, a competitive advantage should be realized. In other words, the acquisition and deployment of a set of valuable and distinctive competencies, as represented by the medical services offered, will enable a hospital to establish a favorable reputation in the market, thereby attracting physicians and their patients. The more distinctive a hospital's competencies are in a market, the greater the competitive advantage. With this in mind, the following hypothesis is offered:

> *Hypothesis 1: The value of a hospital's strategic competencies is positively related to hospital financial performance.*

Interorganizational strategic competencies and hospital financial performance

The relational view (Dyer and Singh, 1998) has been offered as an alternative perspective of competitive advantage. Like the RBV, the relational view notes that competitive advantage is derived from unique and valuable resources. However, while the RBV focuses on resources internal to the firm, the relational view contends that resources or capabilities that are needed by the firm may reside outside the firm and are accessed or created through building relationships with other firms. Thus, by sharing resources firms are better able to jointly position themselves in their environment (Baum, Calabrese, and Silverman, 2000).

As noted above, managed care is forcing hospitals to deliver health care services more efficiently and effectively. In the U.S. health care industry, hospitals, physicians, and insurance companies have traditionally operated independent of each other and, as a result, the provision of health care has been very fragmented (Starr, 1994). However, due to the growth of managed care (Dowling, 1995) and to rising uncertainty in the health care environment, hospitals have reconsidered these traditional approaches to health care delivery in favor of more integrated and coordinated systems of care (Zuckerman, Kaluzny, and Ricketts, 1995). Zuckerman and his colleagues argue that these 'integrative' alliances are being formed to strengthen market positions by effectively combining capabilities in a vertical manner with the goal of enhancing each organization's competitive advantage.

One of the major developments in the production of medical services is the integration of physicians into larger organizations, like hospitals (Burns, DeGraaff, and Singh, 1999; Goes and Zhan, 1995). These newly formed group practices take advantage of the larger scope of services that can be offered, along with the cost efficiencies of locating services centrally and sharing administrative burdens (Zuckerman *et al.*, 1995). As of 1996, 85 percent of hospitals in the United States had integrated with physicians in some manner (Shortell *et al.*, 2000).

Based on the logic of the relational view, the linkages between hospitals and physicians provide both parties with the opportunity to combine resources needed to establish advantageous competitive positions. From the perspective of the hospital, linkages with physicians essentially provide access to patients. Access to patients is particularly critical in an environment where cost control efforts are focusing on reducing the usage of inpatient hospital care and expensive medical services.

From the perspective of the physician, forming relationships with hospitals gives physicians access to a broad range of hospital services. Shortell

et al. (2000) found that physicians are especially attracted to hospitals that focus on innovation and delivery of new services. Those physicians that are linked to hospitals that offer the latest cutting-edge medical technologies and/or have the strongest reputations in the market will be able to attract the most patients. Through these interorganizational linkages, both the physician groups and the hospitals are able to combine complementary resources and offer an efficient and differentiated continuum of care.

As discussed above, capabilities utilized to deliver services that result in superior rents are called strategic competencies. Hospitals that integrate with physician groups with the result of enhancing their strategic competencies within the market can potentially achieve competitive advantage. In fact, Shortell *et al.* (2000) found that broadly defined integrated health care systems that integrated with physician groups experienced higher total revenues and cash flows. With this in mind, we offer the following hypothesis:

Hypothesis 2: Developing strategic links with physician groups in a manner that enhances strategic competencies will be positively related to hospital financial performance.

Influencing the buyer power/performance relationship

While the above hypotheses portray direct relationships between constructs presented in the RBV, relational views, and hospital financial performance, it is important also to consider whether these constructs interact in ways that mitigate the forces associated with the SCP model presented above. Porter (1980, 1991) prescribed the use of strategic behavior by individual firms to influence industry structure. The recent empirical study by McGahan and Porter (1997) confirmed an interaction between industry and company-associated variables. One way that firms could enact their environment is to identify and procure resources that would mitigate important industry forces pressuring organizational profits.

The RBV suggests that if an organization is able to establish an advantageous position in the market it will be less susceptible to buyer power. If a hospital is able to establish a differentiated position in the market by building strategic competencies that few other hospitals in the market can match,

then the buyer (the MCS) will be more willing to pay a premium for those services. Or, alternatively, the MCS will be less willing to utilize bargaining power to force the hospital to accept lower prices for those unique and valuable hospital services. Hospitals that are able to establish an advantageous competitive position or a superior reputation in the market will be better insulated from increasing buyer power than their resource-disadvantaged counterparts. Based on the implications of the RBV of competitive advantage, the following hypothesized relationship is suggested:

Hypothesis 3: The relationship between industry buyer power and hospital financial performance will be less negative when the hospital possesses strategic competencies.

An alternative method of establishing an advantageous position in the marketplace would be to gain access to important resources in other organizations (Dyer and Singh, 1998). As proposed above, the merging of capabilities between hospitals and physician groups is expected to be positively related to hospital financial performance. This merging of capabilities may also have a mitigating effect on the pressures exerted by industry structure.

A merger or partnership between a hospital and physicians group essentially represents a coordinated set of complementary resource endowments. This combination or 'pooling' of capabilities enables the individual providers to build joint strategic competencies that collectively are valuable to the buyer. Since managed care has created formidable buyers in this industry, utilizing enhanced capabilities to deliver strategic competencies should make a particular hospital more attractive.

As outlined above, the potential ability of hospital/physician group partnerships to lower combined costs, share administrative duties, target referrals, and deliver a broader range of valuable services enhances their service line in a way that may move them above industry standards. By providing these shared strategic competencies, they are better able to meet the needs of buyers with the result of lessening this industry structure force. Therefore, the following hypothesis is offered:

Hypothesis 4: The relationship between industry buyer power and hospital financial performance will be less negative when the hospital has developed strategic links with physician groups resulting in strategic competencies.

METHODS AND MEASURES

Research design and data collection

Much of the data were gathered on a secondary basis for the 32 largest hospital markets in the United States. While there is not a generally accepted approach to measuring and defining hospital markets (Dranove and White, 1994), hospitals do compete within a limited geographic region. Examples of approaches taken to derive geographic-based market definitions include the use of county designations (Irwin, Hoffman, and Lamont, 1998), Health Service Areas, which account for travel patterns within metropolitan areas (Makuc et al., 1991), or simply all hospitals within a designated distance of the focal hospital (Robinson and Luft, 1988). In this study we utilized the Metropolitan Statistical Area (MSA) to define the hospital market. While this approach is not without its weaknesses (Dranove and White, 1994), it is the most common urban hospital market definition designation (Dranove, Shanley, and Simon, 1992; Manheim, Bazzoli and Sohn, 1994; Ketchen, Thomas and Snow, 1993). In addition to using MSAs to define markets, this sample included only general medical hospitals (Veteran's Administration, military-base, and specialty hospitals were excluded). This resulted in a total sample size of 824 hospitals.

The second part of the data collection utilized highly qualified industry experts to evaluate the hospital and physician group resource endowments with regard to their relative strategic value (see the Appendix for a summary of the hospital and physician group services included in this study). The American Hospital Association (AHA) recommended the six industry experts selected to participate in this evaluation as the most highly qualified and knowledgeable individuals. Two of the industry experts were CEOs of large integrated health care delivery systems. Three of the experts were major or principal partners in firms that specialize in consulting for the health care industry. The final industry expert is a nationally

known scholar who has published extensively on health care management issues. Subsequent to the appraisal of the resource value survey, interrater reliability between the six industry experts was calculated which resulted in a reliability coefficient of 0.712. Since this reliability coefficient indicated sufficient agreement, the average of the six experts' ratings for each hospital resource was calculated and assigned as weights to each respective hospital and physician group service endowments.

Variables and measures

The following section details the measures employed in this study. The approaches used to operationalize the relevant constructs are consistent with methodologies used successfully in the literature.

Cash flow margin

The measure of hospital financial performance utilized was cash flow margin (Gapenski et al., 1993; McCue, 1991). Not-for-profit firms whose missions are service oriented and not profit maximization dominate the hospital industry. However, all hospitals, whether for-profit or not, are necessarily concerned with an adequate cash flow to sustain operations. The cash flow margin (CFM) was calculated as follows:

$$\frac{\Sigma(\text{Net income} + \text{Depreciation} + \text{Interest exp.})}{\Sigma(\text{Net patient revenue} + \text{Total other income})}$$

The cash flow margin measure of financial performance for each hospital was calculated for the years 1996 and 1997 and then averaged to eliminate any single year anomaly. The data needed to calculate this measure were obtained from the 1998 American Hospital Directory.

Strategic competencies

The strength of a hospital's competencies is determined by comparing the value of a hospital's service offerings to those of the competition. By comparing the value of the bundle of services with that of the competition, a measure of the distinctiveness of each firm's competencies can be determined and competitor analysis can be conducted (Chen, 1996). In order for a competency to be considered valuable, it would have to either help reduce costs or differentiate the firm relative

to the competition (Porter, 1991). While certain hospital services may help to reduce costs, the primary function of adding hospital services is to improve the desirability of the hospital in the eyes of current and potential customers.

Following the approach taken by Irwin *et al.* (1998), industry experts were asked to evaluate the potential of each hospital service to enhance the reputation or increase the attractiveness of the hospital to physicians, patients, and insurance companies. These competencies are only valuable if deemed so by the participants in the external environment (Priem and Butler, 2001). In this 5-point Likert-type scale, '5' designates a 'high potential to enhance a hospital's reputation and attractiveness to customers,' while the '1' represents a 'low potential to enhance a hospital's reputation and attractiveness to customers.' The '0' indicates no strategic value whatsoever (Irwin *et al.*, 1998).

Subsequent to the appraisal of the resource value survey, the average of the six experts' ratings for each hospital resource was calculated and assigned as weights to each respective hospital service and an overall measure of the value of each hospital's service bundle was calculated. The measure was calculated as follows:

$$\frac{\Sigma[(\text{Value, Service A}) + \dots (\text{Value, Service N})]}{\text{Total number of services}}$$

This measure represents the average value of each hospital's service offering. The practical significance of this approach is that the number of services a hospital provides (which may be indicative of organizational size) may not be relevant. Indeed, a hospital with only 20 service offerings may have competencies that are, on average, more valuable than the competencies of a larger competitor that offers 60 services. Subsequently, in order to reflect each firm's relative position in the market, the measure of the strategic value of the hospital's service offering calculated above was standardized relative to the local market. This was accomplished by transforming each observation into a Z-score. The data related to hospital service offerings were gathered from the 1998 American Hospital Directory.

Physician linkages

As discussed above, the linkage of hospitals with various types of physicians groups may have a

differential impact on the ability of a hospital to create a competitive advantage vis-à-vis rival hospitals and powerful MCS buyers. Industry experts, familiar with the development of integrated health care delivery systems, were asked to evaluate on a 5-point Likert-type scale the relative importance of each physician service in building an efficient and effective integrated delivery system. In this Likert-type scale, '5' denotes the particular physician service as 'critical to the effectiveness of an integrated delivery system,' while '1' designates a physician service as 'not an important part of an integrated delivery system.'

Subsequent to the appraisal of the strategic value of each type of physician group, the average of the six experts' ratings for each type of physician service was calculated and assigned as weights to each respective physician service. This weighting factor was then applied to the type of physician services each hospital is linked to and was then summed to derive a measure of the strength of each hospital's physician linkages. Data regarding the integration of physician services were obtained from the Integrated Healthcare Systems directory (Health Strategies Group, 1996).

Managed care buyer power

The managed care market power measure is a composite of two critical determinants of managed care's ability to influence the demand structure in the market; managed care penetration, and the percentage of managed care that is Medicaid and Medicare related. Managed care market penetration is the percentage of the MSA population enrolled with an MCS in 1996. This variable is calculated as the number of enrollees per MSA divided by the total MSA population. The second determinant, the percentage of Medicaid and Medicare managed care, is important to include because it is an indication of the level of government involvement in managed care. Recent efforts of governments at all levels to balance budgets have provided significant impetus for government buyers to wield their clout in the health care industry, especially related to care for the poor. These two measures were obtained from the 1998 American Hospital Directory and then, using SPSS, were factored together to produce a singular measure of managed care buyer power. Principal components were used to extract the buyer power factor and the

factor scores were generated using the regression methodology.

Industry competitive rivalry

The variable used to measure the level of rivalry in each general hospital market is a modification of the Herfindahl index. The Herfindahl, which considers both the magnitude and the relative differences of market shares of competitors in a market, is a measure of market concentration that has been used extensively in the strategy literature as a proxy for rivalry (Boyd, 1990; Melnick *et al.*, 1992). A measure of rivalry was calculated as 1 minus the calculated Herfindahl index, so that higher values correspond to greater levels of hospital competition in a particular market. Total revenues for each hospital were obtained from the 1998 American Hospital Directory.

Tax status

Hospital tax status has been indicated as a significant influence on performance (Graeff, 1980). A for-profit hospital will likely have different organizational goals from those of the not-for-profit hospital (Zajac and Shortell, 1989). Therefore it was important to control these different competitive orientations and classify each hospital accordingly. Data on tax status were obtained from the 1998 American Hospital Directory.

Organizational size

Organizational size has been a significant predictor of hospital financial performance in the literature (Graeff, 1980). Therefore, this study controlled for variations in performance due to differences in organizational size. Organizational size was measured as the average of 1996 and 1997 total assets. These data were obtained from the 1998 American Hospital Directory.

Indigent care

The service mission of most hospitals requires that they serve patients that are unable to pay for the services provided. However, the preponderance of this burden often falls on a few hospitals within a market, namely the public hospitals and health centers that are located in economically distressed areas (Cunningham and Tu, 1997). This obviously

represents a significant negative impact on hospital profitability and must be accounted for in the model. This variable, which is the number of Medicaid-related hospital discharges, provides a reasonable proxy for the level of indigent care each hospital provides. These data were obtained from the 1998 American Hospital Directory.

Teaching hospital

The dual missions of providing health care to a market as well as providing graduate education may put academic hospitals at a distinct competitive disadvantage to their nonacademic counterparts (Blumenthal, Campbell, and Weissman, 1997). Therefore, it is important to acknowledge these different organizational missions and classify each hospital accordingly. Data were obtained from the 1998 American Hospital Directory.

Given the form of the model, moderated regression was used to test the hypothesized relationships. Support for the hypotheses was determined by the statistical significance of each focal variable. The following section summarizes the results of the analyses.

RESULTS

Descriptive statistics

The descriptive statistics as well as the Pearson correlation matrix are summarized in Table 1. As Table 1 indicates, there is no significantly large correlation that would indicate any concern over multicollinearity (Hanushek and Jackson, 1977). In addition, the variance inflation factors were calculated and found to be less than 2 in all cases. This is well below a level that would cause concern of any excessive multicollinearity (Neter, Wasserman, and Kutner, 1985).

Table 2 presents the results of the hierarchical moderated regression analyses. Model 1 reflects the inclusion of only the control variables; Model 2 tests Hypotheses 1 and 2, while Model 3 tests Hypotheses 3 and 4.

Control variables

Some discussion of the control variables utilized in this study is warranted since these factors have a significant underlying impact on hospital financial

Table 1. Descriptive statistics and correlations ($N = 824$)

	Mean	S.D.	1	2	3	4	5	6	7	8
1. Cash flow margin	0.06	0.09	1.00							
2. Hospital rivalry	0.93	0.05	−0.13**	1.00						
3. Buyer power	0.00	1.00	−0.13**	0.00	1.00					
4. Strategic competencies	0.00	1.00	0.04	−0.01	0.01	1.00				
5. Physician linkages	0.00	1.00	0.13**	−0.21**	−0.09**	0.05	1.00			
6. Size	56.12	70.10	−0.07	−0.02	−0.03	0.20**	0.11**	1.00		
7. Tax status	0.17	0.37	0.29**	0.00	−0.13**	−0.03	0.10**	−0.17**	1.00	
8. Teaching hospital	0.36	0.48	−0.15**	0.08*	0.06	0.14**	−0.02	0.40**	−0.21**	1.00
9. Indigent care	1772	2826	−0.23**	0.07	−0.01	0.18**	−0.06	0.40**	−0.16**	0.37**

$^* p < 0.05;\ ^{**} p < 0.01$

Table 2. Regression results

Independent variables	Model 1 Controls		Model 2 Direct effects		Model 3 Interactions	
	β	t	β	t	β	t
Size	0.098	2.55**	0.058	1.49	0.057	1.45
Tax status	0.253	7.37***	0.235	6.86***	0.238	6.94***
Teaching hospital	−0.071	−1.86†	−0.055	−1.45	−0.056	−1.48
Indigent care	−0.201	−5.35***	−0.201	−5.40***	−0.199	−5.36***
Rivalry			−0.091	−2.69**	−0.072	−2.06***
Buyer power (BP)			−0.103	−3.11**	−0.118	−3.47***
Strategic competencies (SC)			0.080	2.36*	0.093	2.71**
Physician linkages (PL)			0.053	1.56	0.062	1.78†
SC × BP					−0.068	−2.07*
PL × BP					0.069	1.94*
Adjusted R^2	0.119		0.145		0.151	
F	27.85***		17.86***		15.18***	

$^\dagger p < 0.10;\ ^* p < 0.05;\ ^{**} p < 0.01;\ ^{***} p < 0.001$

performance. The first control, organizational size, is significantly and positively related to financial performance. This finding is consistent with previous research that has noted a positive correlation between size and performance (Kimberly, 1976; Judge, 1994). In addition to size, the tax status of a hospital also had a significant impact on its financial performance. Not surprisingly, for-profit hospitals outperformed their not-for-profit counterparts. This disparity in financial performance perhaps stems from the differences in the overall mission of the hospitals and the inherent conflict between financial and social objectives (Krawlewski, Guilford, and Porter, 1988). A beneficial direction for future research would be the inclusion of additional performance variables that would be more closely linked to these alternative objectives. Finally, the level of indigent

care a hospital provides is negatively related to organizational performance. This result, while not surprising, highlights the financial burden that is unevenly shouldered by some hospitals (Fishman, 1997). Teaching hospital status demonstrated only marginal significance with respect to financial performance.

Industry structure variables

While no specific hypotheses were offered with regard to the two key measures of industry structure, namely managed care buyer power and hospital rivalry, it is important to note their impact on hospital financial performance. The results of this study support the relevant I/O model, as expected, which suggests that powerful buyers and higher levels of rivalry will

in general result in lower levels of organizational financial performance. As Model 2 in Table 2 indicates, the results of our study noted that both managed care buyer power ($t = -3.11$, $p < 0.01$) and hospital rivalry ($t = -2.69$, $p < 0.01$) are negatively related to a hospital's cash flow margin.

Hypothesis 1

Hypothesis 1 suggests that a hospital's internal capabilities can be used to deliver strategic competencies that result in competitive advantage. Specifically, Hypothesis 1 asserts that the strength of a firm's strategic competencies is positively related to hospital financial performance. The results of this study indicate support for this assertion since the level of a hospital's strategic competencies is positively related to hospital cash flow ($t = 2.36$, $p < 0.05$).

Hypothesis 2

Hypothesis 2 introduces the notion that interorganizational linkages are the conduits that enable physician groups and hospitals to combine resources resulting in strategic competencies. Thus, forming linkages with physicians was hypothesized to have a positive effect on hospital financial performance. The results of this study, however, did not indicate a significant relationship ($t = 1.56$, $p < 0.15$).

Hypotheses 3 and 4

Hypotheses 3 and 4 suggest that firms can interact with their environments by implementing strategies that can mitigate potential negative influences of industry structure on performance. Specifically, Hypothesis 3 asserts that hospitals can reduce the negative effects of MCS buyer power by developing and deploying valuable organizational capabilities, while Hypothesis 4 suggests that forming relationships with physicians can mitigate these same influences. The results of the moderated regression analysis indicate the presence of moderating influences. As Model 3 shows, the relationship between buyer power and performance is less negative when hospitals engage in value-creating interorganizational relationships with physicians groups ($t = 1.94$, $p < 0.05$). Thus Hypothesis 4 is supported.

The results related to Hypothesis 3 also indicated that moderating influences exist. However, the effect was opposite to the theoretical expectation. Applying the RBV, we hypothesized that hospital managers could alleviate the negative effects of powerful buyers by building valuable, strategic competencies. The results indicate that the effect of managed care buyer power on hospital cash flow was more negative ($t = -2.07$, $p < 0.05$) when hospitals possessed strategic competencies. This is a surprising result that warrants further discussion.

DISCUSSION

This study attempted to contribute to recent literature in strategic management by evaluating the ability of firms to select and apply both internal and shared resources to gain a competitive advantage and relieve competitive pressure related to industry structure on firm profitability. The results extend our understanding of the combined contributions of industry structure and management strategic actions on organizational performance within a specific context. By concentrating on the direct and combined effects of relevant theoretical variables, we have contributed in several ways.

First, we established and tested configurations of services to determine if they represented strategic competencies in the hospital industry. The findings supported the use of service-related strategic competencies to create competitive advantage in support of the RBV and relational view models. Second, we tested these same competencies' use in mitigating industry structure forces indicated by the SCP model, with the results suggesting the value of combining internal and external organizational variables in understanding competitive advantage (Hoskisson *et al.*, 1999). Third, the findings highlight the importance of focusing on a specific context when studying the impact of both external and internal environments on competitive advantage. The power of the forces related to industry structure varies by industry, as do the competencies necessary to achieve competitive advantage (Priem and Butler, 2001). Finally, the results of the study provide information for the industry under study, practitioners, and instructors of strategic management.

Theoretical contributions

Findings with respect to the relationship between each of the study industry structure variables (buyer power and rivalry) and organizational performance were consistent with prior findings in the strategy literature. While many of the previous findings were based on analyses across industries (McGahan and Porter, 1997; Roquebert, Phillips, and Westfall, 1996; Rumelt, 1991; Schmalensee, 1985), our study consisted of a single industry with 32 unique market areas. Within these market areas we found that the measures of buyer power and rivalry varied, with higher levels of both variables related to lower organizational performance. While the literature in the hospital industry has been inconsistent regarding the impact of rivalry on financial performance, this study found support for the effect predicted within I/O literature.

With respect to the competitive strategies of individual organizations, based on our observations of the services offered, hospitals have developed differing strategic competencies. As predicted by the RBV, those organizations that exhibited a higher level of strategic competencies also performed at a higher level. Priem and Butler (2001) argue that little work has been done with respect to evaluating the RBV in appropriate contexts. In the case of hospitals, offering specific services that are highly valued by their customers appears to be rewarded. Future research should consider additional service industries for similar evaluations.

Our study's findings also indicate that industry structure variables interact with the variables related to the competencies owned or shared by the incumbent organizations. In the case of the complementary resources shared by partnerships between hospitals and physician groups, the findings showed that the stronger the valuable and shared competencies are, the weaker the relationship between buyer power and organizational performance. Hospitals, by engaging in valuable linkages with physician groups, can mitigate some of the power exerted by the MCS. While Porter (1980) suggested that organizations take an active role in positioning themselves in a manner that insulates them from industry forces, little evidence exists in the literature supporting this advice. Our finding is also consistent with the conclusions of Burns *et al.* (1999) that the multiple service capabilities of hospital/physician group combinations

are valuable competitive attributes for organizations in the health care industry.

The findings also contribute to the health care literature. Following the predictions of Dranove and White (1994), as purchasing power has migrated from uninformed patients to highly competitive and knowledgeable MCS, the hospital industry has begun to respond to these threats. Increasing buyer power and rivalry force incumbent hospitals to consider ways to enhance the value that they deliver (Teisberg *et al.*, 1994) from the perspective of their multiple stakeholders (Shortell *et al.*, 2000). In this data set it has been shown that hospitals can reduce the power of buyers by integrating with physician groups that possess strategic competencies. In addition, hospitals that possess higher levels of strategic competencies are rewarded for the increased value provided. These are important considerations for strategic planners of integrated health care systems. Shortell *et al.* (2000) have predicted that more emphasis will necessarily be placed on 'quality and outcome criteria' in the coming years rather than on costs, with the further development of continuous quality improvement (CQI) providing the necessary support. Higher levels of CQI have been recently shown to have a positive impact on hospital profits (Douglas and Judge, 2001). In this competitive environment, as health care organizations focus on developing and providing strategic competencies, the overall value and quality of services provided can be enhanced.

One surprising finding in our study raises additional issues. In our data the relationship between buyer power and organizational performance was actually strengthened in the presence of higher levels of hospital strategic competencies. We had hypothesized that these valuable competencies would lessen the pressure exerted by buyer power. It may be that the specific forces working in the health care industry are unique, causing an effect quite opposite to the one expected. We chose to operationalize a hospital's strategic competencies based on the strategic value of the bundle of services offered by the organization. It may be that the more valuable services offered by these hospitals are ones that require a higher level of capital investment (Anderson and Steinberg, 1994). While patients may be better served by these services, an MCS's 'dominant criterion in the value equation is still cost' (Shortell *et al.*, 2000: 6). An MCS may require the substitution of less costly alternative

services or may reimburse the subject hospitals at a rate that is less than the respective cost of delivery.[1] Unfortunately, our data do not contain the detail necessary to help us answer this anomaly. It would be helpful to study this relationship further in other industries and to engage in more in-depth, qualitative research in the general hospital industry to better understand this result.

Finally, studying the constructs from the various theories in a specific context appears important. The significant interactions that we found between buyer power and owned or shared strategic competencies may be unique to the industry that we chose to study. How are these and other important constructs suggested by these theoretical perspectives related in other contexts? Studies in both manufacturing and other service organizations would be helpful as well as including global vs. domestic environments.

Managerial implications

This study also has implications for administrators in this industry. Since the need to control costs while increasing the quality of service remains a critical success factor in the hospital industry, it appears that managers of these organizations can strategically act to enhance their organization's well-being. Developing valuable competencies, whether within the organization or in partnership with other groups, can have a positive effect on overall performance.

With respect to increased internal capabilities of these hospitals, more information is needed. However, even though hospitals with higher levels of strategic competencies seem to allow an MCS to denigrate profits from them based on these data, the higher level of hospital profits associated with these valuable capabilities more than offset this potential loss. This may also be an area where the hospitals and MCS can better partner to ensure that the services offered best meet the needs of all stakeholders.

Limitations

The results of this study must be viewed with respect to a number of limitations. First, this study was conducted within a single industry.

While this lessens the generalizability of the findings, it does enhance the literature in this area. Most studies have been completed across multiple manufacturing industries and have provided important information with respect to key relationships formulated in the strategic management literature. The use of a single service industry in this study allows for an in-depth analysis and further contributes to the growing knowledge in this field. Second, most of the data were gathered at a single point in time. While the theory implies causality in a number of the relationships studied, this study could not verify the direction of this causality. Future research should examine these relationships using a longitudinal database. Third, the measure of competitive rivalry across hospitals in each MSA doesn't account for interdependencies that may exist given the proliferation of local hospital systems (Luke, Ozcan, and Olden, 1995). We did conduct an ad hoc test adding system membership as a control variable, but found that it was insignificant. It has also been noted that the degree that member hospitals take advantage of shared resources and processes is still an unresolved question (Luke and Wholey, 1999).

CONCLUSIONS

This study examined the drivers of competitive advantage within the hospital industry. Specifically, we examined both the direct and combined effects of market structure (I/O economics), firm-level resources (RBV), and interorganizational relationships (relational view) on organizational performance. The results of this approach indicated that managers, through their strategic actions related to developing and sharing strategic competencies, are able to establish advantageous competitive positions and mitigate some of the negative effects of market structure. Hopefully, these findings are useful to managers in this and related industries and will provide the impetus to extend this type of study to other industries and competitive contexts.

ACKNOWLEDGEMENTS

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[1] Thanks to a reviewer for suggesting this alternative.

paper. Professor Ryman would also like to thank the Cameron School of Business for generously supporting this research effort. A previous version of this paper was presented at the 2001 Southern Management Association meeting, where it was the recipient of the 2001 SMA Outstanding Paper Award. Both authors contributed equally to this paper.

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APPENDIX:

Sample Hospital and Integrated Delivery System Service Survey Potential Strategic Value of the Hospital Service

1. Purpose: The purpose of this survey is to evaluate medical services used by hospitals in terms of the degree to which they may enhance a hospital's reputation and/or result in increasing patient volume.
2. Instructions: For each hospital service, please rate the following hospital services in terms of their *potential for enhancing a hospital's reputation and/or result in increasing patients*. When determining the rating, please consider the potential attractiveness to both patients and physicians.

Hospital resource	No Potential	Very low Potential	Low Potential	Moderate Potential	High Potential	Very high Potential
Aids services	0	1	2	3	4	5

All other hospital services included in the survey:

Anesthesia
Angioplasty
Blood bank
Bone marrow transplant
Burn care unit
Cardiac catheterization
Chiropractic services
Clinical psychiatry
Computerized tomography scanners
Dental services
Diagnostic ultrasound
Dietary services
Electrocardiography
Electroconvulsive therapy
Emergency department
Extracorporeal shock wave lithotripter
General anatomical laboratory services
Heart transplant facility
Heart/lung transplant facility
Hemodialysis/acute renal dialysis
Home health care program
Hospice
Cardiac intensive care unit (cardiac only)
Intensive care unit (mixed)
Kidney transplant facility
General clinical laboratory services
Liver transplant facility
Lung transplant facility
Megavoltage radiation therapy
Neonatal nursery
Neonatal intensive care unit

Magnetic resonance imaging
Neurology special care unit
Neurosurgical intensive care unit
Nuclear medicine department
Observation beds
Obstetrics department
Occupational therapy services
Open heart department
Optometric services
Organ bank
Organ transplant facilities
Outpatient surgery department
Pancreas transplant facility
Pediatric department
Pharmacy services
Physical therapy service
Postoperative recovery room
Psychiatric educational services
Pulmonary/respiratory intensive care unit
Radioactive implants
Recreational therapy facility
Respiratory therapy
Self-care
Skilled nursing long-term care
Social services
Speech pathology
Therapeutic radioisotope facility
Trauma center level 1
Trauma center level 2
Trauma center level 3
X-ray radiation therapy

Strategic value of physician services

1. Purpose: The purpose of this survey is to evaluate integrated delivery system services in terms of the degree to which they are vital to the formation of an effective integrated system of medical care.
2. Instructions: For each system service, please rate its level of *strategic importance as a part of a competitive and effective integrated system of health care delivery*.

Physician Services	Very low Importance	Low Importance	Moderate Importance	High Importance	Very high Importance
Primary care clinics	1	2	3	4	5
Speciality group practices	1	2	3	4	5
Diversified group clinics	1	2	3	4	5