To the Graduate Council:

I am submitting herewith a dissertation written by Deborah A. McFarland entitled "Patterns of Strategic Responses by Hospitals to Changes in the Competitive Environment of the Hospital Industry: A Study in Strategic Groups." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.

Max S. Wortman, Jr., Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Provost
and Dean of The Graduate School

PATTERNS OF STRATEGIC RESPONSES BY HOSPITALS TO CHANGES IN THE COMPETITIVE ENVIRONMENT OF THE HOSPITAL INDUSTRY: A STUDY IN STRATEGIC GROUPS

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Deborah A. McFarland

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ABSTRACT

Recent research in strategy content has focused on the concept of strategic groups as one explanation for persistent differences in strategy and performance across firms within an industry. If strategic groups exist in an industry, they have implications for the pattern of competition in that industry and may serve as a theoretical bridge between industry structure and strategic management research. This study examined the pattern of strategic responses and the formation of strategic groups among a population of competing hospitals in the hospital industry during the period from 1980-1985, a time of dramatic change in the competitive dynamics of the industry. Using Porter's (1980) industry analysis model, this study described and analyzed the competitive industry environment for hospitals recognizing that the nature and character of the competitive conditions facing a firm determine a firm's strategic opportunities.

The study population consisted of all short-stay hospitals in the five standard metropolitan statistical areas of Tennessee (n = 67). Seven strategic responses were measured for each hospital. Values on the seven strategic responses were used as input variables in a clustering algorithm to identify strategic groups in the Tennessee hospital industry. The cluster analysis identified four clusters or strategic groups and these were labelled analyzers, prospectors, reactors and defenders based on the pattern of strategic responses in each group.

Tests were performed for differences between strategic groups on four organizational contingency variables--size, location, multihospital

system membership, and ownership status. Only size was statistically significant. The nonsignificant finding for ownership status was the most surprising result, but appears to support recent findings that the strategic behavior of not-for-profit and for-profit hospitals is converging. When tested for differences in financial performance (ROA), there was no statistically significant difference between the strategic groups. This result seems to refute emerging strategic group theory, but may reflect the loosely bounded nature of the strategic groups in the hospital industry, and the fluid financial state of the industry during the time period of this study.

A model of the competitive dynamics of the hospital industry in Tennessee was developed based on the concept of strategic groups.

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CHAPTER I

INTRODUCTION

While the debate continues among analysts over the efficacy of regulation versus competition as the appropriate public policy instrument to ameliorate the widely perceived cost crisis in the United States health care system (Cohodes, 1982; Goldsmith, 1984; Havighurst, 1982; Luft, 1985; McClure, 1982), the reality for health care providers is an intensely competitive environment. The effects of this competitive environment have rapidly transformed the health care system from an insulated, nonmarket position to an industry confronting one of the most dynamic marketplaces in the U.S. economy (Coddington et al., 1985). The hospital, the dominant economic institution in the health care system as well as the most visible in the community in the provision of health care services, has been the health care institution most buffeted by changes in the competitive environment. How hospitals have responded strategically to this new environment and what patterns the strategic responses have taken are the foci of this study.

The rapidity of the changes which have occurred in the health care system and, particularly the hospital industry over the past five years, offers an unusual opportunity to study the effects of the competitive environment on strategic choices in a population of competing organizations in specified markets. Encompassing a turbulent period for hospitals, the first half of the 1980s spans the time when the rhetoric of competition began to match reality. The period roughly

coincides with Ronald Reagan's first term as President. Reagan's political agenda of less government, less regulation, the elevation of free market ideals, and budget reductions has been enacted in the health care sector with some eagerness but with some unanticipated consequences. While the political environment is not the primary focus of this study, the Reagan years do serve as a relevant time frame marking out a perceptible shift in the country's mood and expectations regarding social and economic matters including those related to the provision and financing of health care services.

The first chapter is divided into four sections. In the first section, a brief review of the literature motivating the research is given. The purposes of the study are stated in the second section. The significance of the study for strategic management, health care management and policy, and industrial organization economics follows in the third section. The chapter concludes with an overview of the material to be presented in the remaining chapters.

Background

Strategic management is an eclectic discipline which draws from many others including economics, political science, psychology and sociology. Integrating concepts from these and other disciplines, strategic management examines the alignment of an organization with its environment through the mechanism of strategy to achieve an organization's objectives (Chandler, 1962; Thompson, 1967). Organizations of all types are within the purview of strategic management.

Assessing the environment of an organization is a critical part of the strategic management process, attracting the attention of many strategic management researchers (Lenz and Engledow, 1986). One model of environmental analysis, the industry structure model, assumes that the dominant aspects of an organization's environment exist in and around the industry in which a firm competes. According to Porter (1980), an industry environment consists of a particular set of competitive forces that present both opportunities and threats to the firm. Driven by the desire to ameliorate the strength of the competitive forces facing it, the firm develops its strategy. As the industry environment changes, eroding a prevailing equilibrium among the underlying structural features of an industry, strategies of individual firms or organizations also change to preserve alignment between the environment and the organization.

The hospital industry has experienced a confluence of changes in the competitive forces facing the industry in recent years (Sheldon, 1984). The bargaining power of buyers, both public (Arons, 1984; Morone and Dunham, 1985) and private (Sloan and Becker, 1984; Goldsmith, 1985), has increased as has the threat of substitutes for the primary business of a hospital, inpatient services (Ermann and Gabel, 1985). Exacerbated by the leverage being exerted by the buyers of hospital services, the intensity of rivalry in existing multihospital markets has increased steadily as hospitals struggle to cope with rapid decline in admissions and average length of stay (Levit et al.,

1985). Considerable excess capacity also exists in the industry (American Hospital Association, 1985) contributing to the rivalry.

The hospital industry has relatively high barriers to entry in the form of certificate of need requirements (Havighurst, 1982), and economies of scale (Cowing, Holtman and Powers, 1983), meaning the threat of entry from new full service hospitals is limited. However, the threat of entry into traditional hospital services is increasing from single service providers, e.g. ambulatory surgery centers, diagnostic centers and walk-in emergency centers, which are not covered in certificate of need requirements in many states (Ermann and Gabel, 1985). Such single service providers may be an efficient way to provide services in the absence of any documented economies of scope (Baumol, Panzar and Willig, 1984).

As the competitive forces acting on the hospital industry change in strength and focus, an individual hospital must respond with specific business level strategies to counter the competitive forces or to take advantage of them (Porter, 1980). A number of strategic typologies have emerged in the strategic management literature which detail various generic strategies, or strategy archetypes (Galbraith and Schendel, 1983). A related stream of research has focused on identifying strategic groups within an industry based on the observed similarity of strategic choices or strategic behavior of firms (McGee and Thomas, 1986). Efforts have been made to use generic strategies as determinants of strategic group membership (Dess and Davis, 1984). If strategic groups exist in an industry, then they will have implications

for the patterns of competition within industries (Harrigan, 1985; McGee and Thomas, 1986).

This research, a study of strategic responses by hospitals to changes in the competitive industry environment, is motivated by the assertion that strategy is the link between a firm and the competitive industry environment. The study is also motivated by the work on strategic groups in other industries which suggested that the appropriate unit of analysis for evaluating and understanding competitive behavior in an industry may not be the firm, but the strategic group which is composed of firms employing similar generic strategies.

Purposes of the Study

The four purposes of this study are:

1. To describe and analyze the changes which occurred in the competitive environment of the hospital industry in Tennessee from 1980-1984.
2. To identify and classify the strategic responses of hospitals in Tennessee to changes in the competitive environment of the hospital industry during the period 1981-1985.
3. To identify and analyze strategic groups in the hospital industry in Tennessee at the end of 1985 based on the patterns of strategic responses made by each hospital during the preceding five years.

4. To formulate a model of the competitive dynamics of the hospital industry in Tennessee based on the concept of strategic groups.

The study of strategic groups within the hospital industry may help to explain differences in both strategy and performance among firms within the industry. Even though there are approximately 6000 hospitals in the United States, the market for hospital services is regional or local. Within regional markets, the hospital industry has an oligopolistic structure and the competitive dynamics of this structure for hospitals are not well understood. The concept of strategic groups is an important theoretical contribution to strategic management research and should be examined in many different industries with varied industry structure and competitive environments. This study is a contribution to the development of strategic groups theory.

Significance of the Study

Although there have been a number of studies which have examined the strategic management process in hospitals (Pitts, 1984), few, if any, studies have examined the strategic decisions of a population of competing hospitals over time (Shortell et al., n.d.). This study may make several contributions to the literature in strategic management, in hospital management and in industrial organization economics.

Contributions to Strategic Management

In the field of strategic management, there is an important body of knowledge which has documented the evolution of specific industries and strategies (Chandler, 1962; Miles and Snow, 1978; Miles and Cameron, 1982; Stubbart et al., 1984) over the life cycle of an industry. This study adds the hospital industry to the list of industries which have been examined. Of particular importance is the fact that the hospital industry is in transition from the growth phase of the industry life cycle to the mature phase, a transition that often means a dramatic shift in strategy for firms in the industry (Porter, 1980; Rumelt, 1985).

Another facet of strategic management which will be investigated is the dynamic aspects of strategy formulation and response to changes in the competitive environment of the firm which is a neglected area of empirical research (Freeman and Boeker, 1984).

Contributions to Hospital Management

As the hospital industry makes the transition from a cottage, non-competitive industry to a competitive, business-like industry, it is incumbent upon researchers to use the tools of business research to investigate the hospital industry. This study will contribute to the application of strategic management concepts in investigating the hospital industry. Perhaps, most saliently, this study will describe the nature of competition in the hospital industry and the role of competition as a stimulant to strategic change, a topic of immediate interest

to policy makers grappling with the effect of competition in health care markets.

Lastly, this study will investigate the effects of competitive forces on strategic choices made by hospitals of different ownership categories, an area of intense interest among public policy analysts attempting to sort out the effects on behavior and performance of the for-profit sector of the hospital industry.

Contributions to Industrial Organization Economics

Industrial organization economics has largely confined its research on the relationship of industry structure to the performance of the industry ignoring the impact of industry structure on the conduct or strategy of a given firm. This research will focus directly on the structure-conduct linkage in the industrial organization paradigm and apply the analysis to a service industry rather than the traditional industrial organization focus on manufacturing industries.

Two postulates in economics which appear to be somewhat in conflict will also be indirectly investigated in this study. Economic theory suggests that the more competitive an industry is, ceteris paribus, the more efficient that industry is. However, it is also affirmed by property rights theory that firms that deviate from the profit maximization goal, that is, firms which are publicly owned or operate on a not-for-profit basis, are by definition less efficient and pursue a different set of strategies than for-profit firms. What has not been investigated is whether public and not-for-profit firms

operating in a competitive environment adopt the behavior postulated by the environment or whether the ownership effect takes precedence over the competitive effects. The hybrid nature of the hospital industry with firms of different ownership status in a similar competitive environment allows the researcher to investigate this interaction.

The study of strategic groups in the hospital industry is a contribution to the growing body of literature on strategic groups in other industries. The theory of strategic groups is related to the structure of industries and the strategic behavior of firms within their industries. As such, it is a bridge between industrial organization economics and strategic management. This study complements research being undertaken which pays attention to the boundary areas between these disciplines.

Study Outline

Chapter II reviews literature from three disciplines, health care management and policy, industrial organization economics and strategic management, focusing on the competitive dynamics of the hospital industry in the United States. A research model is then presented which provides the framework for the major thrust of this investigation into strategic responses and strategic groups in the hospital industry.

Chapter III formulates the specific research questions guiding the study. Definitions of important terms are reviewed and the theoretical justification underpinning each research question is summarized. The major portion of the chapter describes the study sample, the measures

used for critical variables in the research questions, the data sources and data analysis used in the investigation.

Chapter IV presents the application of Porter's competitive forces model to the Tennessee hospital industry from 1980-1984. An analysis of each of the competitive forces and its economic and technical determinants is assessed relative to changes which occurred in Tennessee during the time period of the study.

In Chapter V, the strategic responses of hospitals are discussed and interpreted, followed by an analysis of strategic groups in the Tennessee hospital industry which were identified by the strategic response patterns of each hospital. The chapter concludes with an analysis of differences between the strategic groups in organizational charateristics and financial performance.

The topic of Chapter VI is a presentation of a model of the competitive dynamics of the hospital industry in Tennessee based on the concept of strategic groups. The model is preceded by a discussion of each of the hospital market areas in Tennessee with respect to the competitive environment, strategic group membership, organizational characteristics of the hospitals in the area and financial performance.

The last chapter, Chapter VII, summarizes the purposes, literature review, methodology, and major results of the study. It concludes with a discussion of the limitations of the study and suggested topics for future research.

CHAPTER II

LITERATURE REVIEW AND RESEARCH MODEL

This literature review has five sections. First, the hospital industry is described within the context of the U.S. health care system highlighting the singular characteristics of hospitals and hospital markets. Second, a model of industry and competitive analysis is applied to the hospital industry to identify the salient competitive forces acting on the industry. Third, the place of industry and competitive analysis is discussed within the framework of the strategic management process. Fourth, the concept of strategic groups is reviewed. Finally, a conceptual model is presented which provides the basis for addressing the research questions outlined in this study.

The Hospital Industry in the United States

Hospitals are the dominant economic institution in the health care system of the United States. Spending for health in the U.S. reached $425 billion in 1985, 10.7 percent of the gross national product with hospital expenditures accounting for 39.8 percent of total health expenditures. Since 1965, the first year of the Medicare and Medicaid programs, expenditures for hospital care have increased from $14.0 billion to $166.7 billion in 1985. Not only has the absolute number of dollars increased dramatically, but the rate of increase in hospital expenditures has been between 10 and 16 percent annually up to 1983 when the rate of increase was below 10 percent for the first time since

1965. In 1984, growth in hospital spending, at 6.1 percent, was the slowest in nineteen years (Levit et al., 1985; Gibson et al., 1984). A detailed breakdown of health care expenditures for selected years from 1965 to 1985 is given in Table 2.1.

Virtually any analysis of the health care system begins with this litany of absolute costs and cost increases accompanied by a lament about the relatively poor returns in health status accruing to the American public. Costs of such magnitude for a diminishing return in health status have given rise to a great chorus calling for reforms in a health care system which prompts such an imbalance in the trade-off between costs and benefits. The concern for cost containment is the dominant health policy theme in the 1980s, contrasted with the 1960s and 1970s, when health policy initiatives were primarily directed at increasing access to the health care system to those denied care on the basis of income, age or location. Initiated with the passage of Medicare and Medicaid in 1965, this period of health activism gave way in the late 1970s to a preoccupation with ways to contain costs (Litman and Robbins, 1984) which were by then characterized as out of control. Preoccupied with ensuring access for all, many of the programs passed during the "golden age" of health policy had within them unforeseen cost escalation incentives for providers of health care services including hospitals.

As the dominant institution within the health care system, the hospital has been the focus of intense scrutiny and public policy debate. Since public (federal, state and local) funds accounted for

Table 2.1. National Health Expenditures for Selected Years, 1965-1985

Item	1985	1984	1983	1982	1981	1980	1975	1970	1967	1965
					Amount in billions					
National health expenditures	$425.0	$390.2	$357.2	$323.6	$287.0	$248.1	$132.7	$75.0	$51.5	$41.9
Private	250.2	230.7	209.7	188.4	165.8	142.9	76.4	47.2	32.5	30.9
Public	174.8	159.5	147.5	135.3	121.2	105.2	56.3	27.8	19.0	11.0
Federal	124.4	111.7	102.7	93.2	83.3	71.0	37.0	17.7	11.9	5.5
State and local	50.4	47.8	44.8	42.1	37.9	34.2	19.3	10.1	7.0	5.5
Health services and supplies	409.5	374.5	341.8	309.4	273.8	236.2	124.3	69.6	47.6	38.4
Personal health care	371.4	341.1	314.7	286.5	254.7	219.7	117.1	65.4	44.5	35.9
Hospital care	166.7	155.3	146.8	135.2	119.1	101.6	52.4	28.0	18.4	14.0
Physicians' services	82.8	75.4	68.4	61.8	54.8	46.8	24.9	14.3	10.1	8.5
Dentists' services	27.1	24.6	21.7	19.5	17.3	15.4	8.2	4.7	3.4	2.8
Other professional services	12.6	10.9	9.3	8.0	6.8	5.7	2.6	1.6	1.3	1.0
Drugs and medical sundries	28.5	26.5	24.5	22.1	20.7	18.8	11.9	8.0	5.8	5.2
Eyeglasses and appliances	7.5	7.0	6.2	5.8	5.3	5.1	3.2	1.9	1.3	1.2
Nursing home care	35.2	31.9	29.4	26.7	23.9	20.4	10.1	4.7	2.8	2.1
Other personal health care	11.0	9.4	8.3	7.4	6.8	5.9	3.8	2.1	1.5	1.1

Source: Daniel R. Waldo et al., "National Health Expenditures, 1985," Health Care Financing Review, 8:1 (1986), p. 13, 14.

$89.8 billion or 53.8 percent of hospital expenditures in 1985, and since this percentage has increased steadily over the twenty years of direct public payment for hospital care, this is a legitimate concern.

Characteristics of Medical Care Services

Much of the current debate has been couched in terms of a choice between competitive initiatives and regulatory measures to rectify what are regarded as endogenous structural features of the health care system which exacerbate the cost problem. Medical care, of which hospital services is the largest component, has a number of characteristics that distinguish it from most other products or services. First, the demand for medical care services is a derived demand from the desire for good health. Medical care services are not purchased from any desire for such services in themselves and are certainly not the most important determinant of health status. Another feature distinguishing medical care from other commodities is the uncertainty of illness incidence. The need for medical care is often immediate allowing little time to shop around. Perhaps the most crucial distinguishing characteristic of medical care is the asymmetry of information between provider and consumer (Cohodes, 1982; Evans, 1984).

These three factors are thought to hamper the operation of a normal market giving rise to the rationale for protecting health care services from competition (Evans, 1984). Certain institutional responses to these unique characteristics of medical care services have further distorted the market:

1. The physician serves a dual role acting as agent for the consumer in deciding which services to seek but also serving as the provider of medical services. In a sense, the physician controls the demand for his services earning more fees under the fee-for-service reimbursement method the more services he provides.
2. Due to the risk and uncertainty of increasing medical expenses, consumers (or their employers) purchase insurance to regularize their expenses. Most insurance is characterized by third party payment which insulates the consumer from the direct payment for medical care thus undermining incentives for cost conscious consumer behavior.
3. Not only are payments made by a third party, they are usually based on incurred costs and payment is made retrospectively. This rewards providers with more revenues for generating more costs (Cohodes, 1982).

Taken together, these factors virtually undercut all normal incentives for market efficiency. Table 2.2 summarizes some of the ways in which the medical market diverges from a perfectly competitive market using the industrial organization economics paradigm of structure-conduct-performance as a template.

Policies that have been implemented to contain medical costs range from rate regulation to competition among delivery systems. Most of them have been designed with the goal of cost containment although in some instances cost containment has been only a secondary concern.

Table 2.2. The Market for Medical Care

Assumptions Underlying a Perfectly Competitive Market	Match with Market for Medical Care	Specific Differences
Market Structure		
Large number of buyers and sellers	Mixed	Many consumers Many physicians Few hospitals
Complete information (Absence of uncertainty)	No	Consumer ignorance of the product Risk and uncertainty of need
Firms operate independently (No one seller can influence price)	No	Price fixing (fee schedules) by doctors Cost reimbursement for hospitals
Free entry and exit of all producers	No	Barriers to entry (personnel licensure, hospital accreditation, certificate-of need programs, limited number of medical schools)
The product is homogeneous	No	Multiple, undefined products (services) Varied quality
The consumer is the key decision-maker	No	Physicians act as agents on behalf of consumers
Market Conduct		
Firms are price-takers	No	Hospitals and physicians are price-setters
Firms maximize their profits	No	In general, hospitals are nonprofit organizations which seek to maximize other objectives (e.g., growth, prestige) Similarly, physicians may have noneconomic motives, such as intellectual curiosity, esteem of peers
Market Performance		
The price consumers pay equals the price producers receive	No	Insurance (third-party payments) distorts this equality

Source: Donald R. Cohodes, "Where You Stand Depends On Where You Sit: Musings on the Regulation/Competition Dialogue," Journal on Health Politics, Policy and Law, 7:1 (1982), p. 57.

Selected policies with primarily regulatory aspects are summarized in Table 2.3 and those with primarily competitive aspects in Table 2.4 (Luft, 1985). Hospitals are the focus of a large number of the initiatives suggesting that both the structure of the hospital industry and the behavior of hospitals are contributing to the cost problem.

Structure of the Hospital Industry

Hospitals have never represented a concentrated national industry dominated by a few leading firms although local and regional markets may be dominated by one or two hospitals. Rather, local circumstances typically create wide variations along several dimensions. Nonetheless, hospitals do constitute an industry, albeit a loosely clustered one, which has evolved along an identifiable path. Lawrence and Dyer (1983) have developed a unique grid to map the evolution of an industry along the dimensions of information complexity and resource scarcity. The map of the hospital industry is shown in Figure 2.1. As shown, hospitals existed until recently in an area of the grid marked by high information complexity but low resource scarcity, an anomalous situation in which hospitals faced no incentives to economize or operate efficiently. Changes in the competitive environment of hospitals, precipitated by the cost containment goals of both public and private payors, is moving the hospital into a more adaptive position.

Part of the uniqueness of the hospital industry can be traced to the predominance of the not-for-profit ownership form. Although for-profit hospitals have always existed in the industry, they have tended

Table 2.3. Regulatory Approaches to Cost Containment

Approach	Level of Government	Dates	Target	Focus
Certificate of need	Federal State	1974 1968	Capital investment	Hospitals, nursing homes
Professional Standards Review Organizations	Federal	1972	Utilization	Hospitals
Rate regulation	State	Varying	Charges	Hospitals, nursing homes
Prospective payment using diagnosis-related groups (DRGs)	Federal State	1983 1983	Medicare payments	Hospitals
Economic Stabilization Program	Federal	1971-74	Prices/charges	Physicians, other providers
Medicaid restructuring	State	1979-	Prices, utilization, eligibility	Providers, beneficiairies
Drug and device approval	Federal	Ongoing	New services	Drugs and devices
Coverage of new technologies	Federal State Private	Ongoing	New services	Third-party coverage

Source: Harold S. Luft, "Competition and Regulation," Medical Care, 23:5 (1985), p. 386.

Table 2.4. Competitive Approaches to Cost Containment

Approach	Level of Government	Target	Focus
Development of HMOs	Federal, State	Encourage HMO growth	Shift consumers to lower cost plans; encourage cost competition by others
Removal of bans on advertising	Supreme Court	Price competition	Anticompetitive behavior by professional groups
Vigorous application of antitrust laws	Federal Trade Commission, Justice Dept.	Collusive behavior of providers	Price setting; exclusionary contracts
Competitive bidding for Medicaid contracts	States	Hospital prices, total cost for beneficiaries	Selective contracts, restrict freedom of choice
Selective contracting by insurers	States	Constrain prices and utilization	Alter patient deferral patterns, obtain discounts

Source: Harold S. Luft, "Competition and Regulation," Medical Care, 23:5 (1985), p. 385.

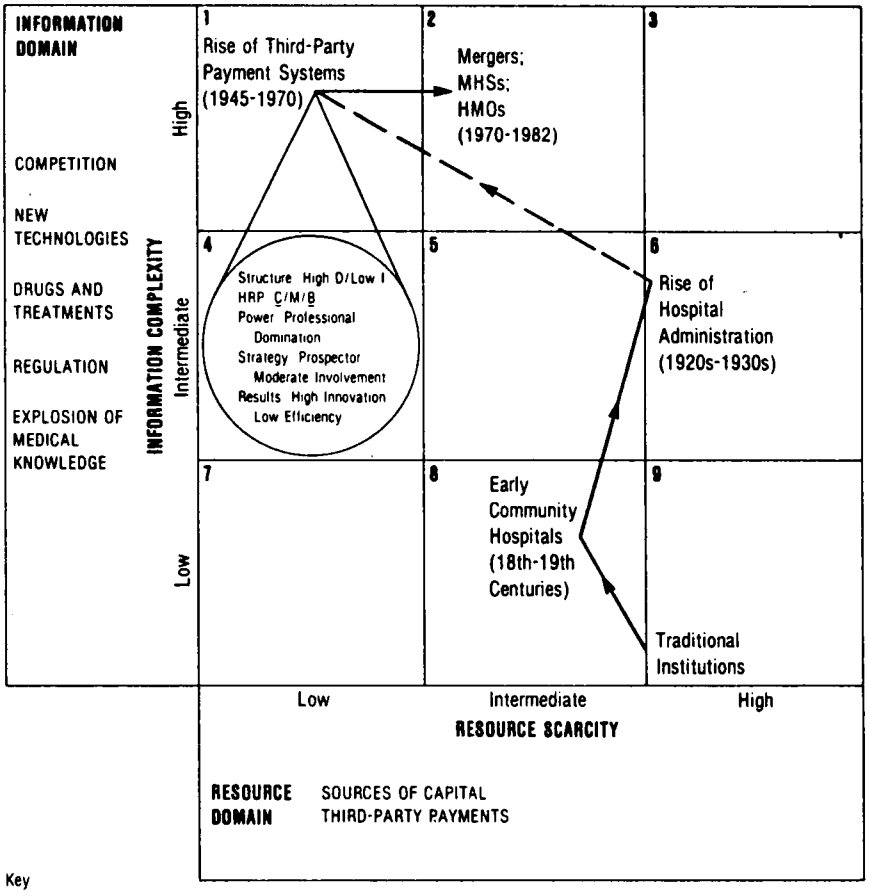


Figure 2.1. Evolution and Organization of the Hospital, 1850-1980

Source: P. R. Lawrence and D. Davis, Renewing American Industry: Organizing for Efficiency and Innovation (New York: The Free Press, 1983), p. 116.

to be small, physician owned clinics rather than full service community hospitals until the last twenty years (Starr, 1982).

The not-for-profit, short-stay hospital is a distinctly American phenomenon in terms of organizational structure, size of budget, and technological complexity. Few community institutions have assembled such vast resources and received such public acceptance (Kovner, 1981). But the decision-making process in the not-for-profit hospital, described as a three legged stool of hospital trustees, medical staff, and hospital administration (Gordon, 1961), may be ill-suited to adapt effectively to the demands of the external environment. According to Perrow (1963), power in the hospital first was centered among trustees when fund raising and legitimacy were most critical, shifting to the medical staff when treating patients became most critical. Power now has shifted to management, as adaptation to external demands and coordination of internal activities have become most critical.

Recognizing that power distribution affects the strategic management process, Carper and Litschert (1983) examined the economic orientation of hospitals as a contingency variable in the power-strategy distribution. Given the traditional triadic nature of the power relationships in the not-for-profit hospital, they proposed that the relative power position of the components of the triad would vary according to the economic orientation of a given institution. Although the results were in the predicted direction, none were statistically significant. Lack of support for the hypotheses tested may not necessarily suggest that economic orientation is not important for a

hospital's strategic behavior, but rather that the exigencies of the external environment have forced not-for-profit and for-profit hospitals to adopt similar operating characteristics.

The growth of the for-profit hospital chains or the investor-owned sector of the hospital industry occurred after the passage of Medicare and Medicaid and is still confined to certain sections of the country, notably the sunbelt states (Johnson, 1985). In spite of the geographic concentration, the strength of the for-profit hospital sector has prompted an increasingly polarized debate on the role of for-profit enterprise in the health care system regarding costs, cross subsidization issues, a two-tiered system of medical care, the ethics of profit and responsibility to the poor (Gray, 1986). Such issues arise principally because of the historical evolution of the hospital as a charity institution providing care to the poor (Stevens, 1982), and not because of any organized social policy decision regarding appropriateness of different organizational forms for the delivery of medical care. This is beginning to change as evidenced by the decision of New York State to exclude investor-owned hospitals from operating in the state (Vladeck, 1985) and, by a proposed resolution of the American Public Health Association (APHA) opposing the growth of for-profit enterprise in the hospital industry (APHA, 1986).

The hybrid nature of the hospital industry, that is, the combination of not-for-profit private hospitals, not-for-profit publicly owned facilities and for-profit or investor-owned hospitals makes it difficult to develop an economic model of hospital behavior. Most

models of hospital behavior start with the assumption that the hospital is a not-for-profit entity and proceed to model this idiosyncratic type of firm (McQuire, 1985). Indeed, most economic models of not-for-profit organizations in general use the not-for-profit hospital as the quintessential example of this type of organization (Hansmann, 1982; Newhouse, 1970) although there is some disagreement whether the not-for-profit form really fits the hospital industry (Clark, 1980). A critical question seems to be whether the not-for-profit orientation for a hospital is a contributory cause of the market failure exhibited by hospital markets or whether it is, in fact, a part of the remedy for these market failures. The fact that hospitals with different economic orientations exist side by side may suggest that these firms have different goals and behavior patterns which complicate the analysis of the conduct and performance of the industry.

Recent studies (Levin et al., 1981; Pattison and Katz, 1983; Renn et al., 1985; Sloan and Vraicu, 1983; Watt et al., 1986) of the relative performance of for-profit or investor-owned and not-for-profit hospitals found that:

1. Total charges and net revenues per admission were significantly higher in investor-owned hospitals mainly because of higher prices for ancillary services.
2. No significant differences were found between the two groups of hospitals in patient care costs per admission or case (adjusted for case mix).

3. Investor-owned hospitals used fewer full-time equivalent employees per occcupied bed and had greater capital costs as a percentage of operating costs than the not-for-profits.
4. No consistent differences were observed in the case-mix indices between the two groups of hospitals providing little support for the cream-skimming hypothesis.

Virtually all studies investigating the differences between investor-owned and not-for-profit hospitals have concentrated on financial performance. There have been few studies focusing specifically on the corporate or business level strategies employed by hospitals of differing ownership type. The underlying strategies pursued by hospitals represent an important and underdeveloped area of inquiry (Shortell et al., 1985). Shortell et al. (n.d.) found no association between the provision of out-of-hospital services and hospital strategies as measured both by Miles and Snow's strategic typology or by specific product/market diversification strategies. Hospitals pursuing such diversification strategies were expected to be more likely to provide a greater number of out-of-hospital services. Although the study showed a lack of association, Shortell et al. noted "that strategies will be more strongly associated with diversification behavior in subsequent years as cost containment and competitive pressures force hospitals to shift from an operational orientation to a more strategic orientation." (p. 28)

Economic theory and strategic management theory both predict that organizations with different goals derived from their ownership status

would employ a divergent set of strategies if confronted with the same environment (Alchian and Demsetz, 1972; Williamson, 1979, 1981; Gruber and Mohr, 1982; Wortman, 1983). Issues of voluntarism, responsiveness and accountability to community needs, humanitarian concerns such as service to the poor, community service and mission are goals that are cited which might differ between ownership type and therefore affect the choice of strategy (Starr, 1982; Vladeck, 1985; Gray, 1986). This study will investigate whether the strategies chosen by hospitals differ dependent upon the ownership category of the hospital.

Transition to a Mature Industry

The health care industry has joined the list of major U.S. industries facing the mature phase of the industry life cycle, although the hospital industry is in the early stages of maturity (Goldsmith, 1981; Sheldon, 1984). The importance of industry evolution to strategy is well documented in the strategic management literature (Porter, 1980; Rumelt, 1979; Cooper, 1979; Primeaux, 1985). Essentially the premise is that industry growth follows an S-shaped curve from the introduction phase through the growth phase plateauing into maturity and then into decline. The length of the stages varies widely from industry to industry and industry growth does not always follow the S-shaped curve. Nonetheless, the industry growth curve is widely accepted as a model of industry evolution. Porter (1980) summarized the main tendencies in an industry in transition to maturity as slowing growth, competition for market share, experienced repeat buyers, greater emphasis on cost and

service, slowing down of additional industry capacity and a falling of industry profits.

In two separate reports on health care trends and the future of the health care delivery system in the U.S., the following trends emerged from the analysis (Arthur Anderson, 1985; Arthur Little, 1985):

1. National health care expenditures are expected to decline from 10.5 percent of GNP in 1985 to 9.1 percent in 1990, as growth of the industry drops from 11 percent per year over the past five years to 5 percent over the next five years.
2. Hospital reimbursement and profitability will be dramatically altered as both government and private insurance payers focus on cost savings.
3. The hospital industry will contract rapidly because the system is vastly overbuilt predicated on erroneous planning assumptions in the 1970's about a bed supply need of 4.5 beds per 1000 population.
4. Multihospital systems will continue to grow and will be positioned best to implement and take advantage of the strategies of choice in the new competitive marketplace.
5. Investor-owned hospitals will substantially increase in number and will be more profitable.
6. Emphasis in health care will shift to ambulatory services and new alternative delivery systems.

7. Hospitals may be at a disadvantage in attracting capital financing and many will have to create new corporate structures and business ventures to compete in the capital market.

A common thread ran through the two assessments--an accelerating rate of change and a new competitive marketplace. In short, the era of the free ride, driven by the generosity of federal health programs like Medicare, appears to be over. In the future, hospitals will be unable to exercise dominance over the health care system in the United States. With gross hospital revenue per patient day now approaching $650 nationally, hospitals have effectively priced themselves out of the market for many routine services. In the process they have created an enormous price umbrella for the proliferation of alternate providers of such services.

The health care revolution began in October, 1983, with the introduction of a prospective payment system (PPS) for Medicare hospital patients. Beginning with a three year phase in period, the objective the program was to wean hospitals away from their cost-plus mentality and instill a more "business-like" orientation through fixed rate payments based on regionally and nationally blended diagnosis-related groups (DRGs). DRGs shocked an industry that had never been exposed to financial risk (Lave, 1984).

Managing the transition to a more intensely competitive economic environment is the principal challenge facing hospital managers, trustees and staff. In this newly competitive environment, it is likely that hospitals will thrive or perish to the extent that they are able

to learn those business and market strategies that have contributed to the success of firms in other industries.

The next section presents a model derived from industrial organization economics which outlines a way to identify the competitive forces acting on a given industry in order to overcome the constraining effects of the competitive forces on the goals of the firm. To note that competition has hit the hospital industry is of little practical or theoretical value without knowing the nature of the competition, the strength of the threat that it represents, and the relative speed with which the competitive environment has changed.

Industry and Competitive Analysis

As a relatively new field of study, strategic management has benefited immeasurably from contributions from behavioral and social science disciplines such as psychology, political science, sociology and economics. The relationship between scholars in strategic management and economists has been somewhat tenuous because of fundamental differences in the way each discipline views the world. Lacking the economist's convenient "ceteris paribus" assumptions, the strategic mangement researcher deals in a more ambiguous, cluttered environment. Notwithstanding the divergent frames of reference, it is recognized that economic theory must be integrated into the strategic management paradigm and vice versa.

Teece (1985) argued persuasively that economics needs more strategic content, while Camerer (1984) contended that strategy needs more

economic thinking. Both represent a new breed of economists who are drawing on the theoretical richness of industrial organization economics to delve into the more pragmatic realm of strategic management. Economic analysis has until recently yielded few insights into strategic management issues because the new classical theory of the firm was created by assuming away the very existence of those phenomena that most concern students of strategic management. The theory was sustained by the mainstream microeconomist's commitment to the position that the theory of the firm not be required to describe the actual behavior of firms.

Recent contributions from industrial organization economics have sought to mitigate these shortcomings by treating the normative theory of industrial organization economics embodied in the classic structure-conduct-performance paradigm as a positive theory of strategic management (Caves, 1980). Works by Harrigan (1985), Rumelt (1985), Spence (1979) and Teece (1985) demonstrated that economic concepts can model and be used to test strategic phenomena.

Porter's Competitive Forces Model

The most promising integration of strategic management and industrial organization economics in this regard has been the work of Porter (1980, 1985) on the analysis of the competitive structure of an industry and the subsequent competitive strategy for firms in that industry. His competitive strategy framework derives its core from the industrial organization tradition that industry structure determines industry

conduct which in turn determines industry performance. While industrial organization economics has focused almost exclusively on industry level analysis and tended to view conduct or strategy as a black box variable, Porter's framework made explicit the influence of competitive industry structure on an individual firm's choice of competitive strategy and highlighted strategy as the variable of most interest to firms in trying to develop and maintain a competitive position.

The crux of his argument is that there are a basic set of competitive forces which affect the state of competition in any industry and that the goal of competitive strategy is to find a position in an industry where the firm can best defend itself against these competitive forces or can influence them in its favor. The key for developing strategy is to delve below the surface and analyze the sources of each of the competitive forces. Comparing Porter's approach with the basic industrial organization structuralist paradigm as summarized by Scherer (1982), (see Figure 2.2.), shows that Porter has refined the paradigm to make the interaction of the parts more visually apparent.

The collective strength of the five forces is the essential determinant of industry attractiveness, one of the fundamental building blocks in strategic management (Hax and Majluf, 1984). Underlying each of the five competitive forces is a number of economic and technical determinants of industry structure which in turn define the rules of competition in an industry with which the firm must cope strategically. Business strategy is the creation of a defensible position vis á vis the competitive forces. The firm can find positions in its industry

Figure 1A.
Forces Driving Industry Competition

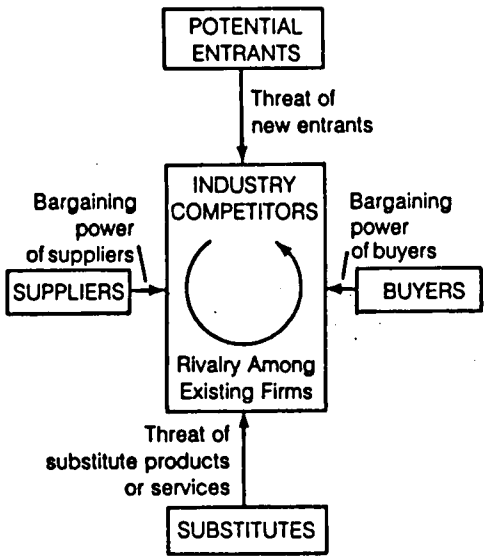


Figure 1B.
A Model of Industrial Organization Analysis

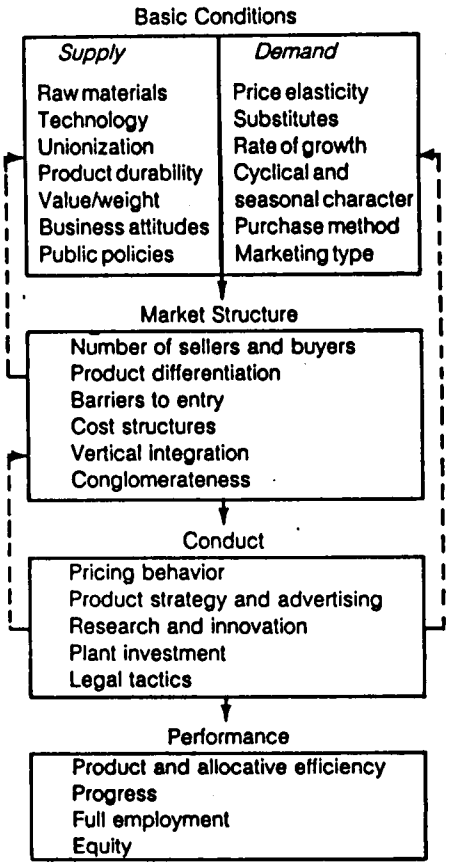


Figure 2.2. The Structure-Conduct-Performance Paradigm of Industrial Organization Applied to Competitive Strategy

Source: D. L. Teece, "Economic Analysis and Strategic Management," in Strategy and Organization, edited by Glenn Carroll and David Vogel (Boston: Pitman Publishing Inc., 1984), p. 86.

that are more defensible against the forces than others. Moreover, the industry structure changes over time and can provide the opportunity for strategic repositioning. Most importantly, the firm, through strategy, can influence every one of the five competitive forces in its favor. A central axiom of the competitive strategy framework is that although the industry structure is to some extent defined by exogenous economic and technical factors, strategy can unlock the constraints of industry structure. Hence the promise is for the firm to change the rules of competition in an industry in its favor by identifying the fundamental factors that determine the rules in a particular industry. The essence of strategic management in the structuralist framework is to shield the firm, to the maximum legally possible, from competitive forces (Porter, 1981).

Applicability of Competitive Forces to Hospital Industry

The underlying economic and technical determinants of each of the five forces in Porter's model are shown in Figure 2.3. This section discusses each of the forces and its relevant determinants with reference to their applicability in the hospital industry based on a review of theoretical and empirical literature. Based upon this review, each of the competitive forces can be operationalized for use in assessing the changes in the competitive environment of hospitals in Tennessee.

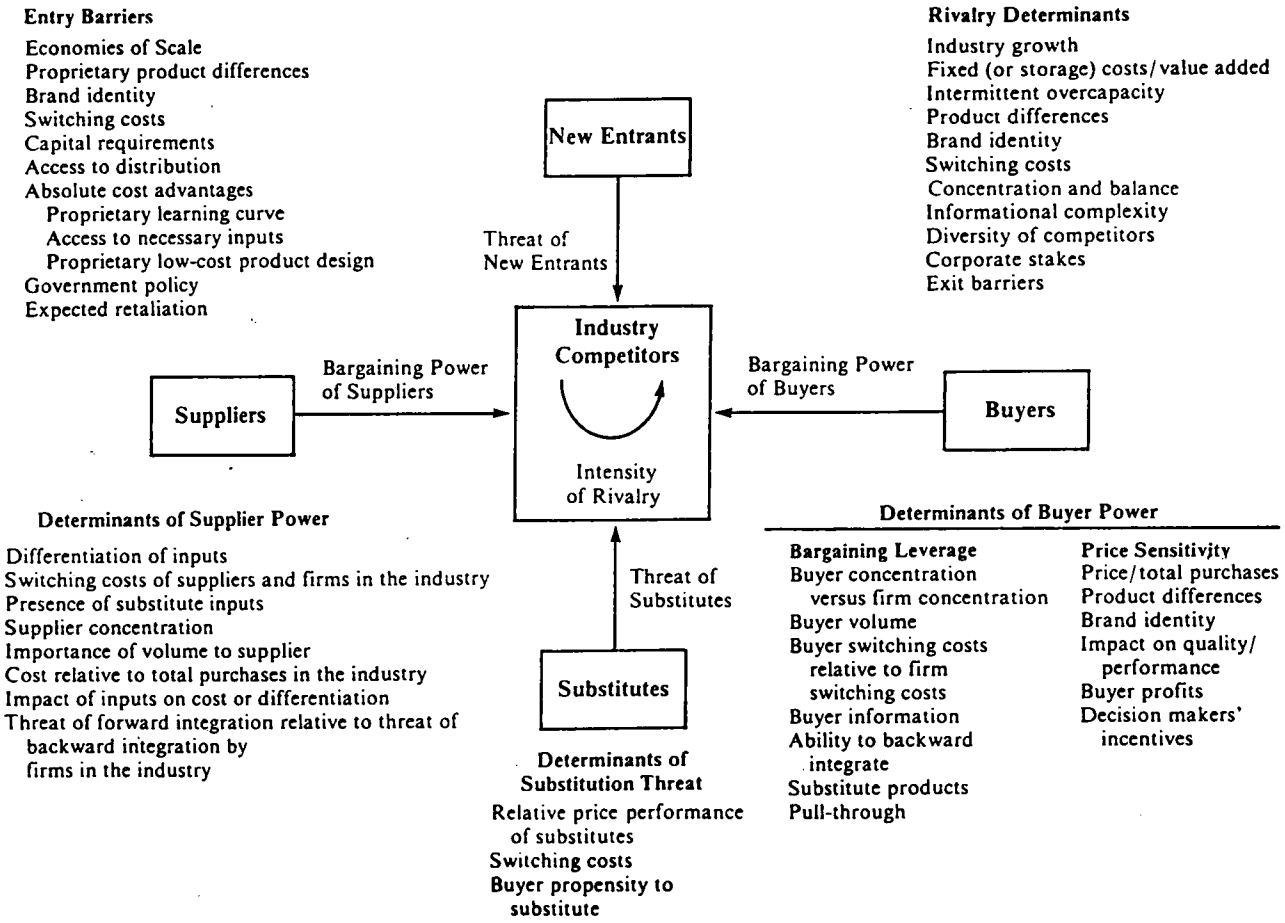


Figure 2.3. Elements of Industry Structure

Source: Michael E. Porter, Competitive Advantage (New York: The Free Press, 1985), p. 5.

Threats to Entry

In a neat turnaround from traditional industrial organization economics where barriers to entry are thought to lead to concentration and high profits, and thus are considered an impediment to perfect competition, the sina qua non of Porter's model is that barriers to entry are positive from the firm's point of view. In fact, a key element of strategy is the erection of entry barriers where possible.

The threat of entry into an industry depends on the barriers to entry coupled with the reaction from incumbents that the entrant can expect. Barriers to entry can be classified into five broad groups: (1) absolute unit cost differences, (2) economies of scale, (3) capital cost requirements, (4) product differentiation and (5) government policy or legal barriers (Bain, 1956).

Absolute Unit Cost Differences

There is no evidence to suggest that any type of hospital has absolute cost advantages due to a proprietary learning curve or any other reasons. Teaching hospitals may have an absolute cost disadvantage because of the nature of medical education (Steinwald and Sloan, 1982).

Economies of Scale and Scope

Although many early empirical studies of hospital costs found evidence suggesting economies of scale over a wide range of hospital size, more recent studies have generally concluded that any scale economies that do exist are quickly exhausted, so that hospital costs are

typically characterized by constant long-run average costs beyond some rather small number of beds (Cowing, Holtman and Powers, 1983). In any case, size does not appear to be the most significant variable if scale effects are to be accurately measured in hospitals. Rather, the most important variable appears to be case or service mix explaining between one-half and one-third of the cost variation among hospitals (Barer, 1982; Watts and Klastorian, 1980).

Another source of economies of scale may be associated with multihospital systems (Ermann and Gabel, 1984), that is, groups of hospitals organized under various collaborative arrangements varying from shared purchasing agreements to actual ownership (Brown and McCool, 1980). Preliminary evidence suggested that multihospital systems realize economies of scale in three primary ways:

1. By securing discounts and obtaining superior price information thus realizing savings through mass purchasing.
2. By using capital facilities and equipment more efficiently than independent hospitals through sharing and specialization.
3. By using highly skilled personnel more efficiently than independent hospitals.

There is some argument that while multihospital systems may attain the expected benefits at the institutional level, there is no evidence of economic benefits at the community level (Zuckerman, 1979).

Virtually no empirical work on economies of scope in hospitals has appeared in the literature because of the difficulty of defining and measuring hospital output. A relatively recent development in economic

theory, economies of scope requires estimation of cost models for multiple product firms (Baumol, Panzar and Willig, 1982). Such models are difficult to specify and even more difficult to interpret. In the simplest specification, economies of scope prevail when the resource cost of producing services jointly is less than the sum of the individual costs of producing each service separately.

Theoretically, it is economies of scope that leads to the economic justification of a multiproduct or multiservice firm, such as a general care hospital. Recent work (Cowing and Holtman, 1983) suggested the existence of economies of scope with respect to pediatric services with possible diseconomies of scope with respect to emergency room services. No other study has confirmed this results. Whether economics of scope prevail in the hospital industry is central to questions of optimal industry structure and the particular concerns of hospital service configuration and institutional consolidation.

Capital Requirements

Hospitals require large sums of capital to replace, renovate, modernize and expand services and facilities. A limited number of empirical studies strongly support the proposition that multihospital systems operate at an advantage in the financial markets because they are perceived as sounder risks given their larger revenue, asset and equity bases, and debt capacity (Ermann and Gabel, 1984). Hospitals which are small, located in an economically depressed area, those with declining market shares, those with a poor payor mix and an overdependence on cost or less than cost reimbursement, those with a large

number of competitors in the market area and those with an inability to attract and retain new physicians and staff are very vulnerable and ill-suited to gain access to capital markets (Cohodes and Kinkead, 1984).

Access to capital and of what kind is a critical element in the competition between the investor-owned for-profit and the not-for-profit segments of the hospital industry. Currently, reimbursement policy from the federal level is much more generous for investor-owned than not-for-profit hospitals. The former are paid a return on equity capital and are reimbursed for expense items such as property taxes that not-for-profit hospitals do not pay (Anderson and Ginsburg, 1984). In addition, investor-owned hospitals have access to equity capital which is unavailable to not-for-profit hospitals, while tax exempt bond issues, the traditional source of capital for the not-for-profit hospital, have declined (Brown and Saltman, 1985).

Product Differentiation

Certain products or services are highly differentiable, whereas others are not. The key to understanding product differentiation lies in buyer behavior. If buyers believe that all brands and models of a product or service are absolutely identical in their ability to satisfy certain needs, there would be no product differentiation. Sellers would be forced to compete solely on the basis of price. If there are genuine, objective, nonprice differences between brands, then product differentiation is based on the knowledge about these attributes. The key variables in determining buyer knowledge are the buyer type and the

product or service type. If the product or service is an experience good, the consumer typically acts in a well informed manner, and is much less sensitive to advertising or brand names (Scherer, 1982).

What are the attributes of medical services and specifically hospital services which affect buyer behavior? In the medical marketplace, the assumption is made that the individual consumer is uninformed and lacks knowledge about both the nature of medical services and the timing of the purchase of such services. Thus the physician determines when and where services are given and what kind and level of medical services are needed. She acts as the consumer's agent. This is particularly true for hospital services where the physician acts as the gatekeeper. It is the often stated adage that patients or consumers do not select hospitals; rather, they select physicians who select hospitals (Pauly and Langwell, 1983).

Product differentiation is a barrier to entry if an industry has a highly differentiated product. Marketing a differentiated product entails substantial costs in advertising, branding and packaging. The question is whether hospital services in general are highly differentiable. Since the quality of the service is difficult to determine before purchase, hospital care might best be classified as an experience good and thus sensitive to advertising. Because of the relative infrequency of purchase of the good, the high unit cost and the insulation of the consumer from the actual purchasing decision, advertising for hospital services is actually very low (Folland, 1985). Thus product differentiation does not appear to be an important barrier to

entry for hospital services although there may be certain outpatient services, e.g., outpatient surgery, alcohol treatment units, where advertising will flourish (Folland, 1985). Nevertheless, hospitals have continued to increase their advertising budgets dramatically either as a defensive reaction to a competitor's challenge or simply to be doing something. Most hospital advertising is designed to increase customer awareness of services available. No data are available on changes in market share attributable to the size of advertising expenditures (Super, 1986).

Government Policy or Legal Barriers

The most tangible barrier to entry for firms wishing to enter the hospital industry is the presence of numerous governmental and/or legal barriers including certificate of need regulation, rate review regulation, licensing and accreditation requirements.

Under Public Law 93-641 passed in 1974, certification of need (CON) for new facilities and services has been carried out through an elaborate process administered at the state level and embodied in state certificate of need laws. CON laws were conceived to restrain the perceived impulse of health care institutions of all kinds to overinvest in unneeded facilities and to provide unneeded services. A CON must be obtained from the state before certain capital investments in facilities may be made or certain new health services may be instituted.

Empirical studies on the effect of certificate of need on restraining total hospital costs and investments have consistently shown that there is no effect, while redistribution effects have been

negligible (Havighurst, 1982). Nevertheless, certificate of need programs appear to be embedded in state law because the CON process serves as an important source of information, a forum for public debate and a restraining influence on indiscriminate expansion. While CON programs were opposed by the hospital industry at their inception, they are now firmly supported by the industry, a good example of regulatory capture (Stigler, 1962). An issue which has not been addressed in previous research concerns the implications of certificate of need regulation for strategic behavior and adaptation of hospitals confronted with an increasingly competitive environment where first mover advantage and strategic surprise is rewarded. Hospitals also face a new set of competitors not subject to CON requirements.

Of necessity, research on the effects of rate setting on hospital costs has been limited because only seven states have had mandatory rate-setting programs for extended time periods. While results are somewhat mixed for rate review as a cost containment measure, the two states with the most mature programs, New York and New Jersey, have achieved savings in real spending per case and per capita population as well as in per diem spending (Morrisey, Sloan and Mitchell, 1983). It is perhaps no surprise that these two states have also been identified as places where hospitals are starved for capital funds.

In summary, the most significant barriers to entry in the hospital industry are high capital requirements, particularly for free-standing not-for-profit hospitals, and mandated certificate of need

requirements which pose a substantial barrier for both incumbents of the industry as well as potential entrants into the hospital industry.

Threat of Substitutes

Substitution is the process by which one product or service supplants another in performing a particular function or functions for a buyer. Penetration against substitutes is a major reason why firms and industries grow, and the emergence of substitutes is a major reason why they decline (Porter, 1980).

While relatively straight-forward conceptually, it is not easy to identify the substitutes an industry faces. In economics product substitutes are those with a high cross-elasticity of demand but this simple statement masks the difficulty of actually identifying products that perform the same generic functions as an industry's product or service.

In the hospital industry, the utilization of inpatient services has decreased dramatically, at least in part because of substitution from outpatient services. Growth in outpatient services has been stimulated by changes of incentives in the reimbursement structure, changes in technology, and more price conscious behavior on the part of consumers and purchasers of care. Demonstrating that the demand for outpatient care was quite responsive to economic factors, Davis and Russell (1972) estimated the demand elasticity of outpatient services with respect to price was -1.0.

Examples of outpatient services which substitute for traditional inpatient services are free-standing emergency centers, free-standing

ambulatory surgery centers, walk-in medical clinics, the so-called doc-in-the-box medical centers and free-standing diagnostic centers (Ermann and Gabel, 1985).

Another important kind of substitute is the substitution of health care for medical care. This has been demonstrated by the dramatic behavior change exhibited by the American public regarding preventive services, wellness and fitness concerns, and nutritional awareness. As individuals take more responsibility for their own health, there is a decline in the use of certain kinds of medical services.

In short, the strength of the threat of substitutes as a competitive force in the hospital industry appears to be growing although it is not clear what total effect this will have on the actual utilization of inpatient services.

Bargaining Power of Buyers

A buyer group in an industry is powerful if the following conditions are true:

1. The buyer group is concentrated or purchases large volumes relative to seller sales.
2. The products the buyer purchases from the industry represent a significant fraction of the buyer's costs or services.
3. The industry has standard or undifferentiated products.
4. The buyer faces few switching costs if turning to another seller.
5. The buyer poses a credible threat of backward integration.
6. The buyer has full information (Porter, 1980).

In the hospital industry the buyers or purchasers of care are not individual consumers, but large private and public group buyers including major employers, unions and federal and state governments. Historically, the purchasers of hospital care have done so indirectly through the purchase of medical care coverage from insurance firms who transfer the dollars from the buyer to the seller acting the role of third party payers. As costs have escalated, the buyers of hospital care have become more prudent purchasers and have begun to exert their buying leverage eliminating, in many instances, the insurance middle man through the vehicle of self-insurance. Coalitions of purchasers of health care have been formed to negotiate directly with the suppliers or providers of health care for discount prices, to encourage cost containment initiatives and to collect, analyze and disseminate information on cost and utilization patterns of specific populations (Fielding, 1984). Most Fortune 500 companies in the United States participate in one or more of such coalitions and engage in a number of other cost containment strategies in the face of inexorable increases in health insurance premiums. It is estimated that corporate health care expenses are rising at such a fast rate that, if unchecked, in eight years they will eliminate all profits for the average Fortune 500 company (Herzlinger and Schwartz, 1985). What is occurring in the health care sector is the so-called buyers' revolution (McClure, 1985).

Complementing, and in a sense foreshadowing, the mounting pressure from private purchasers of health care on hospital costs, Medicare shifted its hospital reimbursement policies in October, 1983. The Tax

Equity and Fiscal Responsibility Act of 1982 (TEFRA) and the 1983 Social Security Amendments established a prospective payment system based on diagnosis related groups (DRGs) which introduced profound changes into Medicare's hospital reimbursement methods. First, the basis of reimbursement shifted from an implicit per diem system based on retrospective costs to an explicit per case system based on prospective determination of costs; second, case mix was incorporated into the payment system; and third, a limit was placed on the rate of allowable increase in costs per case (Arons, 1984; Lave, 1984). Medicare's proportion of total hospital expenditures was approximately 28 percent in 1984 so the DRG prospective system has had an extraordinary effect on the behavior of hospitals giving hospitals an easily recognizable incentive to produce a predetermined bundle of services at the minimum possible cost.

One concomitant effect of the Medicare prospective payment system has been to illuminate the problem of cost shifting, the cross subsidization of public program beneficiaries by private payers (Sloan and Becker, 1984). Hospitals, losing revenues from Medicare, have attempted to shift the cost of hospital services to private purchasers over whom they have the most leverage, the private insurance industry. The response from the insurance industry has been a call at the state level for an all-payers rate, that is, a negotiated rate for all purchasers of hospital services based on average cost (Meyer and Johnson, 1983).

As a competitive force in the hospital industry, the bargaining power of buyers is quite significant and growing stronger as buyers,

both public and private, exert the leverage which has lain dormant for many years.

Bargaining Power of Suppliers

The conditions making suppliers powerful tend to be the opposite of those listed above for powerful buyers (Porter, 1980). Suppliers in the hospital industry include physicians because of their role as gatekeepers to the health care system; the suppliers of capital; and the suppliers of consumable goods and equipment used in hospitals, a large industry in its own right.

Perhaps the most significant change in the bargaining power of suppliers is that caused by the growing supply of physicians. Consensus is emerging that there is a doctor glut imminent in the U.S. In 1980, the Graduate Medical Education National Advisory Committee (GMENAC) report projected an excess of 70,000 physicians by 1990 and 145,000 by the year 2000. The Department of Health and Human Services projected that the number of physicians per 100,000 population will increase from 199 in 1981 to 235 in 1990 and 260 by the year 2000 (Iglehart, 1986). As the absolute number of physicians increases the bargaining power of an individual physician declines vis á vis a given hospital, but new collaboration among groups of physicians who are well organized can be expected to exert considerable power particularly if the group poses a credible threat of forward integration. In such cases, the supplier group becomes a competitor as well (Boland, 1985; Vladeck, 1985; Wright and Wright, 1984).

Physicians not only are suppliers of service in the hospital industry but they also supply the patients to the hospital in the form of admissions. There is an intrinisic dual authority in the hospital which has caused some researchers to observe that the hospital is a kind of doctor's cooperative (Pauly and Redisch, 1973; Pauly, 1980) and to note that the hospital is really two organizations in one (Harris, 1977). A critical issue faced by both physicians and hospitals is how to ensure a source of patients which are increasingly in short supply. The emergence of vertically integrated systems of care such as health maintenance organizations, tying the financing and delivery of health care services to a captured population, is one solution. Another is the trend toward joint ventures between hospitals and physicians (Richman, 1986).

The hospital industry has large capital requirements. To date, the financial community has viewed hospitals of all kinds as a good investment decision although the sources of capital changed dramatically from 1973 to 1983. Tax-exempt bonds provided over 50 percent of the capital for hospital construction in 1983 contrasted with less than 20 percent in 1973 (Cohodes and Kinkead, 1984). The era of easy capital access for hospitals, and in particular, for not-for-profit hospitals is ending with a combination of downward pressure on revenues, a policy of more reliance on private market capital and equity financing and a decline in available tax-exempt bonds (Brown and Saltman, 1985). This shift is expected to increase the competitive advantages enjoyed by the investor-owned hospital sector (Anderson and Ginsburg, 1984).

While hospital supply companies enjoyed explosive growth prior to the implementation of prospective payment, the halcyon days appear to be over. Prospective payment forces hospitals to look at supplies as commodities and as hospitals are caught in a decling revenue squeeze, they will transfer the pressure to suppliers (Bernstein Research, 1986). Recognizing the possibility of synergy between hospitals and hospital supply firms, Hospital Corporation of America (HCA), the world's largest investor-owned hospital management company, proposed a merger with American Hospital Supply in 1985. The proposal was not viewed favorably by financial analysts because of potential antitrust questions and because of the concern that both the hospital management and hospital supply businesses are in rapidly maturing cycles of growth. In the view of the market, synergy was therefore not to be expected in the merger of the two firms (Worthy, 1985).

The combination of an oversupply of physicians, a declining pool of patients for hospitals and physicians and the profit squeeze on hospital supply companies, presents a mixed picture for the evaluation of the strength of the bargaining power of suppliers in the hospital as a competitive force.

Intensity of Rivalry Among Existing Competitors

The intensity of rivalry among existing competitors is the result of a number of interacting structural features, many of which are salient in the hospital industry. Although most local hospital market areas can be characterized as loose oligopolies (Greenberg, 1978; Salkever, 1980), nationwide there are 5,783 short-term community

hospitals in the United States with 1,018,000 beds. The average number of beds per hospital is 176 with an average annual occupancy rate of 73.5 percent (American Hospital Association, 1984).

The hospital industry had a sustained period of growth from 1965 to 1983 growing from $14.0 billion to $148.8 billion in expenditures, an average of well over 12 percent a year. For the first time in 1983, growth in expenditures for hospital care was below 10 percent and in 1984, growth at 6.1 percent, was the slowest in twenty years (Levit et al., 1985). Nonetheless, hospital expenditures totalled $166.7 billion, 45 percent of all personal health care spending in 1985.

Total national health care expenditures, representing 10.7 percent of the gross national product in 1985, are projected to slow to approximately 5 percent over the next five years, down from 11 percent over the past five years. Data on use of hospital services in 1984 provided evidence of the dramatic changes taking place:

1. Admissions declined 1.4 million (down 3.7 percent from 1983).
2. Inpatient days were off 22.7 million (down 8.6 percent).
3. Length of stay declined to 6.7 days--the lowest level ever recorded (Levit et al., 1985).

Figure 2.4 compares economic activity in the health care industry and the U.S. as a whole for 1984. Despite these ominous signs for the hospital industry, profits in 1984 were up by 27.6 percent from 1983 perhaps representing the degree of slack in the industry.

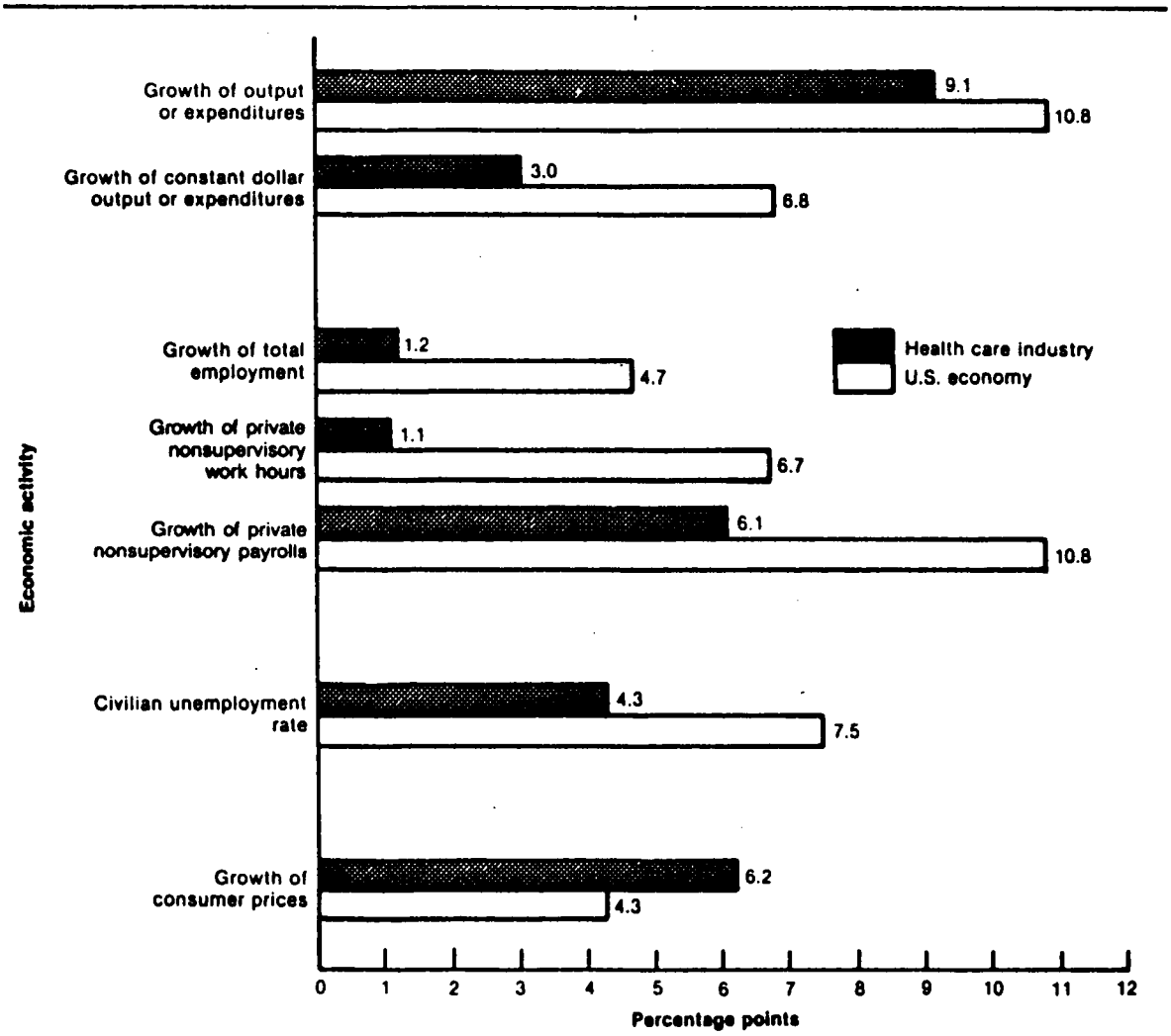


Figure 2.4. Measures of Economic Activity in the Health Care Industry and in the United States as a Whole, 1984

Source: K. R. Levit et al., "National Health Expenditures, 1984," Health Care Financing Review, 7:1 (1985), p. 7.

In addition to slow industry growth, high fixed costs in hospitals contribute to the the intensity of rivalry among competitors in the hospital industry. Reputable industry studies and planning agency estimates use a rule of thumb that an unoccupied hospital bed costs 50 to 60 percent of the cost of an occupied bed. As occupancy rates decline, the fixed costs of hospitals will continue to be high because many hospitals undertook significant expansion programs in the 1970s, incurring long-term debt obligations which were based on sustaining occupancy levels at a rate parallel to the historical rates. For the most part, debt was also assumed during a period of high inflation and high interest rates.

Exit barriers in the hospital industry are considerable given the high sunk costs, the prohibition against exit dictated by state certificate of need regulations and, perhaps most importantly, the loyalties of many communities toward the hospital as an absolutely necessary institution for community prestige and pride as well as livability. Most community hospitals have historically served certain segments of the community, based on income, religious preference or location, and people tend to have very strong feelings about "their" hospital. For this latter reason, many hospitals, confronted with appalling financial loses, have remained open. The number of hospitals which have closed in what might be considered a shakedown phase of hospital industry evolution is insignificant.

The set of institutions most subject to financial stress--rural hospitals, often the sole provider of hospital services, and teaching

and research hospitals--have strong community followings and serve populations who would otherwise go unserved (Graham, 1985). Confronting the often conflicting dilemmas of financial viabilty and the provision of needed community services poses a critical public policy question for both public and private providers of health care services (Vladeck, 1985).

From this brief assessment of factors leading to intensity of rivalry among exsiting competitors, the intensity of rivalry appears to be increasing.

Summary of Competitive Forces and Relevant Determinants in the Hospital Industry

Based on the preceding review of theoretical and empirical literature on the application of the competitive forces model to the hospital industry, the most relevant technical and economic determinants are summarized as follows. First, capital requirements and government barriers, especially certificate of need statutes, appear to be the most important barriers to entry into the hospital industry. Of less importance as barriers to entry are economies of scale and product differentiation. Second, the threat of substitutes for inpatient hospital services is increasing. Third, the bargaining power of buyers is becoming significantly greater while the bargaining power of suppliers, particularly physicians, is declining. Finally, the intensity of rivalry among existing competitors is becoming much stronger as the growth of the industry slows.

This analysis of the competitive forces suggests that the state of competition in the hospital industry is quite volatile and that the ultimate profit potential in the industry, as a function of the strength of the competitive forces, should decrease.

Strategic Management

This section briefly reviews the position of industry and competitive analysis within the strategic management process. Problems in the measurement of strategy are also discussed.

Strategic Management Process

As defined by Schendel and Hofer (1979), strategic management is a process that deals with the entrepreneurial work of the organization, with the organization's renewal and growth, and more particularly, with developing and utilizing the strategy which is to guide the organization's objectives. While there is still some disagreement among strategic management theorists whether strategy includes elements of both ends (objectives and goals) and means (courses of action), the definition proposed by Schendel and Hofer is in concert with the consensus that has emerged on distinguishing between strategy formulation and strategy implementation (Hodgetts and Wortman, 1980; Hrebiniak, 1986; Galbraith and Kazanjian, 1986). Most models emphasize the process of strategic management rather than the content of strategy itself. Although not made explicit in many definitions of strategic management, the notion that strategy describes the essential linkage between the

firm and its environment is a key concept (Thompson, 1967; Snow and Miles, 1983).

Ansoff (1979) discussed strategy content in terms of four components--product/market scope, growth, competitive advantage, and synergy. He regarded strategy formulation as the process of making decisions about the four components. For him, the critical environmental arena was the economic one. Learned, Christensen, Andrews and Guth (1965) also included four components of strategy--market opportunity, corporate competences and resources, personal values and aspirations of managers, and obligation to society beyond that of the stockholders--which expanded the environment of consequence to firms in their choices of goals and strategy. In these older models of the strategic management process, the concept of competitive and industry analysis was rarely made explicit. It was as though the competitive environment was considered a relatively inconsequential element in the process of determining strategy.

The lack of definition of industry and competitive analysis can be seen vividly by examining the model of strategic management proposed by Schendel and Hofer (see Figure 2.5). This model, set force as a "strategic management paradigm" for the 1980s, is silent regarding the influence of the industry and competitors on the formation and implementation of strategy.

Until 1980, when Porter propelled the concept of industry and competitive analysis into the forefront of strategic management thought, most models of the strategic management process either ignored the

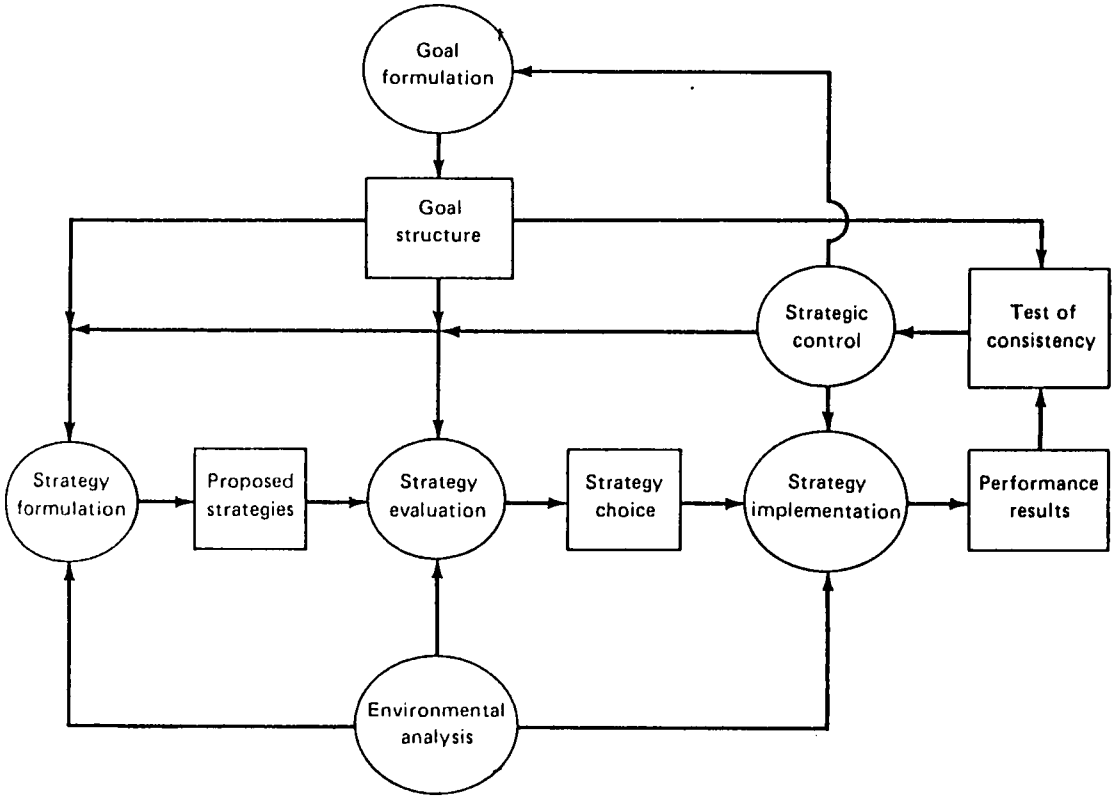


Figure 2.5. A Strategic Management Process Paradigm

Source: D. E. Schendel and C. W. Hofer, eds., Strategic Management: A New View of Business Policy and Planning (Boston: Little, Brown and Company, 1979), p. 15.

competitive dynamics of an industry as a significant factor in formulating strategy or included industry and competitor analysis as a nominal part of the external environmental assessment. Porter's contribution was delineating the elements to be considered in doing a competitive analysis as part of the external analysis in the strategic management process. His analysis focused on the dynamic, interactive nature of the competitive environment suggesting linkages between competitive forces and types of strategies for meeting the competitive forces. Perhaps recognizing the inadequacy of their own model, Schendel and Hofer (1979) ascertained that the greatest need in the environmental analysis component of the strategic management process was for better models of competitive market structures on strategy. They also indicated that much better understanding of the influence of competition on strategies was needed.

Theory Building in Strategic Management Research

Freeman and Lorange (1985) proposed a framework for theory building in strategic management research noting that

> research in strategic management increasingly points toward the necessity for a framework for research which elaborates the basic building blocks of a theory of strategic management, thereby seeing justification of new knowledge as largely one of putting it into an overall context. (p. 14)

A major problem facing researchers is the current piecemeal approach to research. As proposed by Freeman and Lorange, the framework for sorting research questions incorporates four dimensions--strategic tasks, decision level, decision purpose, and decision context. The bottom

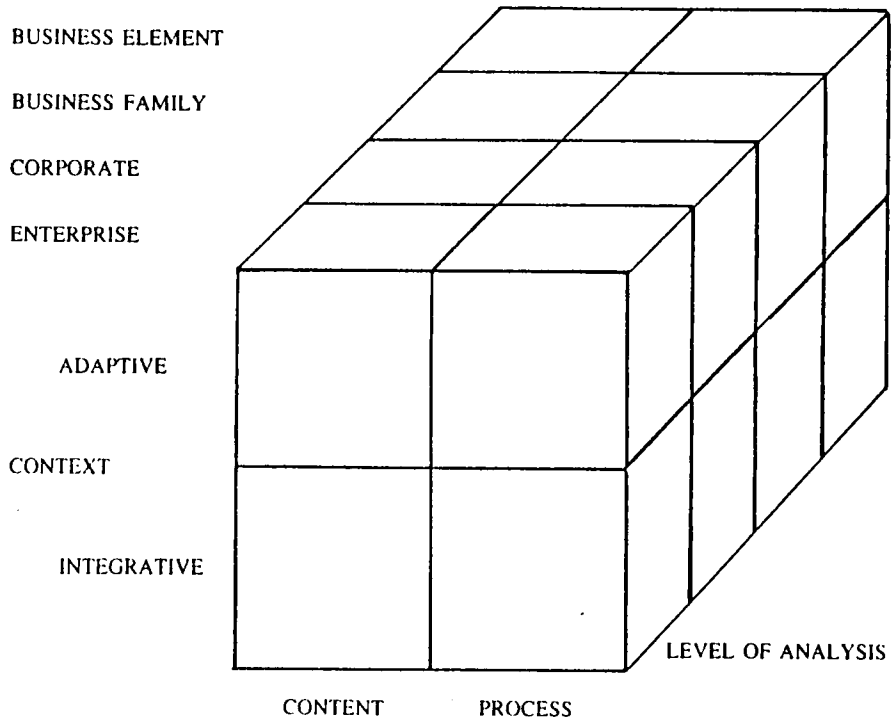
diagram in Figure 2.6 illustrates research topics which appear in the business family level of analysis, direction-setting strategic task cell. The top diagram in Figure 2.6 shows the overall framework proposed by Freeman and Lorange.

The research in this study can be placed in the context of strategic management research by employing the Freeman and Lorange framework. On the task dimension, the study addresses direction setting rather than direction implementing strategic decisions. On the decision level dimension, the study investigates both business family level decisions and business level decisions.

The study focuses on the content of strategic decsions rather than the process of strategic decisions. Lastly, on the decision context dimension, the study is an example of adaptive research focused on the adaptation of a hospital or group of hospitals to the external environment. Integrative research in Freeman and Lorange's schemata is that which focuses on internal processess and decisions.

Dimensions of Strategy and Methodologies for Measuring Strategy

The study of strategy in organizations is fraught with theoretical and methodological difficulties (Snow and Hambrick, 1980), many of which are pertinent to this study. Initially, the researcher must decide on which level of strategy to focus, that is, at the corporate level (what business/es should the organization be in?), business level (how should the organization compete in a given business?) or operating level (what procedures or policies are needed at the functional levels



A Heuristic for Theory Building in Strategic Management

Context	Content	Process
Adaptive	Industry Growth Entry/Exit Barriers Competitiveness Niche Options	Industry-specific Stakeholders --Union --Consumers --Gov't.
Integrative	Industry Know-how Business Synergies	Cross-business Integration

Purpose

Business Family, Direction-Setting Research Topics.

Figure 2.6. Framework for Strategic Management Research

Source: E. Freeman and P. Lorange, "Theory Building in Strategic Management," in Advances in Strategic Management, vol. 3, ed. by Robert Lamb (Greenwich, Conn.: JAI Press, 1985), pp. 24, 25.

of the business to implement the business strategy?) (Rothschild, 1979). The level of analysis in this study is business level strategy.

A second concern is whether to focus on strategy process or strategy content. Most research on the former has investigated decision processes, characteristics of strategy formulators and planning and implementation models; the latter has included studies on strategy performance, the environment, strategy, structure link and strategic typologies (Jauch, 1983). This study is one in strategy content.

Another vexing problem is to ascertain what constitutes a change in strategy as opposed to a strategic adjustment. Quinn (1978) outlined a change in strategy as a process of logical incrementalism over time, while Mintzberg (1978) described it as a rather quick and radical move. Studies in six industries, including the hospital industry, conducted by Miles and Snow (1978), concluded that organizations are reluctant to change their strategies and that most prefer to apply familiar solutions to new problems. Thus, if at all possible, organizations, when faced with external change or pressure, tend to adjust rather than change their strategies. This makes it difficult for researchers studying strategy to determine at what point they have entered the strategic life cycle. Is the research measuring past strategy, a new strategy, a period of strategic adjustment, or some conception of future strategy (Snow and Hambrick, 1980)? An implicit view of strategy (Pennings, 1985) which seeks to uncover a pattern of choices or a configuration of moves would appear to be most useful in

conceptualizing strategic change (Miles and Snow, 1978; Mintzberg, 1978).

Given the constraints implicit in studying organizational strategy, there is an array of options available for identifying and measuring strategies. Snow and Hambrick (1980) outlined four measurement approaches which are summarized in Table 2.5. Along with other researchers in the the field, (Harrigan, 1983; Miller and Friesen, 1984), they recommended that multiple approaches or triangulation be used to study the strategy construct.

Harrigan described the need for a hybrid methodology to capture important dimensions of the strategy construct which may be missed by using a case study methodology or a coarser grained methodology relying on large, aggregated data bases such as the PIMS data base. Hybrid methodologies are characterized by multiple sites, multiple data sources, and intricate sample designs. The benefits of hybrid methodologies are increased generalizability and replicability.

Strategic Groups

The concept of strategic groups is relatively recent. The term itself was coined by Hunt in his 1972 doctoral dissertation on the white goods industry (Hunt, 1972). Essentially the existence of strategic groups was postulated as a way to begin to understand differences in strategy and performance across firms within an industry.

> If corporate strategies can differ persistently among direct market rivals, we can speak of strategic groups--each group consisting of firms highly symmetrical in their corporate

Table 2.5. Four Approaches to Measuring Organizational Strategy

Theoretical Issues	Advantages/ Disadvantages	Investigator Inference	Self-Typing	External Assessment	Objective Indicators
Strategic Change and Adjustment	Advantage	Detached view	Most current	Outsiders may lack comparative view	Good if data available for 5+ years
	Disadvantage	Lacks comparative view	Executives cannot distinguish	Outsider not current	May not reflect current changes
Intended and Realized Strategies	Advantage	Better for intended than realized	Good for intended st.	Good for realized st.	Good for realized st.
	Disadvantage	Res. lacks the perspective to see the diff.	Questionable for realized strategies	Ill-suited for intended strategies	Ill-suited for intended strategies
Relativity of Strategy	Advantage	Good subjective assessment	Large sample sizes and broad view	Large sample sizes and broad view	Large, diverse samples
	Disadvantage	Usually have small sample size	Myopic perspective	Must have homogeneous set of experts	Lack of data availability

Source: Adapted from Charles C. Snow and Donald C. Hambrick, "Measuring Organizational Strategies: Some Theoretical and Methodological Problems," Academy of Management Review, 5:4 (1980), p. 530.

> strategies--as a stable element of market structure (Newman, 1978). (emphasis in original)

In a review article, McGee and Thomas (1986) summarized the main studies in the area of strategic groups (see Table 2.6). While the studies cited have as their common theme the use of some form of strategic groups idea, they differ in their understanding and deployment of the strategic dimensions that lie behind the strategic groups concept. As noted by McGee and Thomas, the sharpest differences between existing studies arises from the strategic dimensions chosen to define the strategic groups.

The issue of which dimensions to employ may be resolved by careful industry studies and case study analysis of the firms involved. Otherwise strategic groups may be nothing more "than an ad hoc construction which can conveniently soak up some of the variability in the dependent variables in our own analyses of industries" (McGee and Thomas, 1986, p. 150).

Analogous to the concept of entry barriers which inhibit entry into an industry, the concept of mobility barriers has been proposed as the characteristic which denotes the boundaries of strategic groups (Caves and Porter, 1977). Recognizing that mobility barriers, or group specific entry barriers, afford protection to group members, it is reasonable to identify the key strategic variables which might denote strategic groups as those which affect the height of mobility barriers. Potential sources of mobility barriers are summarized in Table 2.7. Mobility barriers fall into three broad categories: market-related

Table 2.6. Strategic Groups: Previous Studies

Study	Industry	Basis for Strategic Group Formation
Hunt (1972)	"White goods"	Product line basis --degree of product diversification --differences in product differentiation --extent of vertical integration
Newman (1973, 1978)	34 four-digit "producer goods" industries: chemical processes	Degree of vertical integration
Porter (1973)	38 three-digit "consumer goods" industries	Relative size of firm --leader/follower classification
Hatten (1974), Hatten and Schendel (1977)	Brewing industry	Manufacturing variables --number, age, capital intensity of plants Marketing variables --number of brands, price and receivables/sales Structural variables --eight-firm concentration ratio --firm size
Hatten, Schendel and Cooper (1978)	Brewing industry	Manufacturing, marketing and financial variables (leverage, merger/acquisition behavior)
Harrigan (1980)	Declining industries: receiving tubes synthetic soda ash baby foods acetylene percolator cigar leather tanners rayon	Dimensions of firms' strategic posture; strategic mapping used to identify groups
Caves and Pugel (1980)	U.S. manufacturing industry--sample	Relative size of firm
Oster (1982)	19 consumer goods industries from Compustat	Product strategy --Advertising/sales ratio
Ramsler (1982)	Banking industry --100 largest non-U.S. banks	Product market differentiation, size, geographic scope
Ryans and Wittink (1985)	Airline industry	Financial strategy clustering of residuals from capital asset pricing model (security returns)

Table 2.6 (continued)

Study	Industry	Basis for Strategic Group Formation
Baird and Sudharsan (1983)	Office equipment/ electronic computing	Financial Strategy variables --Leverage, current ratio, return on assets, dividend payment ratio, times interest earned, size
Primeaux (1985)	Textiles Petroleum	Size Investment behavior
Howell and Frazier (1983)	Medical supply and equipment	Customer groups served Customer needs served (due to Abell, 1980)
Hayes, Spence and Marks (1983)	Investment banking	Logit analysis involving match between characteristics of investment bank and characteristics of individual customers; four main groupings identified
Hergert (1983)	2450 SBUs representing 50 industries; broad sample of US manufacturing industry	Mix of variables (i) Advertising/sales (ii) R & D/sales (iii) Assets/sales (iv) Business unit sales/ parent sales (v) Market share
Dess and Davis (1984)	Paints and allied products	A range of 21 marketing variables
Hawes and Crittenden (1984)	Supermarkets	Marketing strategy variables (i) Target market (ii) Product (iii) Promotion (iv) Price (v) Buying (vi) Display
Lahti (1983)	Finnish knitwear industry, 1969-1981	Size: small, medium, large Nature of the product group
Hatten and Hatten (1985)	Brewing	Marketing strategy variables (i) Price (ii) Advertising (iii) Number of brands (iv) National relative market share

Source: J. McGee and H. Thomas, "Strategic Groups: Theory, Research and Taxonomy," Strategic Management Journal, 7 (1986), pp. 143-144.

Table 2.7. Sources of Mobility Barriers

Market-Related Strategies	Industry Supply Characteristics	Characteristics of Firms
Product line	Economies of scale: production	Ownership
User technologies	marketing	Organization structure
Market segmentation	administration	
Distribution channels	Manufacturing processes	Control systems
Brand names	R & D capability	Management skills
Geographic coverage	Marketing and distribution systems	Boundaries of firms --diversification --vertical integration
Selling systems		Firm size
		Relationships with influence groups

Source: J. McGee and H. Thomas, "Strategic Groups: Theory, Research and Taxonomy," Strategic Management Journal, 7 (1986), p. 151.

strategies, the characteristics of supply in the industry and features specific to the ownership and management of the individual firm.

The theory of strategic groups and associated mobility barriers is a rich area of research for strategic management. However,

> there appears to have been slight attention from strategic management researchers to the contribution that strategic groups might make to the debates on strategy identification and typologies, to resource audit and strength and weaknesses analyses, and to the concerns with strategic implementation. (McGee and Thomas, 1986)

Major research questions raised by the strategic group construct include the contribution strategic groups make to the industry/market structure-performance link, the relationship of the evolution of group structures to the evolution of industries and the patterns of rivalry in oligopolistic markets.

The application of strategic groups to the study of strategic decision-making is made difficult because of the problems of controlling for exogenous variables, the lack of comparability among the units of analysis (the firm and the industry), and the changing nature of the environment. All of these generally restrict the researcher from making any causal connections between sets of variables.

Notwithstanding the difficulty of making causal connections between strategic groups and changes in the competitive environment, a great deal of progress has been achieved in operationalizing the concept of strategic groups. Virtually all of the studies cited in Table 2.6 used multivariate techniques such as factor, cluster and regression analysis. Although some reservations have been expressed that the desire for quantification has superceded a real understanding

of the underlying dimensions of strategy in a given industry, the rigor of analysis being applied in the measurement of strategic groups has been generally welcomed.

Harrigan (1985) reviewed the variety of techniques used to classify competitors in strategic management research. These techniques range from a priori groupings to those generated by computer algorithms. Whatever technique is used, the crucial step in thinking about industry competition has been the selection of dimensions used to segregate firms. The most useful technique in identifying strategic groups appears to be cluster analysis.

Cluster analysis generates descriptions of the boundaries segregating groups. Studies using cluster analysis have tended to confirm that the a priori groupings of competitors illustrated in early strategic management research were a fair start in the description of strategic groups. Clustering algorithms seem to be a preferable means of sorting competitors into strategic groups because additional interpretation of competitive dynamics is possible.

Research Model

Two models are presented and discussed in this section. The first shows a general model of the strategic management process and highlights the relationship between the process and this investigation. The second model specifies the variables and relationships under investigation in this study of strategic groups in the hospital industry.

As discussed earlier, the strategic management process models outlined by numerous researchers have only recently explicitly included industry and competitive analysis as a component. Analysis of the competitive environment of an industry is one facet of external environmental analysis as shown in Figure 2.7. Although it is a necessary part of the analysis step, it is not a sufficient one.

A complete analysis of a firm's internal strengths and weaknesses and the threats and opportunities faced by the firm from the competitive environment and the broader external environment provides the impetus for the formulation, choice and implementation of strategies to align the firm and the environment. In this study of hospital strategic responses to changes in the competitive environment of the hospital industry, the strategy content choices or outcomes of the strategy formulation stage shown in Figure 2.7 were examined. This study did not address the strategic decision making process within the hospital nor did it address the implementation of particular strategies within the hospital.

In Figure 2.8, the theoretical descriptive model guiding the research is shown. The five competitive forces driving competition in the hospital industry in Tennessee have changed in intensity and emphasis over the time period 1980-1984. In turn some hospitals modified their strategies in response to the environment. Although hospital strategies may differ in a wide variety of ways, the strategic responses shown in the diagram seem to capture the possible differences among a hospital's strategic options. The seven strategic responses

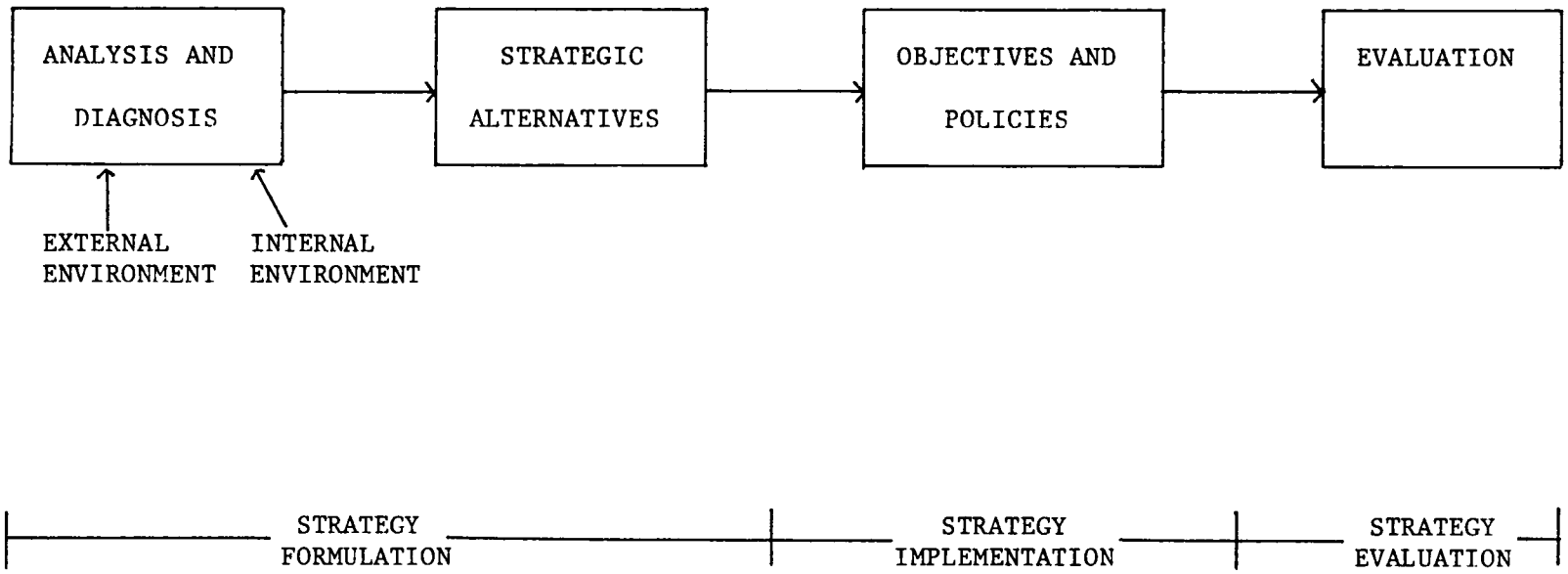


Figure 2.7. The Strategic Management Process

Source: Adapted from W. F. Glueck and L. R. Jauch, Business Policy and Strategic Management, 4th ed., 1984, p. 27.

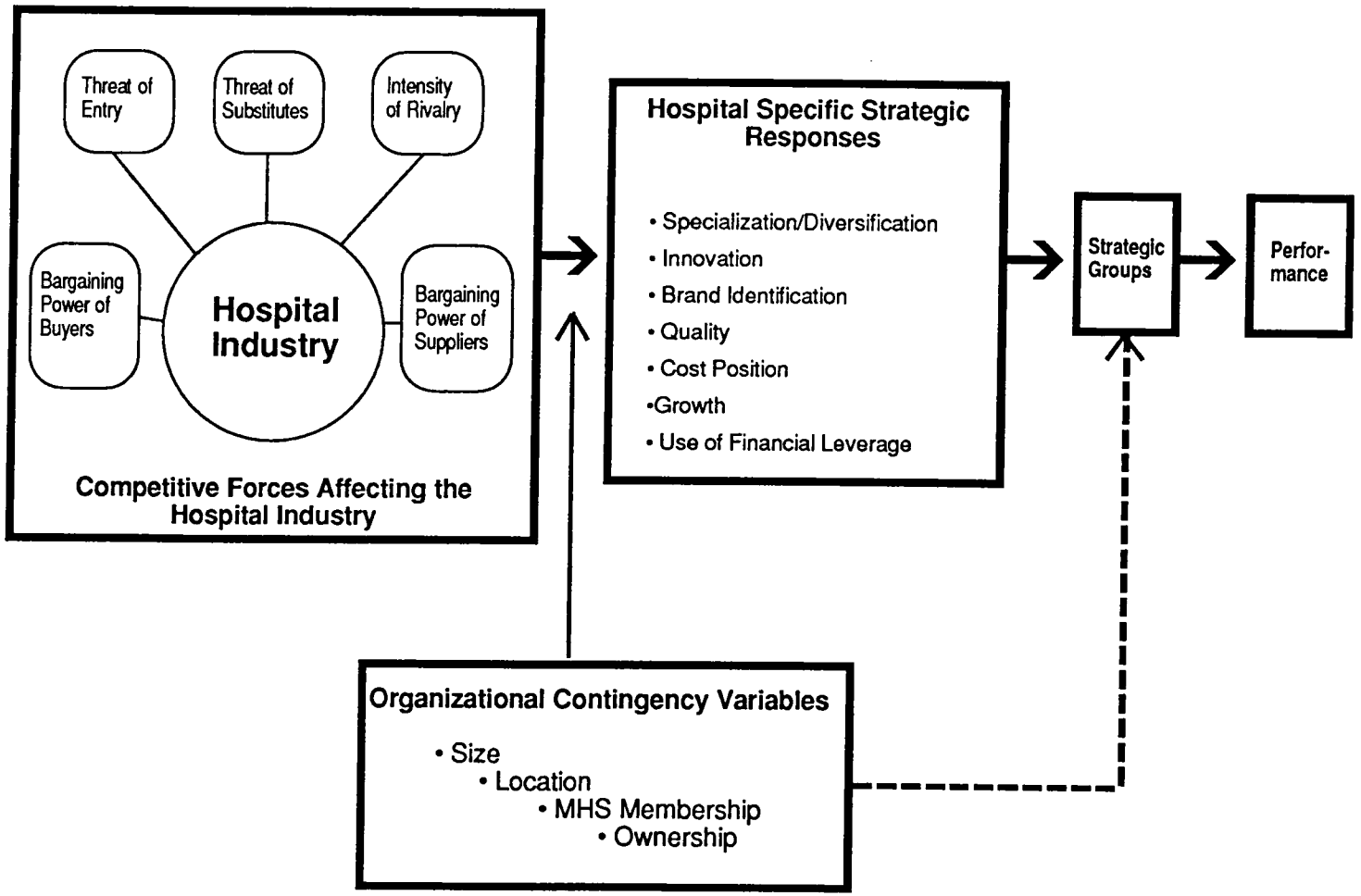


Figure 2.8. Theoretical Model Guiding Research

are specialization/ diversification, innovation, brand identification, quality, cost position, growth, and use of financial leverage. Together, these seven responses present a profile of a hospital's strategic orientation.

According to the theory of strategic groups, hospitals which pursue similar strategies constitute a strategic group. Once the groups have formed, hospitals in the same strategic group generally resemble one another closely in ways besides their broad strategies. The organizational characteristics of a hospital which appear to be most important, both in influencing the initial strategies chosen as well as indicating differences between strategic groups, are the bed size of the hospital, the ownership status of the hospital, the location of the hospital and membership in a multihospital system. This set of variables may be thought of as contingency or moderator variables.

Used as an independent variable in hospital studies, size is an implicit measure of structure or technology. Bigger hospitals tend to have more comlex structures and more sophisticated technology cores (Graeff, 1980). Likewise, the ownership status of a hospital seems to be an important contingency variable because of different primary goals between a not-for-profit hospital and a for-profit hospital, the latter making profit maximization an explicit goal. In addition, for-profit hospitals have access to more sources of capital perhaps allowing greater flexibility in strategic response.

Because the strength of the competitive forces in the hospital industry may vary from market area to market area, location may be a

significant variable affecting the strategic responses of a given hospital. Even within a broadly defined market, such as a health service area, there may be important differences in strategy between urban and rural hospitals.

The last contingency variable which the literature review suggested may be an important moderator of strategic response is membership in a multihospital system (MHS), either a not-for-profit or an investor-owner system. Multihospital system membership offers possible economic benefits which could influence the business level strategies employed by hospitals in a system.

Since the five competitive forces influence each strategic group selectively, strategic group performance as well as individual hospital performance will depend on the strategies undertaken and membership in a particular strategic group. As a multidimensional outcome, performance is not easy to measure in the hospital industry. An individual hospital should be evaluated not only on financial performance but equally importantly on accessibility and availability, and quality of services. This study does not explore all these aspects of hospital performance, but the investigator was interested in whether the financial performance of hospitals differs by strategic group as suggested by theory. Although financial performance (profitablility) may not be the most important goal in the hospital industry, profitablility is a useful indicator for comparative purposes with studies of strategic groups in other industries.

Chapter Summary

The chapter began with an overview of the hospital industry in the United States. After describing the idiosyncratic characteristics of medical care services when viewed as a commodity, the structural features of the hospital industry were reviewed. The structure of the hospital industry, consisting of mostly not-for-profit firms, is a direct response to the unique characteristics of medical care. But with profound changes occurring in the market for hospital services, an emphasis on making the transition from growth to maturity has emerged in the hospital industry. The transition, marked by fundamental changes in reimbursement patterns, declining admissions rates, cost containment pressures, and a reassessment of the hospital'a role in the community, has focused attention on how hospitals should respond to changes in the competitive environment.

Porter (1980) introduced a model to analyze the competitive environment of an industry. In the second section of this chapter, the elements of Porter's model were applied to the hospital industry to assess the competitive forces operating on the industry. Each competitive force was evaluated with respect to its relevant economic and technical determinants citing empirical studies to support the importance of the determinant in the hospital industry. Based on the review, the bargaining power of buyers, intensity of rivalry, and threat of substitutes are the most significant factors influencing the competitive environment. To a lesser extent, barriers to entry and the

diminishing bargaining power of suppliers are creating a more competitive environment for hospitals.

As a subset of the external environmental analysis phase of the strategic management process, industry analysis is an important element in the total process. In fact, Schendel and Hofer (1979) stated that the greatest need in the environmental analysis component of the strategic management process was for better models of competitive market structures on strategy. Porter's work is a vital contribution toward meeting the need. In this study, the influence of the hospital industry's competitive market structure on strategies pursued by hospitals is investigated.

Although Porter's competitive forces model was a conceptual breakthrough linking an industry's market structure and a firm's strategy, more recent work has focused on intraindustry differences in strategy and performance. These differences are ascribed to the presence of strategic groups upon which the influence of an industry's competitive forces are variable. In this study, the strategic responses of hospitals in the Tennessee hopsital industry are analyzed with respect to the formation of strategic groups. Therefore, the concept of strategic groups was reviewed.

The last section of the chapter presents a research model derived from the various strands of literature reviewed which was used to guide the remainder of the study.

CHAPTER III

SOURCES AND METHODS

This chapter contains the methodology used to address the research questions guiding this study. Definitions of terms are given; the research questions and theoretical justification for their inclusion in the study are briefly discussed; the study sample described; and the measurement of critical variables, the sources of data and method of analysis for each research question are outlined.

Definitions

Terms which are used in the study are discussed in this section to provide standardization in terminology.

Competitive environment. This term is a composite which encompasses the five competitive forces (threat of entry, threat of substitutes, bargaining power of buyers, bargaining power of suppliers and intensity of rivalry among existing competitors) acting on a given industry and which defines the competitive industry structure in which a given firm or organization operates.

Threat of entry. The threat of entry into an industry depends on the barriers to entry that are present, coupled with the reaction from existing competitors that the entrant can expect (Porter, 1980, p. 7). If barriers are high, and/or the newcomer can expect sharp retaliation from entrenched competitors, the threat of entry is low. The reverse

is also true, that is, if barriers to entry are low and/or the threat of retaliation is low, then the threat of entry is high.

Threat of substitutes. Substitution is the process by which one product or service supplants another in performing a particular function or functions for a buyer (Porter, 1980, pp. 22-23). The threat from substitutes is greatest from those products/services that are subject to trends improving their price-performance trade-off with the industry's product/service and those that are produced by industries/firms earning high profits.

Bargaining power of buyers. Buyers compete with the industry by forcing down prices, bargaining for higher quality or more services, and playing competitors against each other, all at the expense of industry profitability (Porter, 1980, p. 24). The power of each of the industry's important buyer groups depends on the characteristics of its market situation and on the relative importance of its purchases from the industry compared with its overall business.

Bargaining power of suppliers. Suppliers can exert bargaining power over participants in an industry by threatening to raise prices or reduce the quality of purchased goods or services (Porter, 1980, p. 27). The power of each of the industry's important suppliers depends on the characteristics of its market situation and on the relative importance of the industry firms to suppliers.

Intensity of rivalry among existing competitors. Rivalry among existing competitors takes the form of jockeying for position. Rivalry occurs because one or more competitors either feels the pressure or

sees the opportunity to improve position (Porter, 1980, p. 17). In most industries, firms are mutually dependent, that is, competitive moves on the part of one firm have noticeable effects on its competitors. The intensity of the rivalry is dependent upon a number of determinants such as the number of competitors, the rate of growth of the industry, the presence of high fixed costs, and the presence of high exit barriers to the industry.

Hospital industry. The hospital industry is the set of all hospitals, regardless of ownership, which deliver short term, acute care community hospital services to patients in a relevant market area (Miles, 1984). In this study, the relevant hospital market area is defined as a standard metropolitan statistical area (SMSA).

Hospital. An institution or facility providing general and other special hospital and medical services on an inpatient basis with an average length of stay (ALOS) per admission of less than 30 days. This term excludes all federal (including military and Veterans Administration) facilities and all single purpose specialty hospitals with the exception of children's hospitals.

Strategic response. A corporate or business level strategy employed by an individual hospital to align the hospital with the competitive environment. The response may be either an intended or a realized strategy (Mintzberg, 1978). It is an action of major impact that constrains or directs subsequent activities in response to changes in the competitive environment and thus may be either an implicit or an explicit strategy (Pennings, 1985). Examples include decisions

regarding market development, such as expansion into a new geographical service area, and diversification of the product or service line, such as movement into outpatient services.

Strategic group. A group of firms in an industry following the same or a similar strategy along certain strategic dimensions (Porter, 1980, pp. 129-130). An industry could have only one strategic group if all the firms followed the same strategy. At the other extreme, each firm could be a different strategic group. Usually there are a small number of strategic groups which capture the essential strategic differences among firms in an industry.

Ownership status. The category or type of organization with legal responsibility for a hospital. The American Hospital Association classifies hospital ownership or control into government, nonfederal; nongovernment not-for-profit; and investor-owned (for-profit). The same control classification is used in the Tennessee Department of Health and Environment's Joint Annual Report of Hospitals.

Not-for-profit hospital. A nongovernmental voluntary hospital either operated by a church or other not-for-profit organization defined by Section 501(c)(3) of the Internal Revenue Code. A not-for-profit organization is one which is barred from distributing its net earnings (profits), if any, to individuals who exercise control over it. Earning a surplus is not excluded; it is the distribution of surplus earnings which is prohibited.

For-profit hospital. Any hospital owned by an individual, partnership or for-profit corporation and operated on a profit-seeking

basis distributing any profits to the owners of the hospital. The term is used synonymously with investor-owned hospital in this study.

Public hospital. A hospital owned by departments of state and/or local governments and operated on a not-for-profit basis. This term excludes federal hospitals.

Health service area. A trade area for health services (defined in Public Law 93-641, the Health Planning and Resources Development Act of 1974).

Standard Metropolitan Statistical Area (SMSA). Defined in OMB circular 83-1, January 1, 1983, as a geographic area with a large population nucleus together with adjacent communities which have a high degree of economic and social integration with that nucleus. Also called metropolitan statistical areas (MSA).

Multihospital system. A term used to denote multi (2 or more) hospital agreements ranging from shared participation in services to complete ownership (Fottler et al., 1982). A multihospital system can be either not-for-profit or for profit entities.

Organizational contingency variables. A term used in this study to encompass the variables of hospital size, hospital location, multihospital system membership and hospital ownership status. This set of variables is postulated to affect the pattern of strategic responses of an individual hospital.

Research Questions

In order to address the first three purposes of the study as systematically as possible, a series of research questions was formulated. In this section, each research question is stated followed by a theoretical rationale for its inclusion as a relevant question. The last purpose of the study was not amenable to formulation as a research question. Based on the results derived from the research questions, a model of the competitive dynamics of the hospital industry in Tennessee was developed. It is presented and discussed in Chapter VI.

Research Question (RQ1): What changes occurred in the competitive environment of the hospital industry in Tennessee from 1980-1984?

Theoretical rationale: This study of strategic responses in hospitals is set against the changing competitive environment for the hospital industry in Tennessee from 1980-1984. Although the design of this study does not allow a direct causal link to be inferred between specific changes in the competitive environment and specific strategic responses of hospitals, nonetheless a description of the competitive forces affecting the hospital industry in Tennessee is a necessary first step to set the context for the identification of strategic responses by hospitals and the study of strategic groups of hospitals.

Research Question (RQ2): What patterns of strategic responses did individual hospitals in Tennessee follow during the period from 1981 to 1985?

Theoretical rationale: During a period when significant changes in the competitive environment have occurred, an individual hospital should adapt its strategies to preserve an alignment between the organization and its environment. To capture fully the dynamic nature of strategy, the pattern of strategic responses should be followed over time rather than measured at one point in time. Since there is a time lag between changes in the environment and strategy formulation, the pattern of strategic responses is investigated over a period lagged one year beyond the analysis of the competitive environment.

Comprehensive understanding of the ways in which industries and industry structure evolve and the ways in which strategies are developed, changed and abandoned requires a method to study populations of organizations or firms within a given industry over time. As Freeman and Boeker (1984) emphasized in introducing the idea of an ecological approach to analyzing strategy,

> strategic issues should be conceptualized in such a way that they are relevant to classes of firms, and not unique to a single competitor or class of competitors. Observations on numerous organizations are therefore required. Strategic analysis can benefit greatly from the study of large numbers of competing firms in specified markets, that is, the dynamic study of firm populations. (emphasis in original)

There are two main approaches to the study of organizational adaptation to environmental change depending upon whether adaptation is viewed as a process reflecting strategic choice (Child, 1972; Lawrence and Lorsch, 1967) or whether it is viewed as a necessary reaction to environmental forces (Aldrich, 1979; Hannah and Freeman, 1977). The former is termed the strategic choice or contingency explanation and the latter the population ecology or natural selection approach.

Most recently, Hrebiniak and Joyce (1985) argued that strategic choice and environmental determinism are both essential to an accurate description of organizational adaptation and that the interaction of the two must be studied to explain the behavior of an organization. In their formulation, the term adaptation is used to describe change that occurs as a result of aligning organizational capabilities with environmental contingencies. This view allows for proactive or reactive organizational behavior in anticipation of a reaction to exogenous variables.

The cost of reacting strategically usually increases as the need for change becomes more obvious. The benefit from the best strategy is the highest for the first firm to select it (Porter, 1980). One of the key steps in charting strategic change is to identify changes in industry boundaries, a phenomenon which is easier to detect if the industry analysis of competitive forces has been done carefully.

This study will focus on the hospital industry in Tennessee over a particularly turbulent five year period. While five years is a short time in the life cycle of an industry, the transition to industry maturity is often a critical phase and one which requires significant strategic adaptation.

Research Question (RQ3): What are the strategic groups in the hospital industry in Tennessee based on the patterns of strategic responses pursued by each hospital during the period 1981-1985?

Theoretical rationale: The existence of strategic groups has been proposed as one explanation for the differences both in strategy and performance among firms in a single industry. Early contributors to the study of strategic groups (McGee and Thomas, 1986) made manifest the idea that differences between firms in an industry do exist and that they are the deliberate outcome of decisions made by firms. Groupings are therefore the result of strategic choices. The value of identifying strategic groups in an industry is that the nature of competition within an industry may be better understood particularly in those industries which are oligopolistic in structure such as the hospital industry. As McGee (1985) noted, strategic groups may be the bridge between industry structure, the emphasis of industrial organization economics, and strategic management. The effect of focusing on strategic groups is to restore strategic decisions to the center of the structure and performance arena and to re-emphasize the firm as an important unit of analysis.

Research Question (RQ4): Do the strategic groups in the hospital industry in Tennessee differ by the hospital organizational characteristics of size, ownership category, location and multihospital system membership?

Theoretical rationale: If discrete strategic groups are found within an industry, the firms within a group should be relatively homogeneous with respect to strategy. The next step in interpreting the meaning of strategic groups within an industry is to identify variables which describe the organizational characteristics of firms within

a group. If the strategic group is loosely formed, there will probably be greater diversity in the firms comprising the group whereas a more tightly formed group may be expected to have firms with similar organizational characteristics (Harrigan, 1985). The boundaries of strategic groups may be quite fluid with consequent implications for competitive behavior within and among groups.

Research Question (RQ5): Is there a difference in financial performance among the strategic groups?

Theoretical rationale: Differences in performance between groups may be expected because the five broad competitive forces defining the competitive environment of the industry may not have equal impact on different strategic groups. Therefore, the profitability potential for each group may vary (Porter, 1980).

Study Sample

The hospital industry in the United States consists of 5,783 short-stay community hospitals of which 55.8 percent are not-for-profit, 31.8 percent are public and 12.7 percent are for-profit (American Hospital Association, 1984). However, the market for hospital services is not national, but regional or local (Robinson and Luft, 1985), and responds to local and community concerns and idiosyncracies. In order to study a population of competing hospitals in local markets, the state of Tennessee was chosen as the site for the proposed study. The following criteria, apart from obvious expediency, governed the selection of Tennessee:

1. There are 152 hospitals in Tennessee (1984) which meet the definition cited above. There has been no change in the absolute number of hospitals operating in the state since 1980, the starting date for this study (American Hospital Association, 1980, 1984).

2. The Tennessee Department of Health and Environment conducts an annual survey of hospitals in the state collecting data on utilization of services, kinds of services available and general financial information. These data are publicly available and are used as supporting data for decisions made by individual hospitals, by planning agencies in the state and by public policy makers. Thus a study which uses extant data in a new way may help to present a broader picture of the hospital industry than has heretofore been drawn.

3. Tennessee has had a certificate of need (CON) program in place since 1974. All applications for a certificate of need which have been filed with the state are available for review. CON regulations are specific to each state.

4. Tennessee is among the five states with the largest percentage of for-profit hospitals in the U.S. and is also the headquarters of the largest investor-owned company in the world, Hospital Corporation of America (HCA). Sixty percent of the for-profit multihospital system hospitals in the U.S. are located in just four states--California, Florida, Tennessee and Texas (Ermann and Gabel, 1984). The state is thus in the forefront of the movement toward more for-profit involvement in the health care system (Gray, 1983).

5. The hospitals in Tennessee are approximately equally divided among ownership categories. In 1984, there were 49 (35.2 percent) not-for-profit hospitals, 40 (28.8 percent) public hospitals and 50 (36 percent) for-profit hospitals. This reflects a shift from 1980 when there were 39, 56 and 44 hospitals in the respective categories (American Hospital Association, 1980, 1984).

6. Most studies of the hospital industry have been conducted in a limited number of highly regulated states introducing lack of generalizability into the findings. Since Tennessee is not highly regulated, it is more representative of the majority of states.

7. Tennessee has five SMSAs which are quite self contained in hospital services and facilities providing an opportunity for comparative analysis.

8. Among the five SMSAs in Tennessee, there is a wide disparity in the distribution of hospital ownership categories allowing for comparative analysis of the competitive environments and the strategies employed by hospitals in the different SMSAs (see Table 3.1).

The study sample consists of the 67 hospitals located in Tennessee counties of the five standard metropolitan statistical areas in Tennessee. Table 3.2 lists counties included in the respective SMSAs. A comparison of the SMSA hospitals with the total Tennessee hospital population is given in Table 3.3.

In 1984, the licensed bed capacity in the 67 SMSA hospitals was 19,643 beds, 73 percent of the total number of beds in the state. The actual number of SMSA hospitals, represented only 48.2 percent of the

Table 3.1. Hospitals by Ownership Status in Tennessee SMSAs, 1984

SMSA	For-Profit	Not-for-Profit	Public	Total
Johnson City-Kingsport-Bristol (Tri-Cities) (SMSA 1)	3	4	3	10
Chattanooga (SMSA 2)	7	2	2	11
Knoxville (SMSA 3)	2	7	3	12
Memphis (SMSA 4)	1	8	2	11
Nashville (SMSA 5)	9	10	4	23
Total	22	31	14	67

Source: Guide to the Health Care Field, 1985 edition, American Hospital Association.

Table 3.2. Tennessee Counties in SMSAs, 1980

SMSA	County
Chattanooga (SMSA 1)	Hamilton
	Marion
	Sequatchie
Johnson City-Kingsport-Bristol (Tri-Cities) (SMSA 2)	Carter
	Hawkins
	Sullivan
	Unicoi
	Washington
Knoxville (SMSA 3)	Anderson
	Blount
	Grainger
	Knox
	Jefferson
	Sevier
	Union
Memphis (SMSA 4)	Shelby
	Tipton
Nashville (SMSA 5)	Cheatham
	Davidson
	Dickson
	Robertson
	Rutherford
	Sumner
	Williamson

Source: Tennessee Statistical Abstract, 1985/86.

Table 3.3. Comparison of SMSA Hospitals and All Tennessee Hospitals: Number of Hospitals, Total Licensed Beds, Mean Bed Size, Total Admissions, and Ownership Status, 1984

Variable	SMSA 1	SMSA 2	SMSA 3	SMSA 4	SMSA 5	Tennessee
Number of Hospitals	10	11	12	11	23	152
Total Licensed Beds	2088	2044	3357	6169	5985	27262
Mean Licensed Beds	208.8	185.8	279.8	560.8	260.2	179.3
Total Admissions	48526	56230	131293	181527	191010	898051
Ownership Status						
For-profit	3	7	2	1	9	60
Not-for-profit	4	2	7	8	10	57
Public	3	2	3	2	4	35

Source: Extracted from data tape of 1984 Joint Annual Report of Hospitals, State Center for Health Statistics, Department of Health and Environment, Nashville, Tennessee.

total number of hospitals. Admissions to SMSA hospitals accounted for 68.4 percent of total admissions (Joint Annual Report of Hospitals, JAR, 1984).

The distribution of the SMSA hospitals by ownership status was 32.8 percent for-profit, 46.3 percent not-for-profit and 20.9 percent public compared with 36 percent, 35.2 percent and 28.8 percent respectively for the state as a whole. Thus, the SMSAs somewhat underrepresent the publicly owned hospitals, which tend to be county-owned facilities in rural areas, while over-representing the not-for-profits.

As a cohort, the SMSA hospitals compete with those in the same SMSA and to a lesser extent with hospitals in the same health service area based on patient origin data which shows that less than 2 percent of patients go outside the health service area for care. Hospitals in the SMSA serve as the referral hospitals for general and specialty services for each health service area. Therefore, the SMSA hospitals are more appropriately the population of competing hospitals in a market area rather than the total number of hospitals in a health service area proposed by the Federal Trade Commission (Miles, 1984). Using SMSAs as the definition of a hospital market area has marked advantages for comparability with other studies (Garnick et al., 1986).

Measurement and Research Design

The measurement of the relevant variables or the operationalization of constructs applicable to each research question is discussed

below as well as a discussion of the research design, the sources of data and methods of analysis for each research question or hypothesis.

Research Question (RQ1): Changes in the Competitive Environment

The Porter competitive forces model was applied to the hospital industry in Tennessee using the economic and technical determinants described in Chapter II as the basis of the analysis. For each competitive force, a set of measures, both subjective and objective, was developed to ascertain the changes which occurred in a particular competitive force from 1980-1984. No attempt was made to weight the strength of the forces.

Most of the information necessary for this analysis was derived from the 1980-1984 JAR, although other primary sources, including data from the Tennessee State Center for Health Statistics and data from the Tennessee Insurance Commission were used to measure certain constructs. No single methodology was employed to analyze the data.

Research Question (RQ2): Patterns of Strategic Response

Strategy is a difficult to measure construct which can often differ from competitor to competitor in the same industry. As Harrigan (1983) suggested, hybrid methodologies are needed to capture the dynamic aspects of environmental evolution and competitive changes that business strategies should anticipate and act on. Such hybrid methodologies should include multiple sites, multiple data sources and

intricate sample designs. In order to capture the patterns of strategic response in individual hospitals in the SMSAs of Tennessee, a hybrid methodology was proposed.

The primary source of data for the assessment of strategic responses in hospitals was the Certificate of Need (CON) program in Tennessee administered by the Tennessee Health Facilities Commission (HFC). By law, any hospital which desires to offer a new service, curtail the availability of any existing service, change the licensed bed capacity of the institution, move the site of an existing facility or which proposes to expend more than $1 million on any one project must acquire a CON from the state (CON rules). Application must be made by the facility to the HFC on a standard form which is filed in Nashville. The application contains the supporting evidence deemed sufficient by the applicant to address the three main criteria of the HFC. First, the project applicant must demonstrate that there is a need for the project; second, that the project contributes to the orderly development of the health care system in Tennessee; and third, that the project is financially feasible.

The applications are reviewed by local/regional planning staffs whose written findings are given to the HFC. Then the local or regional planning board with jurisdictional authority over the geographic area of the applicant conducts a public hearing and makes a recommendation to the HFC. Ultimately it is the commissioners of the HFC who make the final judgment whether a CON should be granted based upon all the evidence presented. The entire process is a source of a

great deal of information about the strategic moves of hospitals in Tennessee although the accumulated information has never been investigated. Partly, this is because the information is in narrative form and has not been codified. All the information is located in Nashville, Tennessee, at the offices of the HFC and is publicly available by the statutes of the CON law.

The raw data for operationalizing the strategy construct consist of two profiles on each SMSA hospital. First, the investigator profiled the CON applications filed by SMSA hospitals in Tennessee over the period 1981 to 1985. Over 550 CON applications were filed by hospitals during this time; 338 were filed by SMSA hospitals. The review of each CON was based on the information provided in the application by the applicant in response to the questions on the CON form. The CON application form is attached to this proposal as Appendix A. A master list of SMSA hospitals, the study sample, was developed from the JAR data including the hospital name and a 4 digit facility code (see Appendix B). Using this master list, the comprehensive card file of CON applications maintained by the Tennessee Health Facilities Commission was culled. Each application listed in the card file, filed by an SMSA hospital from January 1, 1981 through December 31, 1985, was then pulled from the application files stored at the offices of the Tennessee Health Facilities Commission in Nashville. Although the application which must be completed by a hospital is standard, the level of documentation and justification for the project under review varies from application to application. The one page format in

Appendix C was used to summarize the information found in each CON application. The CON code sheets, grouped by hospital, provided a five year summary of CON activity for each hospital. The CON profiles were completed during the month of September, 1986, and the first two weeks of October, 1986, in Nashville, Tennessee.

A second profile was completed for each of the 67 SMSA hospitals in the study sample compiled from data in the Joint Annual Report of Hospitals (JAR), 1980-1984. The JAR included utilization statistics, financial information and manpower statistics as well as descriptive information on each hospital in the state. The State Center for Health Statistics requires every hospital in the state to file the JAR annually. A copy of the 1984 JAR is appended as Appendix D.

Using information from both profiles a strategic response instrument (SRI) was completed by the investigator for each hospital (see Appendix E). The SRI was developed based on a careful review of the literature on strategy content, strategy typologies, dimensions of competitive strategy and varieties of strategic options, as well as an in-depth literature review of the hospital industry in the U.S. regarding major strategic initiatives undertaken in the rapidly changing competitive environment of the last five to seven years. Seven dimensions of strategy were chosen in an attempt to capture the most important possible differences among a hospital's strategic options which are relatively independent.

The seven dimensions are specialization/diversification, growth in market share, cost position, use of financial leverage, innovation,

brand identification and quality. Although the strategic dimensions are related, those for a given hospital should form an internally consistent set of dimensions. The choice of strategic dimensions is critical to the identification of strategic groups (McGee and Thomas, 1986) with the trade-off between parsimony and a need for detail uppermost in the mind of the researcher. The dimensions chosen for the SRI seem to be the ones that are theoretically appropriate for identifying strategic diversity among hospitals.

Each hospital was assigned a value on each variable of the SRI. The investigator assigned a value on a Likert scale for the variables of specialization, innovation, brand identification and quality based on her assessment of the CON five-year profile for each hospital. A seven point scale was used for the specialization variable with the value of 4 as the mid-point indicating no change. Values of 5,6 and 7 indicated more specialization and values of 1,2 and 3 indicated more diversification. The other three variables, coded on a Likert scale, were scored from 0 to 4 with the value of 0 indicating no change from 1980. The year 1980 was used as the base line for each evaluation.

Absolute values for the variables of growth, cost position and leverage were calculated from the JAR data. Growth was measured in two ways using inpatient admissions to the hospital as the relevant indicator of growth in market share:

Growth 1 = percent change in market share (admissions) from 1980-1984; and

Growth 2 = market share (admissions) for hospitals in 1984/mean market share for the respective SMSA in 1984. A value greater than (+1) indicates a higher than average market share.

Use of financial leverage was measured in two ways:

Leverage 1 = percent change in debt/asset ratio (long term debt/total capital assets) from 1980-1984; and

Leverage 2 = absolute change in debt/asset ratio from 1980-1984. Values can range from (-1) to (+1).

Cost position was measured in three ways with cost per adjusted patient day (CAPD) as the relevant indicator of cost.

Cost 1 = 1984 cost per adjusted patient day;

Cost 2 = percent change in cost per adjusted patient day from 1980-1984; and

Cost 3 = cost per adjusted patient day in 1984/mean cost per adjusted patient day for the respective SMSA in 1984. A value greater than (+1) indicates a higher cost hospital.

A list of the strategic variables, operational definitions, and sources of data is found in Table 3.4.

A pilot test of the SRI was conducted by the investigator using the CON applications on file in the offices of the East Tennessee Health Improvement Council (ETHIC), the regional health service agency for East Tennessee, and a JAR profile compiled on the hospitals in the health service area of East Tennessee. The pilot test was conducted on non-SMSA hospitals in the health service area in order not to bias the investigator's judgment toward sample SMSA hospitals. Non-SMSA

Table 3.4. Strategic Response Variables: Operational Definitions and Sources of Data for SMSA Hospitals in Tennessee

Strategic Response Variable	Operational Definition	Source of Data
Specialization/ Diversification (SPEC)	Degree to which the hospital focused its efforts in terms of service/product line, customer segments and geographic markets	CON applications, 1981-1985
Innovation (INNOV)	Degree to which hospital engaged in adoption of new services and/or products	CON applications, 1981-1985
Brand Identification (BRANDID)	Degree to which hospital sought differentiation through branding techniques	CON applications, 1981-1985
Quality (QUALITY)	Extent to which hospital engaged in renovation, modernization or improvements for quality reasons.	CON applications, 1981-1985
Cost Position		
(a) 1984 Cost per Adjusted Patient Day (CAPD)	Total Adjusted Cost/Adjusted Patient Days	1984 JAR
(b) Percent change in CAPD from 1980-1984 (COST)	$\frac{(1984\ CAPD - 1980\ CAPD)}{1980\ CAPD} \times 100$	1980, 1984 JAR
(c) Proportional CAPD (CAPDPROP)	1984 CAPD/Ave. CAPD in SMSA in 1984	1984 JAR
Growth		
(a) Percent change in market share admissions from 1980-1984 (GROWTH)	$\frac{(1984\ Market\ Share - 1980\ Market\ Share)}{1980\ Market\ Share} \times 100$	1980, 1984 JAR
(b) Proportional market share (MSPROP)	Market Share, 1984/Ave. Market Share for SMSA IN !(*$	1984 JAR
Leverage		
(a) Percent change in debt to asset ratio, 1980-1984 (LEVERAGE)	$\frac{(1984\ Debt/Asset - 1980\ Debt/Asset)}{1980\ Debt/Asset} \times 100$	1980, 1984 JAR
(b) Absolute change in debt to asset ratio, 1980-1984 (DEBTDIFF)	(1984 Debt/Asset - 1980 Debt/Asset)	1980, 1984 JAR

hospitals were not included in the sample of hospitals for the final study.

Although the non-SMSA hospitals were smaller and filed fewer CONs than the SMSA hospitals, the pilot test revealed some problems with the SRI as originally conceived. Community responsiveness was a variable on the pilot test SRI but the pilot test indicated that this variable could not be extrapolated from the data available to the investigator either from the CON profile or the JAR profile. Responsiveness to community needs was dropped as an SRI dimension. Review of the CON applications indicated a need, however, to include a measure of quality to capture the strategic moves of renovation, modernization and remodeling engaged in by many hospitals over the time period of the study. Quality was thus included as an SRI dimension in the final study. The pilot test also allowed the investigator to identify ambiguities in the definitions of cost position and leverage.

Several caveats should be noted at this point about the classification of strategies undertaken by hospitals based on the CON applications:

1. The dimensions chosen for the SRI may not capture all of the variance in strategic responses.
2. The value on four of the SRI variables was assigned by the investigator thus introducing value judgments into the assessment. However, as Snow and Hambrick (1980) pointed out, investigator inference coupled with objective indicators of strategy over time are desirable approaches to measuring strategy.

3. The CON process does not capture all of the strategic responses either made by or available to each hospital and thus can represent only a partial view of the strategic change and adjustment process of hospitals.

Research Question (RQ3): Strategic Groups

A cluster analysis was performed to group similar hospitals into strategic groups using the values on the seven responses measured by the SRI as the variables of the clustering algorithm. As noted by several researchers (Dess and Davis, 1984; Harrigan, 1985; Hawes and Crittenden, 1984; Porter, 1980; Oster, 1982), the key to segregating strategic groups into those which make theoretical as well as practical sense is determining the dimensions to use in sorting the groups. Early analyses of strategic groups (Harrigan, 1980; Hatten and Schendel, 1977) were limited to the two dimensions afforded by a graphical representation. The advantage of using cluster analysis to identify strategic groups is the inclusion of more than two dimensions for sorting competitors into groups. Much recent work on strategic groups (Dess and Davis, 1984; Harrigan, 1985; Hawes and Crittenden, 1984) has used cluster analysis.

The purpose of cluster analysis is to place objects into groups or clusters suggested by the data, not defined a priori, such that objects in a given cluster tend to be similar to each other in some respect, and objects in different clusters tend to be dissimilar. Cluster analysis is a generic term for a variety of mathematical methods which

divide into two major types, hierarchical cluster analysis and non-hierarchical cluster analysis (Romesburg, 1984).

Hierarchical clustering techniques are often preferred for separating clusters, according to Lorr (1983), because generally poor performance has been obtained when nonhierarchical methods are applied without providing good starting points.

Ward's minimum variance clustering method was performed on the SRI data after standardizing the data. This method was chosen because it tends to join clusters with a small number of observations and is biased toward producing clusters with roughly the same number of observations. It is also very sensitive to outliers (SAS User's Guide: Statistics, Version 5, 1985). Using the output data set from the Ward's clustering method, a dendogram ("tree") diagram was produced showing the partition of the observations into hierarchical clusters. Although there is no set method for determining the optimum number of clusters, the tree is a tool which allows the investigator to see the hierarchy of similarity between the pairs of clusters being merged and thus to make intuitively a judgment on the appropriate number of clusters. No generally acceptable stopping rules have been developed to select the optimum number of clusters (Lorr, 1983), but the cubic clustering criterion (CCC) may be used for this purpose. The CCC is printed by Ward's method.

In order to determine the stability of the cluster derived from Ward's method, a second cluster analysis was performed using the SAS FASTCLUS procedure (SAS User's Guide: Statistics, Version 5, 1985).

The maximum number of clusters is specified, a priori, in this procedure which performs a disjoint cluster analysis on the basis of Euclidean distances computed from the quantified strategic variables. The variables were standardized for use in the FASTCLUS procedure.

Research Question (RQ4): Differences Between Strategic Groups on Organizational Characteristics

To determine whether the strategic groups identified by the cluster analysis differ on hypothesized organizational contingency variables, appropriate statistical tests to identify differences were performed. Size, as a continuous variable, was tested with a one-way analysis of variance, while ownership status, location and multihospital system membership, as categorical variables, were tested with Chi-square tests.

The sources of data and measurement of the organizational contingency variables are given below.

Size. The licensed bed capacity of a hospital as reported in the 1984 Joint Annual Report of Hospitals.

Ownership status. The type organization with legal responsibility for the hospital as reported on the 1984 Joint Annual Report of Hospitals.

Location. The standard metropolitan statistical area in which the hospital is located.

Multihospital system. The system, if any, to which the hospital belonged in 1984 as reported in the Guide to the Hospital

Field, 1984 Edition (1985). Systems are classified as not-for-profit or for-profit (investor-owned). If a hospital did not belong to a system in 1984, it was classified as "none".

Table 3.5 lists the organizational and performance variables along with an operational definition and source of data for each variable.

Research Question 4 (RQ4): Differences in Financial Performance Among Strategic Groups

To determine if there were differences between strategic groups in financial performance, a one-way analysis of variance was performed with return on assets (ROA) as the dependent variable. ROA is defined as net income divided by total capital assets. Net income is measured as the difference between total adjusted revenues and total costs. Total adjusted revenue is that which has been adjusted for Medicare and Medicaid adjustments reported by each hospital.

ROA, as a measure of hospital performance, certainly does not capture all of the facets of hospital performance, but it is the one measure most comparable across all ownership categories of hospitals. Its use contributes to the replicability of the study and is consistent with measures used by other health care researchers (Levitz and Brooke, 1985).

Summary

This chapter began with the definitions of terms used in this study. Only those terms which are used throughout the study (not

Table 3.5. Organizational and Financial Performance Variables for SMSA Hospitals in Tennessee: Operational Definitions and Sources of Data

Variables	Operational Definitions	Source of Data
Size (LICBEDS)	Number of licensed beds, 1984	JAR, 1984
Ownership status (OWNSTAT)	Ownership reported as for-profit, not-for-profit or public, 1984	JAR, 1984
Location (SMSA)	SMSA in which the hospital is located	State Center for Health Statistics
Multihospital system (MHS)	System to which hospital belonged in 1984, if any	Guide to the Hospital Field, 1985 Edition
Return on assets (ROA)	Net income/total capital assets, 1984	JAR, 1984

defined elsewhere) and which are most pertinent to a conceptual understanding of the study were defined.

In order to address the purposes of this study, a hybrid methodology was developed to guide the investigation. Five research questions were posed to guide the research which are germane to the first three purposes of the study. The last purpose, the development of a model to capture the competitive dynamics of the hospital industry in Tennessee, was not suitable for formulation as a research question because it rests on the results found through answering the five questions. As such, the competitive model is discussed in Chapter VI of this study where an interpretation of the results is offered.

Following a statement of each of the five research questions, a theoretical rationale for its inclusion in the study and its relevance to the purposes of the study was given. This was followed by a section in which the study sample was discussed. A comparison was made between the study sample and the total population of hospitals in Tennessee.

A major emphasis of this chapter was a discussion of the measurement and analysis of the data necessary to address the research questions. For the first question, multiple sources of data were used to operationalize the economic and technical determinants for each of the competitive forces acting on the hospital industry. To measure the strategic responses of SMSA hospitals in Tennessee over the five year period of the investigation, applications filed by hospitals for CON review, were used as the primary source of data, supplemented by data available in the JAR. Based on the CON and JAR profiles, a strategic

response instrument (SRI) was completed on each hospital which measured seven strategic responses. This information was used to answer the second question.

In order to determine if there are identifiable strategic groups in the Tennessee hospital industry, the subject of the third research question, the hospitals were grouped by a cluster analysis using the seven strategic responses as the clustering variables. The last two research questions were formulated to address possible differences in the strategic groups by organizational characteristics and by financial performance. Differences between the clusters or strategic groups were identified by analysis of variance tests or Chi-square tests.

CHAPTER IV

AN ANALYSIS OF THE COMPETITIVE ENVIRONMENT OF THE HOSPITAL INDUSTRY IN TENNESSEE, 1980-1984

Since strategic adaptation to environmental events occurs in a gradual fashion, it is a difficult phenomenon to study in a cross-sectional research design. For this reason, this study takes a longitudinal approach to the study of strategic responses of hospitals to changes in the competitive environment. This chapter, which addresses Research Question 1, describes and analyzes the competitive environment of the hospital industry in Tennessee from 1980-1984 using the Porter competitive forces model as the analytical framework (Porter, 1980).

The following discussion of competitive forces in the Tennessee hospital industry is arranged in the same order as the literature review on competitive forces found in Chapter II. Based on that literature review , a number of technical and economic determinants was identified which appeared to be the most relevant in analyzing competitive forces in the hospital industry. Each of these determinants is assessed for the Tennessee hospital industry under the relevant competitive force. Except where noted, the analysis of changes in the determinants and thus the competitive force, is descriptive in nature and not an analysis of results derived from a rigorous or explicit statistical methodology.

Threats to Entry

According to Greer (1984), barriers to entry can be classified into five broad categories: (1) absolute unit cost differences; (2) economies of scale and scope; (3) capital requirements; (4) product differentiation; and (5) government policy or legal barriers. The threat of entry is a function of how difficult it is for potential entrants into an industry to overcome existing barriers to entry.

Absolute Unit Cost Differences

Using data derived from the 1980-1984 Joint Annual Report of Hospitals, a short-run cost function was estimated for all short-stay hospitals in Tennessee (Cowing, Holtman and Powers, 1983). A general form of a short-run cost function is given by

$$C^V = C^V(Q,w,K,X)$$

where C^V is total variable cost for a hospital, Q is firm output, w is the set of input prices, K is the measure of the firm's capital stock or plant size, and X is a vector of explanatory variables that account for firm specific factors that may influence costs.

From the general form of the short-run cost function, a quadratic cost function for hospitals was specified as

$$\begin{aligned} C^V_{it} = {} & \alpha_0 + \alpha_1 PD_{it} + \alpha_2 PD^2_{it} + \alpha_3 w_{it} + \alpha_4 w^2_{it} + \alpha_5 K_{it} \\ & + \alpha_6 K^2_{it} + \alpha_7 (PD_{it} * K_{it}) + \alpha_8 DRG_{it} \\ & + \alpha_9 (OWN_{it}) + \alpha_{10} (MSch_{it}) \end{aligned}$$

where PD, inpatient days, served as the measure of output. Average wage rates for full-time equivalent employees, w, was taken as the measure of input prices. Other inputs, for example capital and materials costs, were assumed to be constant across the hospital population in Tennessee. The measure of plant size, K, was given by the number of licensed beds. Finally, other variables considered potentially to affect firm costs were whether the hospital was for-profit or not-for-profit (OWN), whether the DRG program was in effect (DRG), and whether the hospital had a medical school affiliation (MSch).

An ordinary least squares regression model was run on the cost function to estimate absolute unit cost differences among hospitals in Tennessee. Data were pooled for 1980-1984 for 120 short-stay hospitals for which complete data were available. All costs were adjusted with a price deflator specific to the medical care sector. Definitions of the variables used in the regression model are given in Appendix F.

The variables in the short-run cost equation which predicted that costs would decrease are those which have a negative sign and are significant (see Table 4.1). While licensed beds was negative and significant, a discussion of this variable is postponed to the discussion of economies of scale, rather than being discussed in this section. The interaction term between inpatient days and licensed beds was negative, but not significant, as was the linear term for labor costs. Absolute cost disadvantages seemed to accrue to hospitals affiliated with a medical school indicated by a positive and significant ($p < .001$) coefficient. Total variable costs also increased when the number

Table 4.1. Ordinary Least Squares Pooled Regression Estimates for Total Variable Cost in All Short-stay Tennessee Hospitals, 1980-1984

Independent Variable	Total Variable Cost	
	Coefficient	t-ratio
Inpatient days	504.76	12.454***
(Inpatient days)^2	-0.00074	-1.049
Licensed beds	-58506.39	-4.955***
(Licensed beds)^2	171.09	3.124***
Labor	-169.45	-0.736
(Labor)^2	0.027	3.764***
Medical School Affiliation	4425576.54	5.364***
Ownership Status[a]	161894.29	0.313
Diagnostic Related Groups[b]	1744870.25	2.636**
Inpatient days* licensed beds	-0.426	-1.099
	R^2 = .9092; F = 696.50; df = 10,600	

[a]Dummy variable: 1 if ownership status is for-profit; otherwise 0.

[b]Dummy variable: 1 if year is 1983 or 1984; otherwise 0.

*p ≤ .10.

**p ≤ .05.

***p ≤ .001.

of inpatient days increased ($p < .001$), when the DRG program was in effect ($p < .05$), when ownership status of the hospital was for-profit, and when labor costs increased. The latter two variables were not significant. The overall R^2 of .9092 indicated that this short-run cost function was an excellent predictor of total variable costs for Tennessee hospitals during the period 1980-1984.

Economies of Scale and Scope

As shown in Table 4.1, the licensed bed capacity variable, representing a hospital's plant capacity, was positive and significant ($p < .001$) in the linear term and negative and significant ($p < .05$) in the quadratic term. This result indicates that economies of scale did prevail when hospital costs were measured by total variable costs. In order to determine at what point economies of scale were exhausted, the regression model was run with a dummy variable for licensed bed capacity in 50 bed increments. Total variable costs increased up to 300 licensed beds and then decreased.

Available data did not allow the investigator to construct a cost model to test for economies of scope in the Tennessee hospital industry.

Capital Requirements

Data from the CON profile completed on each SMSA hospital for this study indicated that SMSA hospitals of all ownership types had access to a variety of capital sources. By far, the largest number of CON

applicants (64 percent) in the period from 1981 to 1985, proposed using either operating funds, depreciation funds or working capital as the source of capital. Tax exempt bonds (7.6 percent) and commercial loans (13.3 percent) represented the other significant sources of funds. Projects which proposed using equity funding, available only to for-profit hospitals, represented only 4.5 percent of projects during this period.

In a real sense, the CON process deters applicants who cannot document sources of funds for proposed projects. Thus CON applications may exaggerate the availability of capital to hospitals. In addition, only CON applications received from the SMSA hospitals in Tennessee were reviewed for this study. But based on studies reported in Chapter II, rural hospitals were one set of hospitals most at risk for unavailability of capital. This study did not have the data to assess whether this was true for Tennessee hospitals during this period.

Product Differentiation

As documented in Chapter II, product differentiation is most often measured by advertising expenditures. Financial statements which might have indicated the level of advertising expense in hospitals over the period of this investigation were not available to the investigator.

Although subjective, a cursory examination of major Tennessee newspapers from the metropolitan areas of Tennessee suggested that hospitals did advertise during the five year period of this study with the number of advertisements increasing every year. Reviewing some of the advertisements revealed that product differentiation was being

attempted by hospitals, not on the basis of price, but on the basis of nonprice criteria, such as availability of a set of unique services. Appeals to choice,quality and convenience were emphasized. Reflecting, perhaps, a change in the way the consumer is viewed by the providers of care, hospital advertisements appealed directly to consumers as buyers/purchasers of health care. Hospital advertising was a mixture of persuasive and informative advertising although the former kind was more evident.

Government/Legal Barriers

As discussed in Chapter II, certificate of need (CON) appears to be the most significant barrier to entry in the hospital industry. Tennessee has had a CON program since 1974 administered by the Tennessee Health Facilities Commission (THFC). The Commission has twelve members appointed by the governor, including the commissioner of public health, the commissioner of mental health and mental retardation, the state controller, six members of the general public (consumers), one executive officer of a hospital, one nursing home administrator and one licensed physician (Tennessee Code Annotated, Section 68-11-106(e)). All health care institutions, physically located in the state of Tennessee, except those owned and operated by the U.S. government, are subject to the provisions of the CON rules. Activities requiring certification are:

1. Establishment, construction or development of new instituions or facilities;

2. Any capital expenditure or any construction which requires a capital expenditure exceeding $1,000,000;
3. Any activity, regardless of cost, which has the effect of increasing or decreasing licensed bed capacity;
4. Initiation or discontinuance of a significant health service;
5. Closure of an institution;
6. Change of location; and
7. Acquisition of major medical equipment.

The three general criteria for issue of a certificate of need are demonstrated need, economic feasibility and contribution to the orderly development of health care services. While all health care institutions in the state are under the provision of CON, private professional practices are excluded. In recent years, equipment, which was heretofore confined to use in the hospital because of quality and cost considerations, has been purchased by private professional practices. Thus, CON is a legal barrier to entry for both incumbent hospitals and potential hospital entrants, but not for physicians or other private professional practices. This confounds the competitive environment for hospitals.

Although CON has been in place in Tennessee since 1974, the rigor of the program has changed over the life of the regulatory program. Using the approval ratio (total number of CON hospital applications approved/total number of CON hospital applications filed) as a measure of regulatory intensity, the CON program has become more stringent for hospitals, indicated by a lower approval ratio, over the life of the

program (see Table 4.2). As such, CON appears to be a more potent barrier to entry, the longer that the CON program has been in place. One reason for this may be that standards for review have been developed in a more rigorous manner and applied more consistently by the Commission in making CON decisions.

Summary of Findings Regarding Threats to Entry for Hospitals in Tennessee

After analyzing the factors related to barriers to entry in the Tennessee hospital industry, the industry might best be characterized as one with moderate entry barriers. CON shelters incumbent hospitals from new entrants thus making the environment less competitive. But the absense of the CON requirement for private professional practices has encouraged entry into markets for specific hospital services and thus the environment for such services has become more competitive.

Differential access to capital for hospitals of differing ownership status did not appear to be a barrier to entry for projects proposed over the period 1981-1985, at least for SMSA hospitals.

Perhaps reflecting the presence of economies of scale regarding hospital size, new entrants into the Tennessee hospital industry during this time were all larger than 100 licensed beds. Evidence derived from the short-run cost function suggested that economies of scale exist up to 300 beds and are exhausted after that point. As far as other absolute unit cost differences, medical school affiliation appeared to confer cost disadvantages to hospitals as did an increase in inpatient days.

Table 4.2. Approval Ratio[a] for Certificate of Need (CON) Applications Filed by All Hospitals in Tennessee, 1975-1984

Year	Total Hospital CON Applications	Number of Hospital CON Application Denials	Approval Ratio
1975	52	1	.9808
1976	79	-	1.0000
1977	83	-	1.0000
1978	53	1	.9811
1979	99	5	.9495
1980	78	7	.9103
1981	92	6	.9348
1982	98	9	.9028
1983	155	18	.8839
1984	129	26	.7984

[a]Approval Ratio =

$$\frac{\text{Total Hospital CON Applications} - \text{Hospital CON Application Denials}}{\text{Total Hospital CON Applications}}$$

Source: Extracted from CON Logs of the Tennessee Health Facilities Commission, Nashville, Tennessee, 1975-1984.

Membership in multihospital systems increased from 34.9 percent of hospitals in 1981 to 48 percent of hospitals in 1984 which suggests that hospitals in Tennessee may value multihospital sytems as a way to overcome some barriers to entry.

Product differentiation did not appear to be a significant barrier to entry based on the very limited availability of information in this study.

Threat of Substitutes

One indicator of an increasing threat from substitutes for inpatient hospital services is the number of CON applications received from nonhospital based providers for traditional hospital services. The number of CON applications received by the THFC from 1980-1985 for free standing facilities providing services traditionally reserved for hospitals is shown in Table 4.3. What these figures do not account for are services offered by private professional practices which are not subject to CON statutes. Information was reported narratively in many CON applications to document this phenomenon, but no data exist statewide to calculate utilization of these alternative facilities.

Another crude indicator used to measure the threat of substitutes was the calculation of the change in the percent of total hospital revenue attributable to outpatient services for each hospital. In 1980, hospitals in Tennessee derived an average of 7.2 percent of total revenues from outpatient revenues; in 1984, the figure was 12.4 percent. Growth in outpatient revenues was considered a positive indicator for

Table 4.3. Certificate of Need Applications Received from Nonhospital Applicants for Free-standing Hospital Services in Tennessee, 1980-1985

Type of Free-Standing Facility	Number of Applications
Ambulatory Surgery Centers	22
Diagnostic Radiology Centers	5
Ambulatory Care Facility	8
Free-standing Psychiatric and/or Substance Abuse Facility	12

Source: Extracted from Certificate of Need Logs of the Tennessee Health Facilities Commission, Nashville, Tennessee, 1980-1985.

hospitals because it documented that hospitals were switching/diversifying into outpatient services to compete with those services being offered in the wider community. Alternatively, outpatient services are more susceptible to capture by single product firms; thus hospitals, by diversifying even more into outpatient services, may be making themselves more vulnerable to new competition.

Bargaining Power of Buyers

Perhaps the best indicator of the bargining power of buyers is the percentage of admissions and patient days contributed by Medicare beneficiaries in individual hospitals. For those hospitals which have high rates of Medicare admissions and patient days, the federal government as a buyer of hospital services via Medicare, will exert considerable leverage through its prospective payment system.

The percentage of Medicare admissions to Tennessee hospitals from 1980-1984 is summarized in Table 4.4. In each SMSA, except SMSA 4 (Memphis), the absolute percentage of Medicare admissions as a fraction of total admissions increased over the period. As Medicare constrains its reimbursement levels, hospitals must look to other buyers to meet an anticipated shortfall in revenues. This shortfall in revenues was exacerbated in Tennessee by the presence in 1984 of 330,000 individuals without any public or private health insurance (Vanderbilt University, 1985). Community hospitals in Tennessee provided $375 million of uncompensated care in 1984, a combination of bad debts and charity care. In the state of Tennessee as a whole and in each SMSA, the

Table 4.4. Percent Medicare Admissions and Percent Uncompensated Care for All Tennessee Hospitals and Tennessee SMSA Hospitals, 1980-1984

	1980		1981		1982		1983		1984	
Market Area	% Medicare Admissions	% Uncompensated Care	% Medicare Admissions	% Uncompensated Care	% Medicare Admissions	% Uncompensated Care	% Medicare Admissions	% Uncompensated Care	% Medicare Admissions	% Uncompensated Care
Tennessee	25.5	6.33	29.95	6.32	27.31	7.31	28.31	7.84	30.74	8.13
SMSA 1	24.34	3.63	27.66	3.34	27.25	3.76	27.08	4.25	35.5	4.34
SMSA 2	27.85	5.96	27.38	6.13	26.34	7.02	31.68	7.26	34.61	7.05
SMSA 3	21.28	5.80	19.08	5.83	22.31	7.31	21.66	8.41	29.91	9.99
SMSA 4	20.03	8.32	19.20	9.47	17.36	8.17	16.52	10.47	19.44	9.30
SMSA 5	20.80	8.90	21.53	7.58	23.19	8.63	23.95	9.31	25.63	9.45

Source: Extracted from data tapes of the 1980-1984 Joint Annual Report of Hospitals, State Center for Health Statistics, Tennessee Department of Health and Environment, Nashville, Tennessee.

absolute percentage of uncompensated care as a fraction of total revenues increased from 1980 to 1984.

Unfortunately, data are not publicly available on the source of revenues for hospitals in Tennessee by buyer or payor so that no estimate of cost-shifting to private payors could be documented. What was also not available per hospital was the percentage of patient days or admissions accounted for by those in negotiated discount plans, e.g., preferred provider organizations or health maintenance organizations (HMO). The more admissions in any given hospital which come from this pool of patients, the less latitude the hospital has in cost shifting to that buyer or payor to balance decrease in Medicare Reimbursement and increase in uncompensated care.

Total HMO enrollment in Tennessee at the end of 1985 was 428,176, an 8.9 percent penetration rate. There were no HMO's in Tennessee prior to 1983. In 1984, total HMO enrollment was 341,085, a penetration rate of 7.3 percent. There were eight HMO's in the state at the end of 1985 although three of them began operations in 1985, and thus enrollment was still quite low at the end of the period of this study. It is indicative of the probable effect on hospital utilization of HMO enrollment that HMO patient days per 1000 population in 1985 ranged from 344 to 633. Total patient days per 1000 population in Tennessee in 1984 was over 1200 (Lighter, 1986). Health maintenance organizations, because of their low inpatient hospital utilization rates, generally attempt to negotiate with selected hospitals for discounted hospital rates. As HMOs enroll more of the population, their

bargaining power will probably increase because hospitals will perceive the HMO as a steady source of patients with a guaranteed payment source.

Another indicator of changes in the bargaining power of buyers over the period of the study was the increase in the number of business coalitions organized for health care cost containment purposes and the number of employers involved in such coalitions. According to the Tennessee Manufacturers Association, there are currently (1986) twelve business coalitions in the state. Members of these coalitions employ approximately 200,000 employees in the state of Tennessee. Coalitions have stepped up their activities in data collection and have become increasingly vocal in CON hearings as advocates of a cost containment position.

In summary, the bargaining power of buyers increased dramatically in Tennessee from 1980 to 1984 making the environment for hospitals more competitive.

Bargaining Power of Suppliers

Because physicians supply patients to the inpatient core business of the hospital, changes in physician to population ratios and changes in the composition of the physician pool, influence the strength of the bargaining power of suppliers as a competitive force in the hospital industry.

Figure 4.1 shows the absolute change in physician population ratios for each SMSA in Tennessee from 1980 to 1984. In each SMSA, the

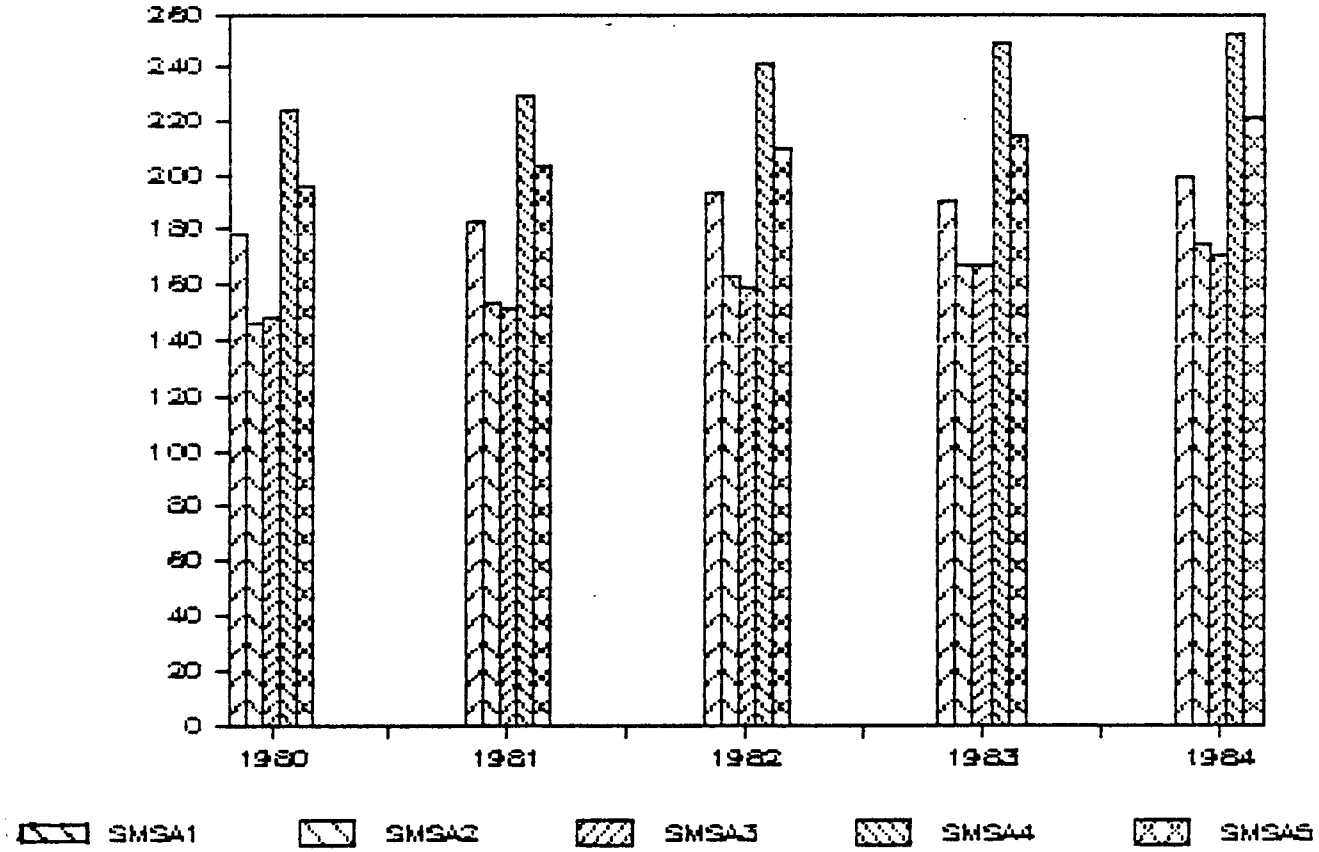


Figure 4.1. Total Licensed Physicians per 100,000 Population in Tennessee, 1980-1984, by SMSA

Source: Extracted from data tapes of the State Center for Health Statistics, Tennessee Department of Health and Environment, Nashville, Tennessee, 1980-1984.

ratios have increased over the time period indicating that the increase in the number of licensed physicians in each SMSA in a given year exceeded the number needed to maintain a stable ratio. The ability of an individual or group of physicians to bargain with a hospital for specialized equipment and services has probably been eroded. With more physicians to choose from for its medical staff, a hospital becomes less vulnerable in a competitive environment. Alternatively, the environment for physicians has become more competitive.

In addition to physician to population ratios, another method used to capture changes in the strength of the bargaining power of physicians as suppliers was to examine the number of physicians per hospital bed. This measure gives an indication of the influence of physicians in a given area over filling the existing hospital beds, an important issue when excess bed capacity exists in an SMSA. From 1980 to 1984, the mean number of physicians per licensed bed in Tennessee increased from .253 to .308. Similar increases occurred in each SMSA with SMSA 4 (Memphis) experiencing the most change.

A supply of capital, essential to the growth and modernization of the hospital industry, has been relatively abundant in recent years in Tennessee as reported in the subsection on threats to entry.

Consonant with the review of the literature in Chapter II on the bargaining power of suppliers, the data presented in this chapter suggest that the Tennessee hospital industry has experienced a decline in the influence of suppliers as a competitive force. As suppliers have

the potential to exert less leverage in the hospital industry, the environment has become less competitive.

Intensity of Rivalry

There are many indicators that point to an increase in intensity of rivalry among incumbent hospitals in the five metropolitan areas of the state. Both the Herfindahl index (HI) and the 4-firm concentration ratio (CR4) are gross indicators of market concentration and power in an industry. The CR4 and the HI for each health service area in the state of Tennessee for the five years of this study is given in Table 4.5.

The concentration ratio is the most widely used of all measures of market structure power. Usually calculated for 4 or 8 firms, the concentration ratio is the percent of market sales (or some other measure of size) accounted for by an absolute number of the largest firms in the market. The CR4 for the largest four hospitals in each health service area was calculated using admissions as the measure of size. In Tennessee, Health Service Area 4 which contains the Nashville SMSA was the least concentrated market. Health Service Area 1, containing the Tri-cities SMSA, and Health Service Area 6, containing the Memphis SMSA, were the most concentrated markets. Over the five year period, 1980-1984, the pattern of concentration in the health service areas remained consistent.

The concentration ratio has a number of problems as a measure of market power which scholars have attempted to overcome by construction

Table 4.5. Four-Firm Concentration Ratio (CR4) and Herfindahl Index (HI) for Short-Stay Hospitals in the Six Health Service Areas (HSA) in Tennessee, 1980-1984

Health Service Area	1980		1981		1982		1983		1984	
	CR4	HI	CR4	HI	CR4	HI	CR4	HI	CR4	HI
1	.678	.135	.701	.139	.695	.137	.729	.162	.727	.166
2	.548	.099	.531	.091	.538	.096	.528	.091	.534	.092
3	.640	.142	.661	.147	.692	.156	.646	.144	.566	.106
4	.319	.040	.318	.039	.325	.040	.315	.040	.337	.043
5	.494	.112	.492	.110	.533	.130	.573	.148	.567	.147
6	.806	.216	.816	.225	.657	.143	.647	.136	.634	.128

Source: Calculated from data tape of the 1980-1984 Joint Annual Report of Hospitals, State Center for Health Statistics, Tennessee Department of Health and Environment, Nashville, Tennessee.

of the Herfindahl index. The HI is the sum of squares of the sizes of firms in a market, in which sizes of firms are expressed as a proportion of total market sales. Under pure competition the HI would equal zero. Under monopoly, it would equal (+1) (Greer, 1984). Calculation of the HI for the six health service areas in the state of Tennessee showed that the hospital industry is a competitive market, although not a purely competitive market. But the CR4 ratios indicated that disproportionate market power was held by the largest four hospitals in each area, a reflection of an oligopolistic market structure.

From 1980 to 1984, there was a decline in total number of admissions to Tennessee hospitals from 933,950 to 898,051, a decrease of 3.84 percent. Similar declines in admissions were experienced in each SMSA (see Table 4.6). The same trend was evident in total inpatient days across the state, mirroring in Tennessee the experience nationwide.

Intensity of rivalry is exacerbated in an industry with excess capacity which is being squeezed by buyers who have increasing leverage. Two measures of the amount of excess capacity in the Tennessee hospital industry are reported occupancy rates, based on the number of beds in actual use, and the absolute difference between licensed bed capacity and reported bed capacity.

Tennessee had considerable excess hospital capacity over the five year time period of this investigation, increasing from 1442 licensed beds in 1980 to 2691 licensed beds in 1984 (see Table 4.7). In addition, as the number of licensed beds in actual use decreased, so did

Table 4.6. Total Admissions and Total Inpatient Days for All Tennessee Short-stay Hospitals, 1980-1984, by SMSA

Year	Variable	Tennessee	SMSA 1	SMSA 2	SMSA 3	SMSA 4	SMSA 5
1980	Admissions	933950	83386	69514	117557	190563	188592
	Inpatient Days	6337124	526864	494058	714896	1558368	1363658
1981	Admissions	968968	84613	71929	136739	188113	193463
	Inpatient Days	6584551	532152	514983	884713	1538650	1398368
1982	Admissions	964069	82771	75067	134411	187045	187691
	Inpatient Days	6393985	491227	530865	713862	1534209	1378545
1983	Admissions	964575	84809	59330	138054	186348	193382
	Inpatient Days	6273959	530033	424802	889932	1522380	1221795
1984	Admissions	898051	48526	56230	131293	181527	191010
	Inpatient Days	5879852	294397	368504	858889	1429518	1345591

Source: Calculated from data tapes of the 1980-1984 Joint Annual Report of Hospitals, State Center for Health Statistics, Department of Health and Environment, Nashville, Tennessee.

Table 4.7. Hospital Capacity Measures for all Short-stay Tennessee Hospitals, 1980-1984, by SMSA: Reported Occupancy Rate and Excess Licensed Bed Capacity

Market Area	1980		1981		1982		1983		1984	
	Percent Occup. Rate	Excess Licensed Beds	Percent Occup. Rate	Excess Licensed Beds	Percent Occup. Rate	Excess Licensed Beds	Percent Occup. Rate	Excess Licensed Beds	Percent Occup. Rate	Excess Licensed Beds
Tennessee	67.0	1442	66.7	1623	65.4	1773	63.2	1846	59.4	2691
SMSA 1	67.5	91	66.1	54	57.9	44	64.9	44	50.7	59
SMSA 2	65.6	119	66.5	149	67.8	146	55.9	135	55.2	202
SMSA 3	63.7	163	72.5	145	64.3	251	68.8	129	65.9	346
SMSA 4	65.6	295	64.0	657	67.2	601	70.7	822	70.6	1147
SMSA 5	71.8	473	71.2	419	67.7	482	63.6	535	62.7	490

Source: Calculated from data tapes of the 1980-1984 Joint Annual Report of Hospitals, State Center for Health Statistics, Department of Health and Environment, Nashville, Tennessee.

the occupancy rate of beds set up for use. Reported occupany rates, already below 70 percent in 1980, declined even more by 1984. In health planning guidelines adopted by the state of Tennessee, an 80 percent market area occupancy rate has been established as a standard before any new licensed beds can be added in a market area. The application of this standard has been inconsistent because of the difficulty in defining the relevant market area and because of perceived unique situations existing in individual hospitals.

Virtually all of the conditions leading to a greater degree of intensity of rivalry were present in the hospital industry in Tennessee from 1980-1984. The most important conditions were slow industry growth, marked by a general decline in hospital admissions and inpatient days, and excess plant capacity measured by an increasing number of licensed beds not in use. While intensity of rivalry may lead to destructive competitive behavior on the part of the incumbent firms, it does not necessarily do so. Some activities, like advertising battles, may actually expand demand in the industry for the benefit of all firms. At present, there are no data to know whether or not this is happening in the Tennessee hospital industry.

Summary of Findings Regarding Competitive Forces in the Tennessee Hospital Industry, 1980-1984

The preceding assessment of changes in the strength of the competitive forces that affect the Tennessee hospital industry supports the contention that the hospital industry became more competitive from

1980 to 1984. Experience in Tennessee, therefore, paralleled national trends which were discussed in detail in Chapter II.

In summary, the threat of entry from new competitors into inpatient hospital markets appeared to be slight because of the presence of CON which constituted a significant barrier to entry. But the threat of entry from nonhospital based competitors, especially those not subject to CON requirements, grew over the period. These competitors had a substantive impact on hospitals because they represented the emerging threat of substitutes for traditional hospital services.

Perhaps the competitive force with the most impact on the Tennessee hospital industry was the increasing power of buyers, both public and private, to exert leverage over the cost structure of the hospital industry. Hospitals, with almost 30 percent of total admissions accounted for by Medicare beneficiaries, were dramatically affected by changes in the Medicare system of reimbursement for hospital care. Unwilling or unable to shoulder more cost shifting burden, private buyers of care, mainly through negotiated discount arrangements and through the actions of employer coalitions, became more potent players in the hospital industry.

At the same time that buyers became stronger, the bargaining power of suppliers declined. For the most part, this was attributable to an increase in the number of physicians. As physician numbers and physicians per licensed bed increased, the leverage which physicians could exert over hospitals lessened.

The last measure of an increasingly competitive hospital industry was dramatically demonstrated by the intensity of rivalry among hospitals made manifest by declines in admissions and patient days coupled with a marked increase in hospital licensed bed capacity.

Most of the information presented in this chapter was descriptive rather than analytical in nature. For the purposes of this study, a rigorous statistical assessment of changes in the competitive forces affecting the Tennessee hospital industry was not necessary since the description of the environment was intended to provide a context for the primary investigation of strategic responses and formation of strategic groups. No causal links were postulated between specific changes in the competitive environment and the strategic responses of hospitals reported in the next chapter.

CHAPTER V

AN ANALYSIS OF THE STRATEGIC RESPONSES OF TENNESSEE SMSA HOSPITALS AND THE FORMATION OF STRATEGIC GROUPS IN THE TENNESSEE HOSPITAL INDUSTRY

Having described the contextual competitive environment for hospitals in Tennessee during the period 1980-1984, this chapter presents an analysis of the strategic responses hospitals engaged in during this period of environmental change. In addition, the patterns of strategic responses are analyzed with respect to the formation of strategic groups in the Tennessee hospital industry.

There are four sections in this chapter. The first three sections present findings and analyses corresponding to Research Questions 2-5 as posed in Chapter III. In the first section, Research Question 2 is addressed. The second section discusses results pertinent to Research Question 3. Because Research Questions 4 and 5 are closely linked, they are addressed together in the third section of this chapter. The chapter concludes with a summary of findings in the fourth section.

Strategic Responses by Tennessee SMSA Hospitals, 1981-1985

Research Question 2 asked: "What pattern of strategic responses did individual hospitals in Tennessee follow during the period 1981-1985?"

As described in Chapter III, seven strategic responses were measured for the 67 short-stay hospitals in the five SMSAs in

Tennessee. Every hospital meeting the definition of hospital given in the definitions list in Chapter III was included in the study population. All the results presented in the remainder of this chapter are for the hospitals in the study population. In Table 5.1, the mean for each strategic variable for the study hospitals is shown. The means were calculated from the data on the Strategic Response Instrument (SRI) which was completed by the investigator. Because of the nature and timing of the CON process, the measures of the first four strategic responses--specialization/diversification, innovation, brand identification, and quality--represented intended strategy on the part of the hospitals. The other three strategic responses--cost position, growth and use of leverage--captured realized strategies because the SRI values were calculated based on the JAR profile which reported actual experience data from the 67 study hospitals. For completeness, mean values are reported for the three measures of cost position, the two measures of growth, and the two measures of use of financial leverage. Only one measure of each construct was actually used for the strategic group analysis. Each strategic variable is discussed separately in the following subsections.

Specialization/Diversification

This variable was measured using a seven point Likert scale ranging from 1 to 7 with (7) representing much more specialization, (4) representing no change, and (1) representing much more diversification over the period from 1981-1985 (see Appendix E). The sample mean for

Table 5.1. Descriptive Statistics for Strategic Response Variables for Tennessee SMSA Hospitals, 1981-1985[a]

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
Specialization/Diversification	3.612	0.999	1.0	7.0
Innovation	0.806	0.973	0.0	3.0
Brand Identification	0.224	0.487	0.0	2.0
Quality	1.179	1.445	0.0	4.0
Cost Position				
-Cost per Adjusted Patient Day, 1984 ($)	366.03	80.60	157.02	572.55
-Percent Change in Cost per Adjusted Patient Day, 1980-1984	87.26	76.50	-15.40	607.00
-Proportionate Cost per Adjusted Patient Day, 1984[b]	1.003	0.210	0.487	1.405
Growth				
-Percent Change in Market Share (Admissions), 1980-1984	9.921	40.203	-43.20	240.70
-Proportionate Market Share (Admissions), 1984[b]	1.036	0.902	0.049	4.629
Use of Financial Leverage				
-Percent Change in Debt to Asset Ratio, 1980-1984	241.007	1469.70	-3060.30	11260.01
-Absolute Change in Debt to Asset Ratio, 1980-1984[b]	0.030	0.381	-0.683	1.389

[a]Specialization/Diversification, Innovation, Brand Identification and Quality are reported from Likert-type scale. Cost per Adjusted Patient Day is reported in dollars. Proportionate change in cost per adjusted patient day, proportionate change in market share and Absolute change in debt to asset ratio are reported as ratios. Percent changes in cost per adjusted patient day, market share and debt to asset ratio are reported as percentages.

[b]Variable used in cluster analysis.

the specialization/diversification variable was 3.612 (see Table 5.1) meaning that there was virtually no move toward specialization or diversification during the time period of this study. Only five hospitals had values greater than (4) indicating some degree of specialization; 23 hospitals had values less than (4) indicating some degree of diversification. The remainder of the hospitals had values of (4) indicating no change over the period 1981-1985.

Diversification was a more predominant strategic response for the study hospitals during the time frame of the study. Most often, diversification took the form of movement into ambulatory surgery services, inpatient psychiatric and/or substance abuse services, birthing rooms, home health services, swing beds and primary care services or satellites.

Specialization moves included focus on oncology services, high technology diagnostic and therapeutic radiology services and cardiac services in order to develop centers of special competence.

Specialization and diversification strategies were placed on the same scale because it was presumed that
hospitals would find it difficult to engage in both strategies simultaneously. Specialization implies a focus of resources; diversification implies a portfolio approach to use of resources. By definition, specialty hospitals were excluded from the study sample of SMSA hospitals so only general service community hospitals were measured.

Innovation

Innovation was measured on a 5 point Likert scale anchored at (0) which represented no change in degree of innovation during the period 1981-1985 (see Appendix E). For the study sample, the mean value for innovation was .806 (see Table 5.1), indicating that these hospitals pursued only slightly a strategy of innovation. A total of 34 hospitals engaged in some degree of product or service innovation although only six hospitals engaged in innovative practices labelled moderate (3) or above. A hospital was coded as an innovator at some level it the services or products proposed in a CON were not simply replacement or modernization of existing services or products, but were an extension into newly emerging services or products. Another measure of innovation was whether a hospital was first or near first in the market with a product or service. Examples of innovative services revealed by the CON profiles included birthing rooms, lithotripsy, nuclear magnetic resonance scanners, and hospice services.

Brand Identification

Of all the strategic responses measured, brand identification was probably the most difficult to assess and made with the most subjective data. Recognizing the inadequacies of the data, brand identification was measured on a 5 point Likert scale anchored at (0) (see Appendix E). Only 13 hospitals in the study sample sought brand identification which could be identified via the CON profile. JAR data did not include any information which could be used to assess brand

identification. Although hospital advertising strategies are undoubtedly a good way to identify branding behavior, this information was not systematically available to the investigator. The mean value for brand identification was .224 (see Table 5.1) indicating that virtually no brand identification was pursued by study sample on average.

Brand identification was identified chiefly through review of the narratives accompanying the CON application. Frequent mention of the multihospital system, if any, to which the hospital belonged, liberal use of logos or other trademarks, and/or consistent linking of the proposed service or product with the hospital name as a branding device, were the most prominent ways in which the hospitals engaged in brand identification.

Quality

Again a Likert scale was used to measure quality on a five point scale anchored at (0) (see Appendix E). Out of the 67 hospitals, 34 engaged in some degree of quality enhancing activities from 1981-1985. There were 15 hospitals that engaged in activities of moderate (3) or much more (4) quality enhancing acitvities. For the total study sample, the mean value for quality was 1.179, a value that indicates that, on average, the hospitals engaged in "little" quality enhancing behavior during the time frame of this study.

Quality is a difficult characteristic to define, but in the context of the data analyzed for this study, quality enhancing activities

were almost exclusively construction, renovation or modernization projects. Although quality was almost always invoked on the CON application as the raison d'etre for a particular project, there was no way to quantify such statements. Hospitals coded as (3) or (4) on the Likert scale generally planned for large scale renovation or modernization projects. Many quality enhancing activities were undertaken to ameliorate code or licensure violations.

Cost Position

One of Porter's (1980) generic strategies is overall cost leadership. While cost is clearly important in the hospital industry and particularly as the environment becomes more competitive or constrained, hospitals have not engaged historically in competitive pricing behavior. However, many of the alternative delivery plans, such as preferred provider organizations and health maintenance organizations are giving incentives and discounts to the low cost providers in a market area which may make cost position of more importance to providers in the future.

Because of the nature of the service and the nature of the health care reimbursement structure, cost leadership is less motivating as a strategy in the hospital industry than it is in many other industries. The characteristic of the service, the nature of the reimbursement and the role of the provider as agent for the patient, make it difficult for the patient to shop around for hospital care.

The mean cost per adjusted patient day (CAPD) in 1984 for the total sample of hospitals was $366.03 (see Table 5.1). The CAPD does

not account for differences in case mix making it an inadequate indicator for measuring cost position in a market area. A more relevant indicator, (CAPDPROP), was developed to reflect the relative position of a hospital vis a vis the mean CAPD for the relevant market area (SMSA). For the sample, the mean CAPDPROP was 1.0029 (see Table 5.1). A value of CAPDPROP greater than (+1) indicated that a hospital had a CAPD higher than the average CAPD for the relevant SMSA. Concomitantly, CAPDPROP less than (+1) indicated that a hospital had CAPD less than the SMSA mean.

A third measure of cost which was developed, percent change in CAPD from 1980 to 1984, was rejected as a valid measure of strategic response because it did not reflect the cost position of hospitals vis a vis their competitors. As reported in Table 5.1, the mean percentage increase in cost per adjusted patient day from 1980-1984 was 87.26 percent for the hospitals in the study sample.

Growth

Although growth in market share may be regarded as an objective or goal rather than as a strategic response, growth was used in this study as a measure of realized strategy. Like cost, growth for each hospital in the sample was measured in multiple ways. First, growth was measured as an absolute change in market share in admissions from 1980 to 1984 (GROWTH). Second, growth was measured as a relative indicator of a hospital's market share in admissions in 1984 vis á vis mean market share in admissions for all the other hospitals in the relevant market area (MSPROP).

A total of 30 hospitals in the study sample lost market share(admissions) during the time period of the study. The range was from -42.6 percent market share loss to +240.7 percent market share gain with the mean for the study sample at 9.92 percent (see Table 5.1, p. 133).

The second measure of growth (MSPROP) gives an indication of market share leadership and was chosen as the most valid measure of growth as a strategic response. A value greater than +1 indicated a market share leader. Of the sample hospitals, 19 hospitals had market shares at least 20 percent higher than the average in their respective market areas whereas 37 hospitals had market shares 20 percent or less than the SMSA mean market share. The study sample mean of 1.036 (see Table 5.1) suggested that, on average, the study hospitals achieved a very slight increase in market share from 1980-1984.

Use of Financial Leverage

The two ways used to measure leverage were as a percentage change and as an absolute change in debt to asset ratio from 1980 to 1984. As with cost and growth, this strategic response represented realized strategy. The percent change, ranging from -3060.3 percent to +11260 percent for hospitals in the study sample, was basically uninterpretable because of the wide range of values and the lack of a standard as a base line. For the sample hospitals, the mean change in debt to asset ratio was 241.01 percent (see Table 5.1).

The second measure (DEBTDIFF) was developed to smooth out the variability in reporting financial leverage from hospital to hospital. It was calculated by subtracting each hospital's debt to asset ratio in 1980 from its debt to asset ratio in 1984. Values can range between (-1) and (+1). A total of 35 hospitals decreased their debt to asset ratios over this period while the mean change in debt to asset ratio was .03 for the hospitals in the study sample.

Summary and Discussion of Strategic Response Variables

Based on the CON profile and the JAR profile compiled by the investigator for every short-stay general hospital located in the five SMSAs of Tennessee (n = 67), a Strategic Response Instrument (SRI) was completed for the same hospitals. The 67 hospitals were the objects of this study and are referred to as the study sample.

Seven strategic responses were evaluated for each hospital in the study sample. Descriptive statistics for each variable were reported in Table 5.1, p. 133. In order to ascertain whether the set of hospital strategic responses was different between SMSAs in the state, a one-way analysis of variance was performed on each strategic response with SMSA as an independent class variable. The results of the analysis are shown in Table 5.2. The only significant difference between SMSAs was on the variable brand identification ($p < .05$).

While the values for the multiple measures of cost position, growth and use of financial leverage were reported in this section, one

Table 5.2. Analysis of Variance Results to Test for Differences in Strategic Response Variables by SMSA for Tennessee SMSA Hospitals, 1981-1985

Variable	F[a]	Probability
Specialization/Diversification	2.03	.101
Innovation	.53	.715
Brand Identification	2.63	.043**
Quality	1.10	.364
Proportionate Cost per Adjusted Patient Day, 1984	.07	.990
Proportionate Market Share, 1984	.17	.950
Difference in Debt to Asset Ratio, 1980-1984	.83	.510

[a] df = (4,62)

**p ≤ .05

measure for the respective strategic responses was chosen as the most valid to use for further analytical tests.

Strategic Group Formation

The third research question posed at the outset of this study was, "What are the strategic groups in the hospital industry in Tennessee based on the pattern of strategic responses pursued by each hospital during the period 1981-1985?" To answer this question, hospitals in the study sample were grouped jointly on the seven strategic response variables using Ward's minimum variance method of cluster analysis. The input measures for the strategic response variables for each hospital were the values on the SRI. The clusters formed by the cluster analysis were taken to represent strategic groups in the Tennessee hospital industry. The terms cluster and strategic groups are used interchangeably in this discussion.

To visualize the hierarchical process of clustering, a scree or tree diagram represents a graphic way to present the results of cluster analysis (see Figure 5.1). Arrayed along the horizontal axis are the unique four-digit codes for the hospitals in the study sample. A full list of hospitals and their facility codes is found in Appendix B. The semi-partial R-squared on the vertical axis is the decrease in the proportion of the variance accounted for resulting from joining the clusters. It equals the between cluster sum of squares divided by the corrected sum of squares. In Ward's minimum variance method, the distance between two clusters is the ANOVA sum of squares between two clusters

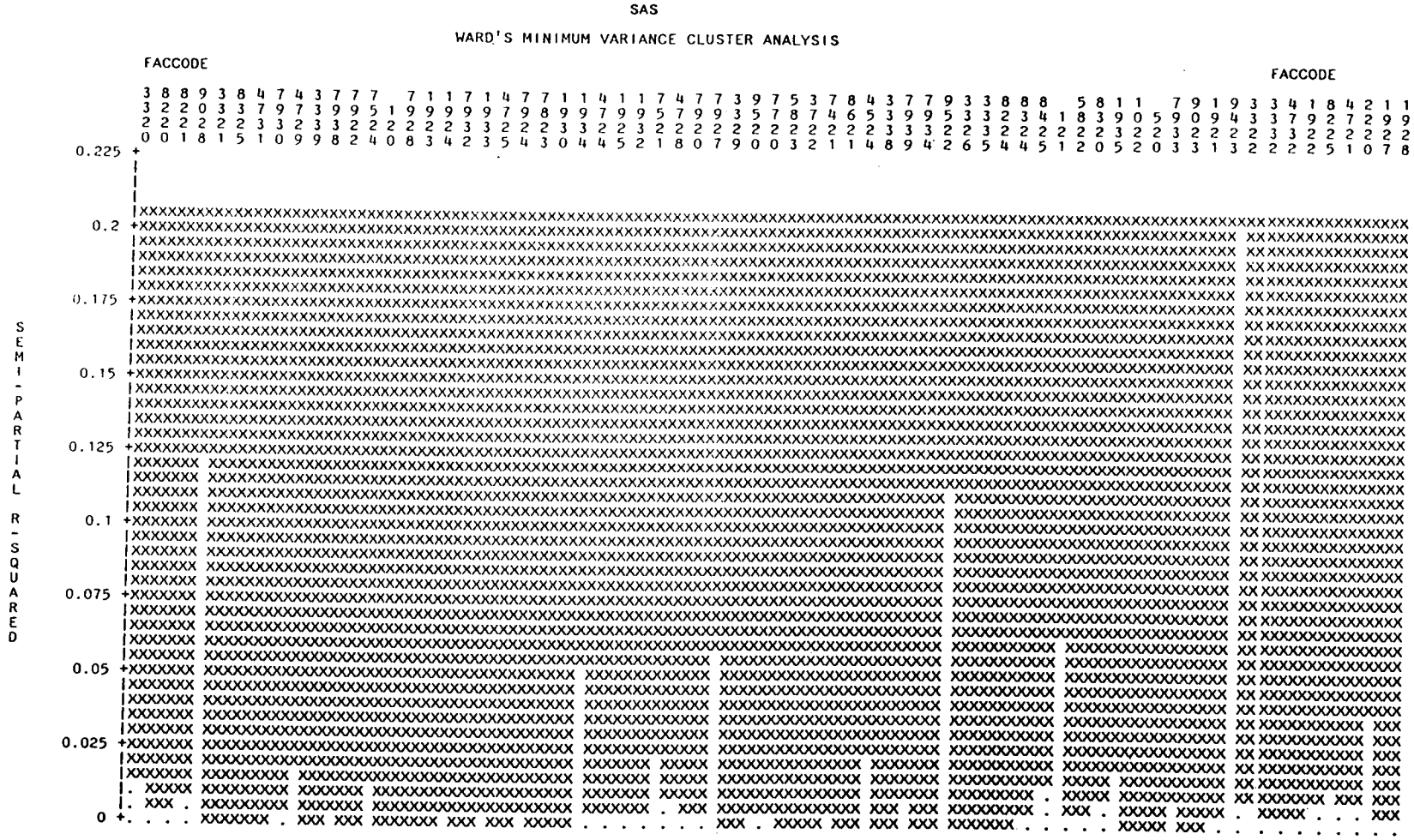


Figure 5.1. Tree Diagram for SMSA Hospitals in Tennessee Using Ward's Minimum Variance Cluster Analysis

Source: SRI

added up over all the variables (SAS User's Guide: Statistics, 1985). The method tends to join clusters with a small number of observations and is strongly biased toward producing clusters with roughly the same number of observations. It is also very sensitive to outliers.

No stopping rule is widely accepted for determining the optimum number of clusters suggested by the data but the cubic clustering criterion (CCC) is one that has been proposed. The best way to use the CCC is to plot its value against the number of clusters up to about one-tenth the number of observations (SAS Users Guide: Statistics, 1982). Peaks of 2 or 3 indicate good clusterings but the optimum number of clusters occurs where the peak is highest.

Figure 5.2 plots the number of clusters generated by Ward's minimum variance method against the CCC value for that number of clusters. Using the decision rule of where the highest peak occurs, the optimum number of clusters for the data under investigation is four.

Once the optimum number of clusters was determined from the Ward's minimum variance method, another cluster method, in which the investigator set the number of clusters, a priori, was performed. This procedure, known as FASTCLUS in SAS, produced an output data set containing a cluster membership variable as well as an output data set containing cluster means, both of which were necessary for further analysis of the clusters. All results presented in the rest of this chapter are those derived from the FASTCLUS procedure. FASTCLUS was run on both standardized and unstandardized variables. For ease of interpretation, unstandardized results are presented in what follows. No

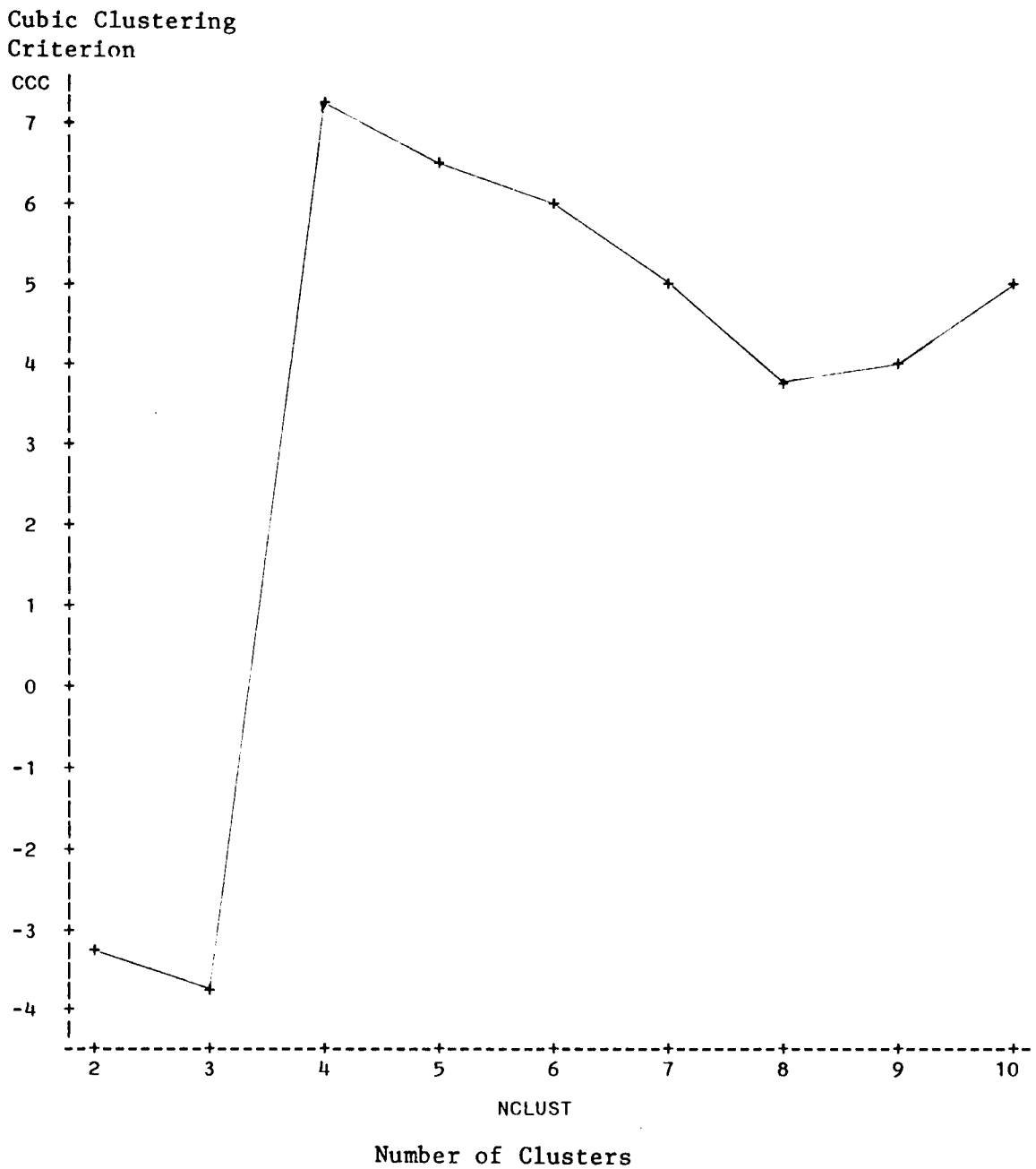


Figure 5.2. Plot of Cubic Clustering Criterion (CCC) Against the Number of Clusters in the Tennessee Hospital Industry

significant change in cluster membership was caused by using standardized variables.

Descriptive summary statistics for the seven strategic response variables which were used in the cluster analysis are presented in Table 5.3. Of particular interest in interpreting the results is the R-squared column which represents the relative contribution of each of the seven strategic response variables in differentiating cluster membership. With an R-squared of .81, quality was the strategic response which had the greatest differentiating effect. Quality was followed by specialization, innovation, brand identification and proportionate market share, the measure of growth used in this analysis. Although clustering does not give a "true" F statistic, the pseudo F statistic of 40.84 indicates that the seven strategic responses accounted for a significant part of between cluster variance and yielded an expected overall R-squared of .524.

Another tool of analysis for interpreting overall differences between clusters is to use canonical discriminant analysis. Canonical discriminant analysis derives canonical variables (linear combinations of the quantitative variables) that summarize between class variance. Multivariate test statistics, based on the canonical discriminant analysis, test the null hypothesis that the cluster means are equal. Each of these test statistics was significant at $p < .001$, indicating that the cluster means were not equal.

An analysis of cluster means on each of the seven strategic response variables (see Table 5.4), allowed for more concrete

Table 5.3. Descriptive Statistics for Strategic Response Variables Used in Cluster Analysis of Tennessee SMSA Hospitals, 1981-1985

Variable	N	Mean	R^2
Quality	67	1.179	.8128
Specialization/ Diversification	67	3.612	.6590
Innovation	67	0.8060	.6141
Brand Identification	67	0.2239	.5828
Proportionate Market Share, 1984	67	1.0359	.4910
Absolute Change in Long Term Debt, 1980-1984	67	0.0302	.0449
Proportionate Cost per Patient Day, 1984	67	1.0030	.0362

F = 40.84

Overall R^2 = .5240

Table 5.4. Means of Strategic Response Variables in Tennessee SMSA Hospitals, 1981-1985, by Cluster

Variable	Cluster 1	2	3	4
Quality	2.60	3.27	1.00	0.19
Specialization/ Diversification	5.40	3.60	2.00	3.81
Innovation	2.20	0.60	2.20	0.32
Brand Identification	0.20	0.07	1.10	0.05
Proportionate Market Share, 1984	2.93	0.72	1.65	0.74
Absolute Change in Debt/Asset Ratio, 1980-1984	-0.13	0.15	-0.05	0.02
Proportionate Cost per Adjusted Patient Day, 1984	1.09	0.96	1.06	0.99
Number of Observations	5	15	10	37

description and interpretation of the clusters. For the purposes of this study, a cluster represented a strategic group in the Tennessee hospital industry at the end of 1985.

Cluster 1, or Strategic Group 1, consisting of five hospitals, was characterized by the highest proportionate market share, the highest level of specialization, the greatest decrease in debt, the highest level of innovation, and the second highest level of quality and brand identification. Cluster 1 also appeared to have the highest cost group of hospitals as indicated by a value greater than +1 on the variable of proportionate cost per adjusted patient day.

Cluster 2, or Strategic Group 2, comprised of 15 hospitals, had the lowest proportionate market share, the highest increase in long term debt and the highest level of quality. This group of hospitals had little or no change in brand identification, innovation or a strategy of specialization or diversification. As a group, Cluster 2 hospitals had lower cost per adjusted patient day than the mean cost per adjusted patient day in the hospital's respective SMSA.

Cluster 3, or Strategic Group 3, comprised of 10 hospitals, had engaged in diversification more than any other cluster group, had the second highest proportionate market share, the highest level of innovation and the highest level of brand identification. As a group, the hospitals also engaged in a slight level of quality enhancement and decreased their debt to asset ratios from 1980-1984. Like Strategic Group 1, Group 2 had a higher mean proportionate cost per adjusted patient day.

The largest cluster or strategic group, Cluster 4, comprised of 37 hospitals, may be characterized as essentially having made no change from 1981 to 1985 on four of the seven strategic response dimensions--specialization/diversification, innovation, brand identification, and quality. On each of these variables, Strategic Group 4 had the lowest mean value. In terms of changes in debt, Cluster 4 hospitals increased their long term debt structure from 1980-1984. These hospitals, as a group, had lower proportionate market share and were neither low cost or high cost hospitals when compared with the mean market share and cost per adjusted patient day of the SMSA.

How do the characteristics of the strategic groups (clusters) identified in this study compare to other commonly cited typologies of business strategies? In a review article, Galbraith and Schendel (1983) noted that classification of strategy types has suffered from a lack of empirical support. Their plea was that typologies of business strategy be derived empirically. This study was an attempt to conduct just such an investigation and it follows investigations conducted in other industries which have employed cluster analysis to uncover strategic typologies. These studies are summarized in Table 5.5.

Although a number of different industries have been studied, certain strategy types appear consistently. Specialization has emerged in most studies as a generic strategy as has a low price strategy. In most industries, there appear to be firms which have engaged in a status quo, "middle of the road" strategic posture. Another common strategic posture appears to be one which might be termed progressive or

Table 5.5. Typologies of Business Strategies Derived from Studies Employing Cluster Analysis

Author and Strategy Label	Industry	Characteristics of Strategy Type
Galbraith and Schendel (1983)	Multiindustry-PIMS Data Base	
(1) Harvest		Low price posture
(2) Builder		High R&D and Promotion Increase market share
(3) Continuity		Status quo strategy
(4) Climber		Narrow product lines; low quality and low cost
(5) Niche		Specialization; high quality and high cost
(6) Cashout		Breadth of product line; emphasis on quality
Dess and Davis (1984)	Paints and Allied Products	
(1) Cost		Overall lost cost
(2) Differentiation		Unique product or service
(3) Focus		Concentration on specific customers' market or product line
(4) Stuck-in-the-Middle		No consistent strategy pattern
Hawes and Crittenden (1984)	Retail Supermarket Chains	
(1) Aggressive Initiators		Introduction of new products early; aggressive promotion

Table 5.5 (continued)

Author and Strategy Label	Industry	Characteristics of Strategy Type
(2) Conservative Reactors		Middle of the road; emphasize stability
(3) Submissive Defenders		Late introduction of new products; little promotional activity; low quality
Harrigan (1985)	Retailing	
(1) & (2)		Very low inventory turnover and employee productivity ratios
(3)		Very low employee productivity ratios
(4)		Moderate inventory turnover
(5) & (6)		Low-average inventory turnover and medium employee productivity
(7)		Full product line; national markets
Fombrun and Zajac (1987)	Financial Services	
(1)		Aggressive; interorganizational linkages
(2)		Growth through mergers and acquisitions; collective efforts
(3)		Specialization

initiative and which focuses on growth. A final generic strategy type which has emerged from these studies is the reactor strategy, which at times seems to have been difficult to differentiate from the status quo strategy.

The cluster analysis used in this study of hospitals to identify strategic groups in the hospital industry in Tennessee uncovered somewhat similar patterns. Using Miles and Snow's (1978) strategic typology, Cluster 1 hospitals may be classified as analyzers, Cluster 2 hospitals as reactors, Cluster 3 hospitals as prospectors and Cluster 4 hospitals as defenders. Alternatively, using Porter's (1980) generic strategies as a reference point, no cluster or strategic group of hospitals engaged in a low cost strategy. This is not surprising given the peculiarities of the hospital reimbursement/pricing structure. Clusters 2 and 3 hospitals might appropriately be labelled as hospitals engaged in a focus strategy, and Cluster 1 hospitals as those having pursued a differentiation strategy. Cluster 4 hospitals appear to be those "stuck-in-the-middle", a particularly unenviable place to be in an increasingly competitive environment.

Although there has been a paucity of studies reporting on strategic responses in hospitals, Table 5.6 summarizes those pertinent to an analysis of the results in this study. Miles and Snow (1978) chose a group of voluntary hospitals as one of three case studies to illustrate organizational adaptation to the environment. In terms of organization strategy, health professionals and hospital administrators were asked to rate hospitals in the case study according to strategic type

Table 5.6. Summary of Strategic Responses Used by Hospitals Derived from a Review of Empirical Hospital Specific Studies

Author	Strategic Responses
Miles and Snow (1978)	Prospectors--hospitals which almost continually search for market opportunities and regularly experiment with potential responses to emerging trends. Analyzers--hospitals which operate in two types of product-market domains, one relatively stable, the other changing. Defenders--hospitals which have narrow product market domains; devote primary attention to improving the efficiency of their existing operations. Reactors--hospitals which perceive environmental change and uncertainty but are unable to respond effectively.
Coddington, Palmquist and Trollinger (1985)	Downsizing--reduce the number of beds Low-cost--compete on price basis Increase market share Specialization--develop centers of special competence Diversification--move into related health care activities to become less dependent on inpatient revenue Multihospital system membership
Shortell et al., 1985	Market penetration vs. new market development Product/service refinement vs. product/service development Diversification--new product/service development and new market development.
Shortell et al. (n.d.)	Prospector Analyzer Defender Reactor
Autrey and Thomas (1986)	Overall cost leadership Differentiation--hospital with unique position in the market Focus--create a market niche

Table 5.6 (continued)

Author	Strategic Responses
Tuckman and Chang (1986)	Horizontal integration Product diversification Product specialization Resource-based quality improvement Institutional differentiation Public-relations and physician centered marketing

described as prospector, analyzer, defender and reactor. There was remarkable convergence on a single typological classification for each hospital suggesting that the types were adequate descriptors of hospital strategy.

Using the Miles and Snow typology as a measure of strategic orientation, Shortell et al. (n.d.) examined diversification of hospital service and the effects of ownership, environment and strategy. With regard to the number of out-of-hospital services offered, the number of unprofitable out-of-hospital services offered, and the provision of charity care, strategy type or orientation was not a significant predictor.

None of the other studies cited in Table 5.6 were empirical, but they do seem to corroborate the suggestion in this study that there are identifiable strategic types in the hospital industry.

While the clusters derived from the cluster analysis may be thought of as strategic groups of the hospital industry in Tennessee, it is nonetheless the case that hospitals do not compete in the entire state, but in local and regional markets (SMSAs). Although it would be helpful to be able to perform a cluster analysis on each set of hospitals in an SMSA to determine if the strategic groups were robust from region to region, the number of hospitals in each SMSA is too small to make such a procedure theoretically possible.

An Analysis of Differences Between Strategic Groups in the Tennessee Hospital Industry

In this section, differences between the strategic groups in the Tennessee hospital industry by organizational characteristics and financial performance are examined. The findings address the fourth and fifth research questions posed at the outset of this study, respectively.

Differences in Strategic Groups by Hospital Organizational Characteristics

To determine whether there were differences between the strategic groups according to the hospital organizational characteristics which were postulated to be important contingency variables, two types of tests were done. For the classification variables of location, multihospital system membership, and ownership status, a Chi-square test was performed. For the continuous variable of size, measured by the number of licensed beds in a hospital, a one-way analysis of variance was performed with cluster as the classification variable. Results of the Chi-square tests are shown in Table 5.7 and results for the analysis of variance in Table 5.8.

None of the differences tested for using the Chi-square test were significant meaning that the strategic groups did not differ according to location, multihospital system membership or ownership status from what would be expected in the population of hospitals. In the case of location, indicated by the SMSA in which a hospital is located, the nonsignificant result appears to suggest that there is not one type of

Table 5.7. Chi-Square Differences Bewteen Strategic Groups in Tennessee SMSA Hospitals on Location, Multihospital System Membership and Ownership Status, 1984

Variable	Chi-Square	Probability
Location[a]	18.043	0.114
Multihospital System Membership[b]	3.511	0.743
Ownership Status[c]	9.210	0.162

[a]Degrees of freedom = 12

[b]Degrees of freedom = 6

[c]Degrees of freedom = 6

Table 5.8. Analysis of Variance for Differences Between Strategic Groups in Tennessee SMSA Hospitals on Size of Hospital, 1984

Source	DF	SS	MS	F	p	R^2
Model	3	621511	207170	3.21	.029**	.13
Error	63	4070415	64609			

**p ≤ .05

strategic pattern which fits a particular hospital area or SMSA. Rather, it seems that each SMSA had hospitals which pursued diverse strategies and thus fell into separate strategic groups.

While multihospital system membership may be an important organizational contingency variable affecting corporate level strategy, the focus on business level strategy in this study may be one plausible reason for the insignificant result on the system variable. It may have been true as well that the continuum of arrangements that were classified as multihospital systems was too all inclusive to capture the real effect of tightly controlled systems on strategy selection.

While unexpected, the finding that ownership status was not a significant variable differentiating strategic group members appears to support recent studies which suggest that there is a convergence of strategy and behavior among all hospitals regardless of ownership status (Gray, 1986; Marmor, Schlesinger and Smithey, 1986).

The one-way analysis of variance performed to test for differences between strategic groups according to size was significant at the .05 level. This result appears to confirm the role of firm size as an important contingency variable in a firm's strategic posture which has been found in studies of other industries. Larger hospitals tend to have more complex organizational structures and more sophisticated technology cores which may offer them certain strategic patterns unavailable to smaller hospitals (Graeff, 1980; Fottler et al., 1982). An example of this might be a specialization strategy, which for a general service community hospital means offering very high technology, high cost services.

To test for statistically significant differences in pairs of strategic group means for hospital size, Scheffe post-hoc tests were conducted. There were significant differences between Strategic Group 1 and Strategic Group 2 ($p < .001$). The latter tended to be hospitals on the periphery of the SMSA and had fewer licensed beds than the Group 1 hospitals, all located in the center of an SMSA. Significant differences on mean hospital size were also found between Strategic Groups 1 and 4 ($p < .10$) and Strategic Groups 2 and 3 ($p < .05$).

In Table 5.9, frequency data on hospital organizational characteristics are presented for each strategic group. It appears that the strategic groups were generally composed of heterogeneous firms, that is, the groups were loosely formed (Harrigan, 1985). In terms of location, Strategic Group 1 appeared to be the most cohesive with three of the five hospitals located in one SMSA. The other strategic groups had at least one hospital in each SMSA with the exception of Strategic Group 4 which did not contain any hospitals in SMSA 4.

Hospitals representing the three ownership categories were found in Strategic Groups 2 and 4, while Strategic Group 3 contained no public hospitals and Strategic Group 1 had no for-profit hospitals. As far as multihospital system membership, each strategic group contained hospitals belonging to both types of system and those belonging to no system at all.

The only significant difference between strategic groups was mean licensed bed size. In Table 5.9, the actual mean bed size for each strategic group is shown. Strategic Group 1 had the largest hospitals,

Table 5.9. Frequency Count for Location, Multihospital System Membership, Ownership Status, and Mean Size by Strategic Groups in the Tennessee Hospital Industry, 1984

Variable	Strategic Group 1	Strategic Group 2	Strategic Group 3	Strategic Group 4	Total Study Sample
Location					
SMSA 1	1	3	2	6	12
SMSA 2	3	3	1	2	9
SMSA 3	1	1	2	8	12
SMSA 4		3		9	12
SMSA 5		5	5	12	22
Ownership Status					
For-profit		8	3	11	22
Not-for-profit	4	5	7	17	33
Public	1	2		9	12
Multihospital System Membership					
For-profit	1	7	3	11	22
Not-for-profit	1	1	3	7	12
None	3	7	4	19	33
Size[a]	523	184	413	261	293
Number of Hospitals	5	15	10	37	67

[a]Mean number of licensed beds per hospital.

followed by Strategic Groups 3, 4, and 1. Group 1, the analyzers, followed a strategy of specialization which may be more favorable for large hospitals while Strategic Group 2, the reactors, followed a strategy of quality enhancements in the form of renovation, modernization and construction projects. Smaller hospitals, which probably tended to be older hospitals, were seemingly engaged in a form of catch-up.

Financial Performance Differences Between Strategic Groups

As was discussed in Chapter III, the measure of financial performance used in this study was return on assets (ROA). Although financial performance is not the sole indicator of performance which is important in evaluating the overall performance of the hospital industry, ROA is useful as a standard for comparison with performance of strategic groups in other industries. According to developing theory on strategic groups, the profit potential of firms in different strategic groups may differ because the five broad competitive forces do not have equal impact on the groups.

The mean ROA for the study sample in 1984 was 3.51 percent. Clusters 1, 2 and 3 had a positive ROA while Cluster 4 had a negative ROA in 1984. Since a single year may be a misleading indicator of financial performance, the five year mean ROA (1980-1984) for each strategic group was also calculated for comparison. Strategic Group 3, the prospectors, consistently had the highest ROA while Strategic Group 4, the

defenders, had the lowest ROA. The latter result is consistent with results reported in the studies cited in Table 5.5, p. 151.

When a one-way analysis of variance was performed to detect any differences between strategic groups on financial performance, no statistically significant differences were found between the groups (see Table 5.10). This result was not consistent with the results of the studies reported in Table 5.5 where strategic groups of firms in other industries were found to have significantly different financial performance levels. One explanation for the result found in this study may be that the financial data from hospitals were inconsistently reported and no information on assets other than total capital assests was available. Therefore, the ROA calculation in this study may not have been a measure comparable to the measures used in other studies.

Summary

There are three major sections in this chapter corresponding to Research Questions 2-5. In each section, a discussion of results was presented followed by an analysis of the results.

The second research question addressed the pattern of strategic responses by individual hospitals in Tennessee and was the subject of the first section of this chapter. Seven strategic responses were measured and analyzed for each hospital. The pattern of behavior for each strategic response, by the hospitals in the sample, was discussed. When an analysis of variance was perfomed on each strategic response variable to determine if there were differences between the SMSAs, only brand identification was statistically significant.

Table 5.10. Analysis of Variance for Differences Between Strategic Groups in Tennessee Hospital Industry[a] for Return on Assets,[b] 1984

Source	DF	SS	MS	F	p	R^2
Model	3	.117	.039	.49	.69	.02
Error	59	4.705	.070			

[a]Four observations missing; n = 63.

[b]Return on assets is net income before taxes/total capital assets.

To address the third research question, a cluster analysis using the seven strategic variables as input variables, was performed and results of that procedure were reported as part of the second major section of this chapter. As a result of the cluster analysis, four clusters or strategic groups of hospitals were identified. The four clusters were labelled as analyzers, reactors, prospectors and defenders, based on the relative contribution of the seven strategic responses in differentiating the strategic groups.

The third section of this chapter focused on results related to Research Questions 4 and 5 which were formulated to examine possible differences between the strategic groups on four hospital organizational characteristics and on financial performance. The only significant difference between the strategic groups on the organizational characteristics was for the size variable corroborating results found in previous studies that size is an important variable regarding the strategic posture of a firm.

Financial performance, as measured by return on assets, was not significantly different between strategic groups.

When the composition of the strategic groups was explored, it was found that the groups are fairly heterogeneous suggesting that the groups are loosely bound and thus may not have significant mobility barriers between them.

In the next chapter, the results of the study are analyzed with respect to each hospital market area or SMSA, and a descriptive model of the competitive dynamics of the hospital industry in Tennessee is presented and discussed.

CHAPTER VI

INTERPRETATION OF STUDY RESULTS FOR HOSPITAL MARKET AREAS IN TENNESSEE

Although some analysis of study results was included in Chapter IV, this chapter reinterprets the analysis for each SMSA hospital market area in order to formulate a model of the hospital industry in Tennessee based on the strategic group concept. The first section briefly examines each hospital market area in terms of competitive forces, strategic group membership, organizational characteristics of the hospitals and financial performance. An integrative model is presented and discussed in the second section which is intended to address the last statement of purpose which was proposed at the outset of this study.

An Analysis of Strategic Groups in Hospital Market Areas of Tennessee

In this section, the unit of analysis is the SMSA, or the hospital market area, rather than the strategic group, because the results presented in Chapter V support the contention that a hospital responds strategically, not to the competitive environment of the statewide hospital industry, but to the competitive forces operating in the SMSA in which the hospital is located. One indicator of this is that the strategic groups were not significantly different on the organizational contingency variable of location.

Hospital Market Characteristics of SMSA 1: Chattanooga

Located in the southeastern corner of Tennessee, the Chattanooga SMSA had a population of 326,935 in 1985. There were 12 hospitals serving the population. Seven of the 12 hospitals were of for-profit ownership making Chattanooga the market area with the highest percentage (58.3 percent) of for-profit hospitals in the state.

In terms of intensity of rivalry, hospitals in Chattanooga in the aggregate, experienced the most precipitate decline in admissions from 1980 to 1984, -41.8 percent, and similarly, the most dramatic decrease in patient days, -44.1 percent, of any SMSA in the state. As a corollary, the average occupancy rate in 1984 for Chattanooga hospitals was 50.7 percent, again the lowest in the state. With respect to market structure, the Chattanooga SMSA, located in Health Service Area 3, fell in the middle range for the state on both the Herfindahl index and the CR4. Thus, the area may be termed a loose oligopoly.

Each cluster or strategic group included at least one Chattanooga SMSA hospital (see Table 5.9, p. 162), reflecting the diversity of strategic responses which might be expected in a relatively competitive environment. In terms of financial performance, the mean return on assets was the highest of all the SMSAs, 15.33 percent (see Table 6.1). Because ROA was calculated using net income before taxes, the relatively high ROA may be somewhat misleading given the percentage of for-profit hospitals in the Chattanooga SMSA.

Table 6.1. Descriptive Statistics for Return on Assets[a] in Tennessee SMSA Hospitals[b] in 1984, by SMSA

SMSA	Return on Assets			
	Mean	Standard Deviation	Minimum Value	Maximum Value
1	15.33	17.04	-3.16	58.95
2	4.08	21.28	-51.95	20.83
3	.15	17.47	-50.48	14.28
4	5.55	14.26	-27.68	23.08
5	-2.12	41.30	-136.87	43.20

[a]Return on assets is net income before taxes/total capital assets. It is reported as a percentage.

[b]Three observations missing.

Source: Calculated from data tape of the 1984 Joint Annual Report of Hospital, State Center for Health Statistics, Department of Health and Environment, Nashville, Tennessee.

Hospital Market Characteristics of SMSA 2: Tri-Cities: Kingsport, Bristol, Johnson City

The Tri-Cities SMSA had a population of 358,738 in 1985. Located in upper east Tennessee, the SMSA is the most disparate geographically of all the metropolitan areas in the state. It has no single central urban area, but rather three distinct mid-sized cities each possessing a major medical center. An analysis of strategic group membership (see Table 5.9, p. 162) highlighted this fact in that the three major medical centers all were members of Strategic Group 1, the analyzers, following a strategic response pattern of specialization.

Health Service Area 1, encompassing the Tri-Cities SMSA, was the most concentrated hospital market area in Tennessee (see Table 4.5, p. 124), and had the tightest oligopoly structure. While in theory, this type of market structure may lead to collusive behavior (Scherer, 1982), there was no evidence to support that conclusion on the part of the three dominant hospitals in the Tri-Cities. Higher than average ROA might be expected as well, but this was not the case in the Tri-cities area where the mean ROA in 1984 was 4.08 percent (see Table 6.1). In spite of the rather low SMSA mean ROA, each of the major medical centers had returns higher than the average suggesting that specialization may have been a beneficial strategic posture in this SMSA.

Among the other hospitals in the Tri-cities SMSA, strategic membership was unfocused with at least one hospital represented among the remaining three strategic groups (see Table 5.9). In terms of performance, hospitals in Strategic Group 4 had the lowest ROAs in 1984.

Hospital Market Characteristics of SMSA 3: Knoxville

The Knoxville hospital market area (SMSA 3) is centered on Knox County which has six hospitals with an average bed size of 440 licensed beds. In the entire Knoxville SMSA, there were twelve hospitals serving a population of 593,203 in 1985. With only one for-profit hospital and one public hospital, the market area can be characterized as a relatively competitive market for hospitals made up of essentially the same organizational profile. Both the Herfindahl index and the CR4 in 1984 were the second lowest in the state. Among the hospitals in Knoxville, at least one was represented in each of the strategic groups (see Table 5.9, p. 162), but there appeared to be no predictive power regarding the relationship between strategic response pattern and financial performance.

Eight of the twelve hospitals in the Knoxville SMSA were classified as members of Strategic Group 4, the stuck-in-the-middle group or the defenders. This might be indicative of the unsettled nature of the Knoxville hospital market where the shake-out phase of the industry was more prolonged than in other SMSAs. Financial performance of hospitals in the Knoxville SMSA ranged from a low ROA of -50.48 percent to a high ROA of 14.28 percent. The mean ROA in 1984 was .15 percent (see Table 6.1), but this figure was not an accurate indicator of the area hospitals' financial performance because the very low ROA of one hospital obscures the fact that 9 of the 12 hospitals in the SMSA had an ROA greater than the mean.

Hospital Market Characteristics of SMSA 4: Memphis

The Memphis SMSA, with a 1985 population of 795,102, is dominated by two hospitals, each with over 1000 licensed beds. Both of these hospitals have engaged in a regional horizontal integration strategy to create and maintain rural referral channels filtering patients into the centralized facilities. Between 1980 and 1985, Baptist Medical Center added eight rural community hospitals to its system. Likewise, Methodist acquired a series of community hospitals (Tuckman and Chang, 1986).

Only two strategic groups were represented by the Memphis SMSA hospitals, Strategic Group 2, the reactors, and Strategic Group 4, the defenders. The lack of diversity among the Memphis SMSA hospitals in their pattern of strategic responses might reflect the absence of strategic flexibility among smaller hospitals when the market is so dominated by two medical centers. But the lack of diversity may also suggest a limitation of this study in that strategic responses which were measured failed to capture significant strategic moves.

In a recent case study of the Memphis hospital market, Tuckman and Chang (1986) found that hospital strategies included mixed diversification/integration strategies, more consumer-oriented strategies, formulation of cost-reduction strategies, product line management and increased reliance on price discounting. The largest number of new strategies was observed in the diversification/integration area as hospitals moved beyond the acute care segment into new areas of product provision. Many of these moves were apparently not captured in this

study by examing CON submissions, probably because no CON was required for the hospital to initiate the change.

In terms of performance, the 1984 mean ROA was 5.55 percent with a range of -27.68 percent to 23.08 percent (see Table 6.1). There was no observed relationship between strategic group membership and financial performance.

Hospital Market Characteristics of SMSA 5: Nashville

As the least concentrated hospital market area in the state, the Nashville SMSA has the most heterogeneous hospital industry. Ranging from major referral centers in Nashville to quite small and relatively rural hospitals on the edge of the SMSA, the Nashville hospital market area is in transition. Much of the surburban area is experiencing rapid growth and for-profit hospitals have moved aggressively in this market.

Hospitals in the Nashville SMSA have pursued all patterns of strategic response except specialization, as indicated by strategic group membership. This might be expected in an area which is still experiencing growth and where the population is shifting rapidly.

Like the other SMSAs, there appeared to be no consistent relationship between membership in one strategic group and superior financial performance. The 1984 mean ROA for the area was -2.12 percent ranging from -136.9 percent to 43.2 percent (see Table 6.1) The low ROA may reflect the diversity of ownership, the relative competitiveness of the SMSA and the absence of any dominant hospital in the market. However,

only six of the 22 hospitals in the Nashville SMSA had negative ROAs so the mean is skewed by the one hospital with the abnormally negative return on assets. This hospital is a public inner city hospital and has consistently operated at a deficit over the past five years.

Summary of Analysis of Hospital Market Areas

In the analysis of individual hospital market areas in Tennessee, defined as the five SMSAs in the state, each represented a distinctively separate situation. No consistent findings regarding strategic group membership and its relationship to financial performance were uncovered in any SMSA. While this may seem somewhat anomalous with regard to studies of strategic groups in other industries, the lack of generalizable findings probably fits the localized nature of the hospital industry. Nonetheless, while the strategic group structure may not be appropriate for statewide analysis of the hospital industry, it is a viable construct for identifying patterns within individual market areas.

The most puzzling aspect of the strategic group model applied to the hospital industry was the relationship between strategic groups and financial performance. Having discovered, statewide, that Strategic Group 3 had the highest ROA and Strategic Group 4, the lowest ROA, this result was not robust when the unit of analysis was the SMSA. There was apparently too much variability in the financial performance values to make any statement at all about strategic group membership and related financial performance in a regional market area.

The most consistent finding in this section was the relationship between market structure, as measured by the CR4 ratio, and the diversity of strategic group membership in an SMSA. In general, the more concentrated the market, the fewer strategic groups were represented by the hospitals in the market area.

A Model of the Competitive Dynamics of the Hospital Industry in Tennessee

In an attempt to integrate the findings reported in this study regarding strategic groups in the Tennessee hospital industry, a descriptive model is proposed and discussed in this section. The formulation of a model of the competitive dynamics of the hospital industry was listed at the outset of this study as the final purpose of the investigation.

The analysis of the competitive environment of the Tennessee hospital industry confirmed that hospitals are faced with more competitive environments, but that the appropriate unit of analysis for analyzing the dominant effect of the competitive forces is the SMSA and not the state. Strategic response patterns of individual hospitals fit into four distinct groups as assessed by the cluster analysis. Whether each market area contained hospitals belonging to each strategic group depended on the market structure of the SMSA. Thus, for example, while there were differences in financial performance between strategic groups, similar differences did not hold in the SMSA, indicating that the effect of the SMSA on hospital behavior was stronger than strategic group membership.

Figure 6.1 shows the model derived from the results presented in this study. Each hospital in the study sample was located in one of the five SMSAs in the state of Tennessee. In response to changes in the competitive forces in both the SMSA and the state, each hospital engaged in a series of strategic responses. Based on the pattern of strategic responses, four strategic groups were identified, labelled respectively, analyzers, reactors, prospectors and defenders. Additionally, the financial performance of the strategic groups was assessed. This logical flow is depicted by the solid line in the model.

The top part of the diagram is drawn to show that an individual hospital exists in a vortex of competitive forces which exhibit strength at different levels of the environment. Statewide, the hospital industry is most affected by the threat of entry. Threat of entry, principally a function of economies of scale and regulation, does not differ between SMSAs. To a lesser extent, the threat of substitutes also affects the industry statewide, rather than in SMSA specific terms, because the threat of substitution arises primarily out of technological change.

The other three competitive forces, bargaining power of buyers, bargaining power of suppliers and intensity of rivalry, vary from SMSA to SMSA thus affecting most directly the strategic responses of hospitals. Of the three forces, intensity of rivalry is the most direct measure of market structure in an SMSA.

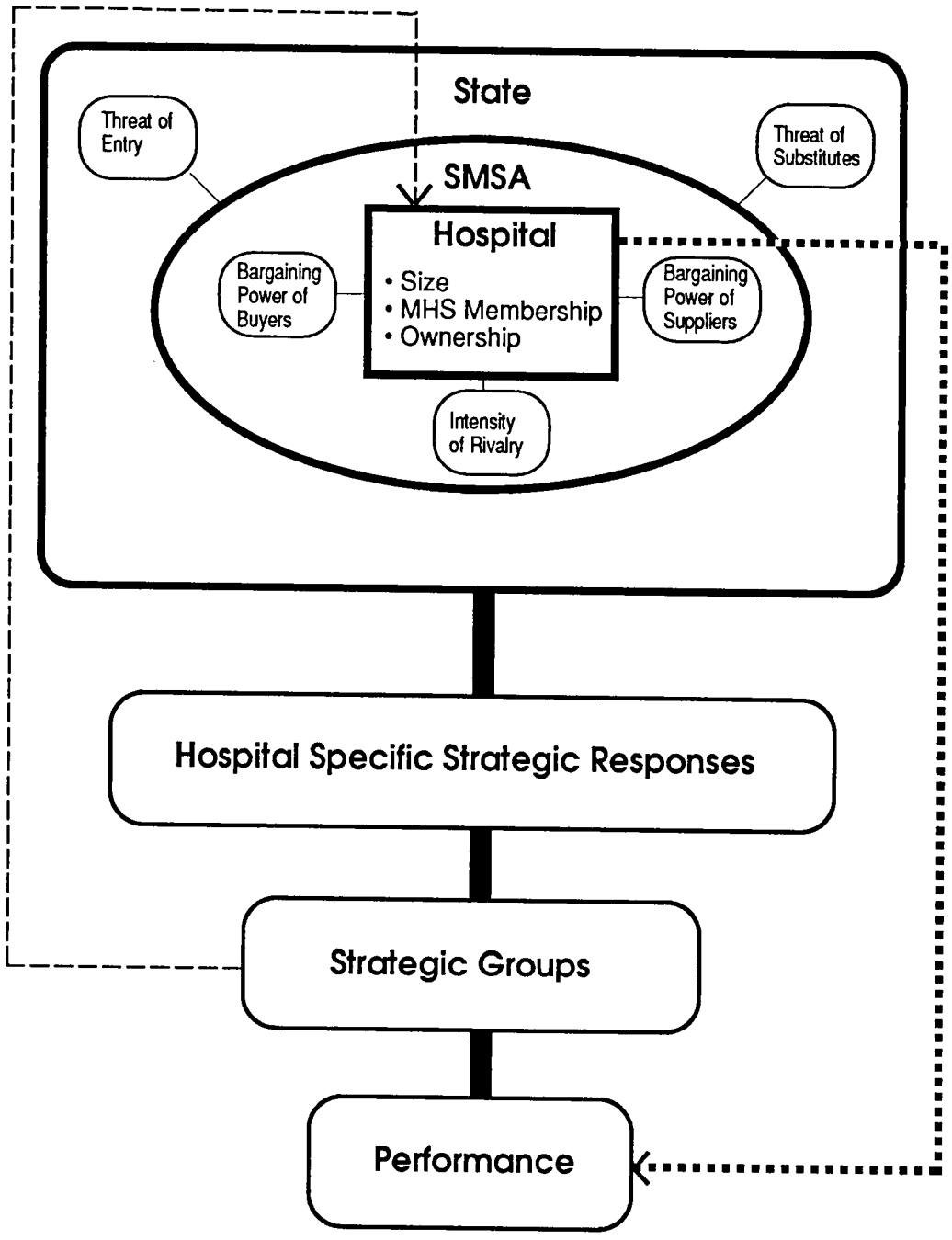


Figure 6.1. An Empirically Derived Model of the Competitive Dynamics of the Tennessee Hospital Industry

While four strategic groups were identified in this study, all four strategic groups did not exist in each SMSA. The diversity of strategic group membership in a given SMSA appeared to correlate most strongly with measures of intensity of rivalry. The dashed line in Figure 6.1 is drawn to show that the characteristics of strategic groups emanated from the strategic responses of hospitals but that strategic groups are defined both by statewide and SMSA specific competitive forces.

As shown in the model, the financial performance of strategic groups is one way of evaluating the performance of the hospital industry in Tennessee. However, individual hospital performance must also be examined because the strategic group concept failed to account for the differential influence of strategic group membership on financial performance within SMSAs. The dotted line in the model represents this element of performance.

Summary

To summarize, the model presented in this section is a refinement of the theoretical research model presented in Chapter II (see Figure 2.7, p. 69), and is based on the empirical results in this study. The most substantive change in the two models is to make explicit the fact that the competitive forces active at the SMSA level are the most decisive in determining the strategic responses and financial performance of a hospital. While the strategic group concept is useful in

identifying strategic response patterns, it does not appear to be an appropriate unit of analysis to study behavior in hospital markets. This is because the market for hospital services operates regionally, and the prevailing market structure in the region seems to be the most important variable in determining strategic choices and financial performance.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The purposes of this chapter are: (a) to summarize briefly the general purposes of the study, the literature review, the research questions guiding the study, the methodology used, and the major results; (b) to discuss the implications of the study; (c) to describe the limitations of the study; and (d) to suggest areas for future research.

Purposes of the Study

The four purposes of this study were: (a) to describe and analyze the changes which occurred in the competitive environment of the hospital industry in Tennessee from 1980-1984; (b) to identify and classify the strategic responses of hospitals in Tennessee to changes in the competitive environment of the hospital industry during the period 1981-1985; (c) to identify and analyze strategic groups in the hospital industry in Tennessee at the end of 1985 based on the patterns of strategic responses made by each hospital during the preceding five years; and (d) to formulate a model of the competitive dynamics of the hospital industry in Tennessee based on the concept of strategic groups.

Literature Review

As the external environment for an organization changes and particularly if it changes dramatically or abruptly, an organization must

adapt strategically to the new environment to survive and prosper. Changes in strategy preserve the alignment between an organization and its environment (Thompson,1967; Schendel and Hofer, 1979).

In the hospital industry in the United States, the environment has become unsettled and turbulent in recent years. Hospitals have been faced with the challenge to respond to these changes quickly (Goldsmith, 1981; Lawrence and Davis, 1983; Sheldon, 1984). In particular, competition has emerged as a significant trend in the hospital industry, making industry and competitor analysis an important component of planning and strategy formulation. A framework which has proven to be useful to undertake such an analysis was developed by Porter (1980). Applied in the hospital industry, the analysis can help hospitals understand their environments and develop strategies to compete.

The basic premise behind Porter's competitive analysis model is that an industry's structure has a strong influence in determining the competitive rules of the game. In the model, an industry is confronted with five competitive forces: (a) threats to entry; (b) threat of substitutes; (c) bargaining power of buyers; (d) bargaining power of suppliers; and (e) intensity of rivalry among existing competitors in the industry. By analyzing these five forces and how they vary in strength and emphasis over time, a picture can be drawn of how competitive an industry is. Each competitive force has a number of underlying economic and technical determinants which define the rules of

competition in an industry with which the firm or organization must cope strategically.

Based on an analysis on these determinants, the hospital industry may be described as one in which the strength of the competitive forces has made the industry quite competitive. For an industry, like the hospital industry in the U.S., which is moving into the mature phase of the industry life cycle, this is not uncommon (Porter, 1980).

A review of literature related to each of the determinants revealed that governmental regulations, economies of scale, and capital requirements, constitute the most important barriers to entry in the hospital industry. Because barriers to entry are fairly significant, the threat of entry into the hospital industry by a new entrant is relatively low, and thus competition is not likely to increase. However, the threat from substitutes for traditional inpatient hospital services has increased making the hospital industry more competitive. Outpatient services have been substituted for inpatient services and there has been an explosion in the number of facilities offering outpatient services (Ermann and Gabel, 1985).

Perhaps the most significant factor contributing to a change in the competitive environment of hospitals has been the growing leverage exerted by both public and private buyers of hospital services (Lave, 1984). With the introduction of the prospective payment system by Medicare in October, 1982, the federal government began acting as a prudent purchaser of care, and changed the economic landscape for hospitals. As hospital costs have escalated and the federal government

has become more stringent in its reimbursement policies, private buyers have also become more vigilant in containing costs to avoid the phenomenon of cost shifting (Sloan and Becker, 1984). All of these events together have made the environment in the hospital industry more competitive.

Conversely, as the bargaining power of buyers has increased, the bargaining power of suppliers has decreased. This is a result of the increase in the number of physicians, the primary suppliers to the hospital industry. Physicians, in an era of physician surplus, can no longer exert the kind of leverage that they did when hospitals were faced with a limited supply of physicians to fill hospital beds (Iglehart, 1985).

The last competitive force, intensity of rivalry among existing hospitals, has increased as the growth in traditional hospital services has slowed. There has been a dramatic decrease in the number of admissions and the number of inpatient days nationwide. Combined with an excess capacity of hospital beds, this has made the hospital environment much more competitive (Levit et al., 1985).

Hospitals, confronting these changes in the competitive environment, should adjust their strategies to maintain alignment with their environments (Schendel and Hofer, 1979). If a group of hospitals responds with a similar pattern of strategic responses and this pattern can be identified, then they may be classified as a strategic group (Harrigan, 1985). The concept of strategic groups, derived from oligopoly theory in economics, is one focus of current research on

strategic content being pursued by strategic management researchers (Fahey and Christensen, 1986). If strategic groups exist within an industry, then they have implications for the pattern of competition within industries, may contribute to an understanding of oligopolistic interdependence and potentially enrich the structure-conduct-performance paradigm of industrial economics. In addition, the strategic group concept may be the bridge between industry structure and strategic management (McGee, 1985).

Because the hospital industry does not constitute a national market, but rather is defined by local or regional oligopolies, the application of the strategic group concept may help in understanding the dynamics of competition in the hospital industry.

Research Questions

There were five research questions in this study of strategic groups in the hospital industry. The state of Tennessee was chosen for the study because there are five identifiable hospital market areas in the state, as denoted by the five Standard Statistical Metropolitan Areas (SMSA), with variation in market structure, range of hospital sizes, and diversity of hospital ownership categories. Confining the analysis to one state also controlled for the effects of regulatory programs, like certificate of need, which are administered at the state level.

The first research question was posed to identify what changes occurred in the competitive environment of the hospital industry over

the time period of the study, 1980-1984. In the second research question, "What patterns of strategic responses did hospitals in Tennessee follow during the period from 1981 to 1985," the focus was on identifying specific strategies in which hospitals engaged during the period. The time period for investigation of the strategic responses was lagged a year beyond the analysis of the competitive environment because of the recognition that it takes time for a hospital to understand the changes in the environment and to propose a change in strategy. While no causal relationship was proposed between specific changes in the competitive environment and specific strategic responses, nonetheless the strategic responses were assumed to be influenced by environmental change.

Based on the identification of strategic groups in other industries and in the interest of detecting whether strategic groups exist in the hospital industry, the third question was posed. It stated, "What are the strategic groups in the hospital industry in Tennessee based on the patterns of strategic responses pursued by each hospital during the period 1981-1985?"

The last two research questions, Research Question 4 and Research Question 5, were formulated to discover whether the strategic groups were different in organizational characteristics and/or financial performance. Research Question 4 stated, "Do the strategic groups in the hospital industry in Tennessee differ by the hospital organizational characteristics of size, ownership category, location, and multihospital system membership?" Similarly, Research Question 5 asked, "Is

there a difference in financial performance among the strategic groups?" Financial performance was measured by return on (capital) assets.

Methodology

To address the research question, several means of analysis were employed. Since Research Question 1 was asked in order to generate a description of the environmental context in which to study strategic responses of hospitals, there was no one statistical methodology used. Having identified the relevant economic and technical determinants underlying the competitive forces affecting the hospital industry in the United States through the literature review, the same determinants were analyzed with respect to the hospital industry in Tennessee. Except for absolute unit cost differences and economies of scale, which were evaluated with an ordinary least squares regression model, all other determinants were assessed via a qualitative trend analysis using data from the 1980-1984 Joint Annual Report of Hospitals, data from the Tennessee Health Facilities Commission, and data from the State Center for Health Statistics, Department of Health and Environment, Nashville, Tennessee.

In order to identify strategic responses of hospitals (Research Question 2), a study sample of 67 hospitals was selected from the population of 152 Tennessee hospitals. The 67 hospitals constituted all of the short-stay general hospitals in the five standard metropolitan statistical areas in Tennessee at the end of 1984. Two profiles were

completed by the investigator on each of the 67 hospitals. The first profile was derived from the 1980-1984 JAR and consisted of data on utilization of services and financial position and was labelled the JAR profile. To complete the second profile, called the CON profile, all certificate of need applications filed by the 67 hospitals in the study sample over the period 1981-1985 were reviewed and abstracted by the investigator. Using these two profiles, a Strategic Response Instrument (SRI) for each hospital was developed. The SRI measured seven strategic responses for each hospital. They were specialization/diversification, innovation, brand identification, quality, cost position, growth and use of financial leverage. Likert scales were used to derive measures for the first four strategic response variables. Values were assigned on each variable based on the accumulated pattern of strategic responses reflected by CON applications filed between 1981 and 1985. For the latter three variables--cost position, growth, and use of financial leverage--the values on the SRI were derived from the 1980-1984 Joint Annual Report of Hospitals. Multiple measures for each of these variables were developed, although only one measure for each variable was used in subsequent analyses.

Using values for the seven strategic responses measured by the SRI as clustering variables, a cluster analysis was performed on the data to determine if groups of hospitals could be identified based on similar patterns of strategic responses. The cluster analysis was used to identify strategic groups in the Tennessee hospital industry, the subject of the third research question.

To detect differences between the strategic groups or clusters on the organizational contingency variables of size, location, multihospital system membership, and ownership status of the hospital, appropriate statistical tests were performed. For size, a continuous variable, a one-way analysis of variance was done. For the latter three organizational contingency variables which are all classification variables, Chi-square tests were performed. These tests of differences in means between strategic groups or clusters were done to answer Research Question 4. To answer Research Question 5, a one-way analysis of variance was performed to detect differences between the strategic groups or clusters in financial performance as measured by return on (capital) assets.

Major Results

Using Porter's (1980) competitive forces model to assess changes in the competitive environment of the Tennessee hospital industry from 1980-1984, yielded support for the contention that the industry became more competitive during the period. Of particular importance were increases in the threat of substitutes, the bargaining power of buyers, and the intensity of rivalry among existing competitors. The bargaining power of suppliers appeared to decrease. Barriers to entry, primarily regulatory barriers posed by certificate of need, seemed to insulate incumbents in the Tennessee hospital industry from entry by new hospital entrants, but CON requirements also made it difficult for existing hospitals to move into new services or products.

Seven strategic response variables were evaluated for each hospital in the five SMSA hospital market areas of Tennessee for the period 1981-1985. The total number of hospitals in the study sample was 67. In a one-way analysis of variance to test for differences between SMSAs on any of the strategic response variables, only brand identification was significant ($p < .05$).

When a cluster analysis was performed using the seven strategic response variables as input clustering variables, the optimum number of clusters fitting the data was four. The four cluster solution yielded an R-square of .524 indicating that the seven strategic response variables accounted for a significant part of between cluster variance. Multivariate test statistics, based on canonical discriminant analysis, were significant at $p < .001$, indicating that the clusters means were not equal. The four clusters, which were taken in this study to represent strategic groups in the Tennessee hospital industry, were labelled Analyzers ($n = 5$), Reactors ($n = 15$), Prospectors ($n = 10$), and Defenders ($n = 37$).

In testing for differences between strategic groups, only size was statistically significant ($p < .05$). None of the other organizational contingency variables was statistically significant nor was financial performance (ROA).

An examination of the characteristics of the hospitals in each strategic group revealed that they were heterogeneous and loosely structured. With the exception of SMSA 4 (Memphis) and SMSA 5 (Nashville), each SMSA had at least one hospital in each strategic

group. SMSA 4 (Memphis) had the least diversity in terms of strategic group representation, with only two groups represented among the hospitals in the area.

Applying the strategic group concept to an analysis of the five hospital market areas revealed that the diversity of strategic group membership in a given SMSA appeared to be associated most strongly with measures of intensity of rivalry, an indicator of SMSA market structure.

Implications of the Study

This study suggests that hospitals in the metropolitan areas of Tennessee do fall into identifiable strategic groups based upon patterns of strategic responses examined longitudinally. Although previous research (McGee and Thomas, 1986) on strategic groups in other industries found significant differences in financial performance between groups in a given industry, this study failed to document such a difference. No strategic group in the Tennessee hospital industry had a consistently higher or lower ROA from SMSA to SMSA suggesting that the specific competitive variables existing in a given SMSA may dominate the effects of strategic group membership. This appears to be consistent with the knowledge that hospitals do not compete across a state, but rather in regional markets which are often oligopolistic in structure.

Regarding whether specific changes in the competitive environment ellicit specific strategic responses, the design of this study did not

allow for the identification of causal links which may exist. The general inference which can be drawn from this study is that in a period of change and some turbulence in the Tennessee hospital industry, hospitals did make strategic responses which were intended to defend against an increasingly competitive environment. This was documented in certificate of need applications filed by hospitals over the time period of the study.

From a methodological perspective, another implication of the study is that a hybrid methodology is needed to identify a broad range of strategies, both intended and realized. In this study, use of an unexplored data source--CON applications--yielded substantive information on hospital strategic response which is not available from quantitative data routinely compiled by the state. The implication for investigators is that more creative means must be found to measure the strategy construct than have been previously used in hospital studies. Data bases maintained for quite separate purposes may be merged in an investigation of strategy.

At least for hospitals in Tennessee in the early 1980's, there was strategic diversity as measured by the range of strategic responses employed by the study hospitals, which implies a dynamic and competitive environment.

The contingent relationships between hospital organizational characteristics and strategic group membership were also considered. The only significant organizational contingency variable was the size of a hospital, measured by the number of licensed beds, implying that size

may be the most important variable affecting an individual hospital's strategic choice menu. This is consistent with findings in other industries in which organizational or firm size has been identified as a significant contingency variable. The lack of support for ownership as a significant contingency variable suggests that hospitals, regardless of ownership, face the same competitive environment with similar strategic responses. Perhaps this represents a convergence of strategic behavior rather than the divergent behavior which is often cited as a corollary to ownership status.

In summary, this study suggests that the appropriate industry boundary for hospitals is probably not the state, but the local region in which the hospital is located. The study also suggests that strategic membership is not a valid predictor of financial performance in the hospital industry, defined either broadly (state level) or more narrowly (SMSA level).

Limitations of the Study

The first limitation of this study is that only hospitals in the five standard metropolitan statistical areas of Tennessee were included in the study sample. Although all short-stay general hospitals in the SMSAs were included in the study population (n = 67), findings of the study may not be generalizable to rural hospitals in Tennessee or to urban hospitals in other states.

A second limitation is that the design of the study did not allow for identifying a causal or even a statistically inferential

relationship between particular changes in the competitive environment and specific responses of hospitals.

Another limitation of the study is related to data culled from the certificate of need applications. While the same application form was required of every applicant for a CON, some applicants provided far greater detail than others so that the quality of information was not uniform from CON to CON. Since the CON record for a given hospital was the basis for assigning values on four of the seven strategic response variables, the variability in CON information is a limitation of the data.

A fourth limitation, also related to the data collection process, is that the investigator assigned values to four of the seven strategic response variables based on the CON data, thus introducing value judgments into the assessment.

A fifth limitation is that the CON process does not capture all of the strategic responses either made by or available to each hospital. This means that only a partial view of the strategic change and adjustment process of hospitals could be measured.

A sixth limitation is that the measures for cost position, growth, and use of financial leverage, all calculated with JAR data, are for the period 1980-1984, because of the unavailability of 1985 data when this study was completed. The other four strategic response variables captured the strategic position of a hospital as of the end of 1985. Disperity in the time frame of the two sets of measures introduces some inconsistency into the interpretation of results.

Finally, the seventh limitation relates to the nature of cluster analysis as a methodology. There are no hard and fast rules in determining the optimum number of clusters nor in interpreting the clusters that result. A combination of art and science is necessary to interpret the results of the cluster analysis and sometimes it is not easy to determine which prevails--art or science.

Suggestions for Future Research

This study of strategic responses of hospitals is an example of strategy content research (Jauch, 1983). Recognizing that both strategy content and strategy process research are crucial to understanding in strategic management, an initial area for research suggested by this study is to investigate the process by which decisions are made in hospitals focusing on the specific strategies investigated in this study. A major question is how these two seemingly different kinds of research can be linked together.

Because strategy content questions emphasize the posturing of the firm with respect to its environment, more research needs to be undertaken to specify under what conditions organizations should adopt or relinquish specific strategies. This study of the hospital industry should be redirected to identify which specific strategies were adopted in response to which specific environmental conditions.

With respect to understanding the effects of competitive forces in the hospital industry, more focused research is needed on product differentiation, particularly advertising, as a barrier to entry. More

research is also needed on the effects of substitutes on delimiting industry boundaries. This latter development may have profound effects on cost containment efforts in the hospital industry, for if utilization is shifted to another industry where existing cost initiatives do not apply, then health care costs may continue to rise.

Another area for future research is the development of much broader performance measures for the hospital industry. For example, performance measures of availability, quality and continuity, in addition to financial measures, are all necessary to evaluate the total influence of strategies and strategic groups on hospital industry performance.

A fifth area for future research on strategies used by hospitals in an increasingly competitive environment concerns the emergence of for-profit subsidiaries in not-for-profit hospitals. Such a trend places many of the diversification strategies being undertaken by hospitals outside the scope of certificate of need regulations, and it may also jeopardize the not-for-profit status of some hospitals.

A penultimate area for further research is to explore more systematically the interaction of hospital ownership status and the nature of the competitive environment. This study suggests that, faced with a more competitive environment, hospitals of different ownership status respond strategically in similar ways. The results seem to contradict much strategic management and economic theory which postulates that firms of different ownership status have divergent goals and thus divergent strategies.

As a final research suggestion, this study of hospital strategic responses over a five year period could be the foundation for a longitudinal cohort study of a population of competing hospitals. As such, the study could be a valuable contribution to understanding the evolution of environmental changes, strategic responses and strategic group membership over an extended period of time.

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APPENDIXES

APPENDIX A

STATE OF TENNESSEE
HEALTH FACILITIES COMMISSION
Realtors Bldg., Suite 306
306 Gay Street
Nashville, Tennessee 37219-5098
741-2364

RECEIVED
JUL 3 1986
RECEIVED
EMHS, Inc.

INSTRUCTIONS FOR FILING AN APPLICATION FOR A CERTIFICATE OF NEED

Please read the following instructions, the Rules and Regulations of the Commission and T.C.A. 68-11-101 et seq prior to preparation of this application.

PREPARATION: Pre-Application planning performed in cooperation with the Health Systems Agency (HSA) in your area or the Tennessee Department of Health and Environment, Division of Health Planning, will be beneficial to you. You are encouraged to contact them prior to submission of the application.

DOCUMENTATION: In preparing this application it is the applicant's responsibility to demonstrate through its answers that the project is necessary to provide the required health care in the area to be served, that it can be economically accomplished and maintained, and that it will contribute to the orderly development of adequate and effective health care facilities and/or services in the area. Consult T.C.A. 68-11-106(h) and Health Facilities Commission Rule 0720-4 for the criteria for consideration for approval.

REVIEW CYCLES:

A review cycle is ninety (90) days. The review cycles for hospital project applications begin on the first day of the months of:

January
March
May
July
September
November.

The review cycles for applications for nursing homes, outpatient institutions, primary care centers, hospital-based swing beds, conversion of hospital beds to nursing home beds, and home health agencies begin on the first day of the months of:

February
April
June
August
October
December.

If there is some question as to the appropriate review cycle due to the nature of the project, please contact the Health Facilities Commission.

COMMUNICATIONS: All documents for filing an Application for Certificate of Need with the Tennessee Health Facilities Commission must be received at the Commission office located at the Realtors Building, Suite 306, 306 Gay Street, Nashville, Tennessee 37219-5098 during normal business hours. For the purpose of filing the Letter of Intent and Proof of Publication the filing date is the actual date of receipt in the Commission office or the postmark date, whichever is earlier. For the

purpose of filing the application or responses to supplemental questions, the date of filing shall be the actual date of receipt. In the event that the last appropriate filing date falls on a Saturday, Sunday, or legal holiday, such filing should occur on the next business day. All communications (i.e. Letter of Intent, Proof of Publication, etc.) should be filed with the Commission in triplicate.

LETTER OF INTENT: Applications shall be commenced by the filing of a Letter of Intent. The Letter of Intent must be filed with the Commission at least forty-five (45) but not more than ninety (90) days prior to the beginning of the review cycle in which the application is to be considered. In calculating the allowable filing period, the day on which the review cycle begins is not counted and the day of filing is counted.

Any Letter of Intent which contains insufficient information will be deemed void and the applicant notified in writing by certified mail within five (5) days of its filing. The Letter of Intent may be refiled but, if refiled, is subject to the same requirements as set out above.

PUBLICATION OF INTENT: Simultaneous with the Letter of Intent filing, the Publication of Intent should be published for one day in a newspaper of general circulation in the county where the proposed project is to be located. The Publication of Intent should be placed in the Legal Notice Section in a space no smaller than two (2) columns by (2) inches.

1. A "newspaper of general circulation" means a publication bearing a title or name, regularly issued at least as frequently as once a week for a definite price, having a second-class mailing privilege, being not less than four (4) pages, published continuously during the immediately preceding one-year period, which is published for the dissemination of news of general interest, and is circulated generally in the county in which it is published and in which notice is given.

2. In any county where a "newspaper of general circulation" does not exist, the executive director is authorized to determine the appropriate publication to receive any required Letter of Intent. A newspaper which is not engaged in the distribution of news of general interest to the public, but which is primarily engaged in the distribution of news of interest to a particular group of citizens, is not a "newspaper of general circulation".

3. In the case of an application for or by a home health agency, the "Publication of Intent" is published in each county which the agency will be licensed or in a regional newspaper which qualifies as a newspaper of general circulation in each county. In those cases where the Publication of Intent is published in more than one newspaper, the earliest date of publication shall be the date of publication for the purpose of determining competition deadlines and filing the "proof of publication" and the application.

PROOF OF PUBLICATION: Documentation of publication must be filed with the Commission on the Proof of Publication form within (7) days after publication. Please attach a copy of the notice as published with the date line and name of the newspaper.

Failure to file proof of publication within seven (7) days after publication shall render the Letter of Intent, and hence the application, void.

COMPETITION: Those persons desiring to compete for a Certificate of Need for which a Letter of Intent has been filed should file a Letter of Intent with the Commission and the original application; and should publish their Intent simultaneously in a newspaper of general circulation in the same county as the original applicant. Proof of publication is also required. All of these activities should occur within twenty (20) days after publication by the original applicant.

1. Only those applications filed in accordance with the rules of the Health Facilities Commission, and upon consideration of the following factors as compared with the proposed project of the original applicant, may be regarded competing applications.

   (A) Similarity of primary service area

   (B) Similarity of location

(C) Similarity of facilities

(D) Similarity of service to be provided.

2. In the event the applicant desires to compete for a Certificate of Need for which a Letter of Intent has been filed and meets all filing and publication requirements as set out in this part, but whose project due to its nature would not ordinarily enter the same review cycle as the original applicant, the applications may enter the same review cycle and be regarded as competing applications.

FILING THE APPLICATION: All applications, including those from competitors seeking simultaneous review, must be filed in triplicate (original and 2 copies) with the Commission within twenty (20) days after publication by the original applicant, however, an application may be filed at any time after the filing of the Letter of Intent and prior to the twentieth (20th) day. The date of filing is the actual date of receipt.

Failure by an applicant to file an application within twenty (20) days after publication of the Intent renders the Letter of Intent, and hence the application, void.

The Commission shall not accept an application for a nursing home project whose projected opening date is more than thirty (30) months after Commission approval; for a hospital expansion whose projected opening date is more than thirty-six (36) months after Commission approval; or, for construction of a new hospital whose projected opening date is more than forty-eight (48) months after Commission approval.

FILING FEE:

The amount of the initial filing fee shall be an amount equal to $2.00 per $1,000 of the estimated capital expenditure involved, but in no case shall the fee be less than $500.00 or more than $25,000. Checks should be made payable to the Tennessee Health Facilities Commission

Filing fees are non-refundable and must be received by the Commission before review of the application can begin.

REVIEW OF APPLICATIONS FOR COMPLETENESS: When an application is received at the Commission office, it will be reviewed for completeness. Review for completeness cannot begin prior to the receipt of the filing fee.

1. If the application is deemed complete, the Commission will acknowledge receipt and notify the applicant when the review cycle will begin. Deeming complete should not be construed as validating the sufficiency of the information provided for the purposes of addressing the criteria under Health Facilities Commission rules.

2. If the application is incomplete, requests by the staff for supplemental information must be completed by the applicant within thirty (30) days of the request; however, all requested supplemental information must be received at least five (5) days prior to the beginning of the review cycle in order to enter that review cycle. Failure of the applicant to meet this deadline will result in the application being considered withdrawn and returned to the contact person.

The Commission will promptly forward a copy of each complete application to the Department of Health and Environment or its designee.

WITHDRAWAL OF APPLICATION: The applicant may withdraw an application at any time by providing written notification to the Commission.

SECTION A: APPLICANT PROFILE

Please enter on this form all Section A responses and attach documentation as an appendix at the end of Section A.

1. Name of Facility, Agency or Institution

Name

Street or Route — County

City — State — Zip Code

2. Contact Person available for responses to questions

Name — Title

Street or Route — City — State — Zip Code

Association with Owner — Telephone Number

3. Owner of the Facility, Agency, or Institution

Name

Street or Route — County

City — State — Zip Code

4. Type of Ownership or Control (Check One)

A. Sole Proprietorship _____
B. Partnership _____
C. Corporation (For Profit) _____
D. Corporation (Not For Profit) _____
E. Governmental (State of TN or Political Subdivision) _____
F. Joint Venture _____
G. Other (Specify) _____

Attach a copy of the partnership agreement, corporate charter and by-laws, letter of certification, or other appropriate documentation.

5. Name of Management/Operating Entity (if applicable)

Name

Street or Route — City — State — Zip Code

Attach a copy of the draft contract for new facilities or final contract for existing facilities.

6. Legal Interest in the Site of the Institution (Check One)

A. Ownership _____

B. Option to Purchase _____

C. Lease of _____ Years _____

D. Option to Lease _____

E. Other (Specify) _____

Attach a copy of the title/deed, option to purchase agreement, option to lease agreement, lease agreement, or other appropriate documentation.

7. Type of Institution (Circle letter as appropriate)

A. Acute Hospital
B. Psychiatric Hospital
C. Nursing Home
D. Ambulatory Care Facility
E. Primary Care Clinic
F. Rehabilitation Facility
G. Home Health Agency
H. Outpatient Facility (Specify) _____
I. Family Planning Clinic
J. Other (Specify) _____

8. Purpose of Review (Circle letter (s) as appropriate)

A. New Institution
B. Replacement of Existing Institution
C. Remodeling Existing Institution
D. Addition or Discontinuance of Service
E. Acquisition/Replacement of Equipment
F. Change in Beds (increase, decrease, designation, distribution, conversion, relocation)
G. Change of Location
H. Other (Specify) _____

9. Bed Complement Data

Please indicate current and proposed distribution and certification of facility beds.

	Current Licensed Beds	CON Approved	Beds Proposed	Total Beds After Completion
A. Medical				
B. Surgical				
C. Obstetric				
D. ICU				
E. CCU				
F. Pediatric				
G. Psychiatric				
H. Pulmonary				
I. Urological				
J. Rehabilitation				
K. Chronic				
L. Nursing Home (Non-Certified)				
M. Intermediate Care (ICF)				
N. Skilled Nursing Care (SNF)				
O. Dually Certified (ICF/SNF)				
P. ICF/MR				
Q. Chemical Dependency				
R. Other				
Total				

10. Of your current licensed capacity, how many are approved as swing beds? _____

11. Of your current licensed bed capacity, how many are staffed? _____

12. Bed Assignment
Please provide number of beds in these type rooms.

		Current Licensed Beds	CON Approved	Beds Proposed	Total Beds After Completion
A.	Private Rooms	____	____	____	____
B.	Two-Bed Rooms	____	____	____	____
C.	Three-Bed Rooms	____	____	____	____
D.	Other (Specify)	____	____	____	____
	Total	____	____	____	____

13. Medicaid Provider Number _____
Certification Type _____

14. Medicare Provider Number _____
Certification Type _____

SECTION B: PROJECT DESCRIPTION

Please answer all questions on 8½ x 11 white paper, clearly typed and spaced, identified correctly and in the correct sequence. In answering, please type the question and the response. All exhibits and tables must follow the question to which they refer. If a particular question does not apply to your project, indicate "Not Applicable" after the identified question.

1. List all significant services to be initiated or discontinued as defined by Commission Rule 0720-3-.02(3).

2. List all new major medical equipment as defined by Commission Rule 0720-2-.01(11) to be acquired.

   A. Replacement of major medical equipment.

      1. Describe equipment to be replaced, including:

         a. Reason for replacement;
         b. Age of unit;
         c. Market value at time of purchase; and
         d. FDA status of equipment.

      2. Provide current and proposed schedule of operation.

      3. Describe equipment that will replace existing equipment, and include:

         a. Expected useful life; and
         b. List of procedures which will be performed on the proposed new equipment which have not been performed on existing units.

   B. New Major Medical Equipment (Not replacing existing equipment).

      1. Describe new equipment, including:

         a. Expected useful life;
         b. List of procedures to be performed; and
         c. FDA status of equipment.

      2. Provide schedule of operations.

   C. Applicant's legal interest in equipment (i.e., PURCHASE, LEASE, etc.)

3. Identify the number and type of beds increased, decreased, converted, relocated, designated, and/or redistributed by this application.

4. List major operational areas of the proposal and any areas affected by the proposal. Include estimated gross square footage in each.

5. Provide simple line drawings delineating spaces on each floor included in this application. Show relationships of existing and intended services or activities to each other. As to each service area, assign a name and/or function and show room arrangement. Identify all beds and operating rooms. Include gross square footage involved. The line drawing and project narrative should be consistent.

6. Describe plans for any vacated space.

7. Attach a copy of the plot plan of the site, including:

   A. Size of site (in acres)
   B. Dimensions of property.
   C. Location of structure, and
   D. Location of proposed construction.

8. For a home health agency, identify:

   A. Existing service area (by county)
   B. Proposed service area (by county)
   C. Parent or primary service provider and proposed branches and/or sub-units.

SECTION C: GENERAL CRITERIA FOR CERTIFICATE OF NEED

In accordance with T.C.A., Section 68-11-106(h)(2), "No Certificate of Need shall be issued unless the action proposed in the application for such Certificate is necessary to provide needed health care in the area to be served, can be economically accomplished and maintained, and will contribute to the orderly development of adequate and effective health care facilities and/or services." The three (3) criteria are further defined in Commission Rule 0720-4-.01.

The following questions are grouped according to the three criteria: (1) Need, (2) Economic Feasibility, (3) Contribution to the Orderly Development of Healthcare. Please respond to each question and provide underlying assumptions, data sources and methodologies when appropriate. Responses must be typed on 8½ x 11 white paper. In answering the questions, type the question and your response. All exhibits and tables must follow the responses to which they refer. If a question does not apply to your project, indicate "Not Applicable."

Criterion 1: The need for a proposed facility or service may be evaluated with reference to:

(a) the relationship of the proposal to applicable plans; and
(b) the need that the population to be served by the proposal has for the proposal.

QUESTIONS

1. Describe the contributions of this proposal toward implementation of the health systems plan (if applicable), state health plan and other appropriate plans. Discuss the impact of the five (5) year bed need projections in the state health plan on this proposal.

2. If this proposal is an exception to the state health plan or the local health systems plan, explain why it should be approved as an exception. Identify any changes in the service area that are not reflected in the state health plan.

3. Describe the relationship of the proposal to the long range development plans (if any) of the applicant.

4. Discuss the current utilization/occupancy trends for this type of project in similar institutions and/or agencies located in the service area.

5. Discuss the projected utilization/occupancy trends for this type of project in the proposed service area.

6. Describe any geographic or service accessibility patterns in similar institutions.

7. Identify the proposed service area and submit a map clearly marked to reflect the area. Justify the reasonableness of the proposed service area.

8. Describe the applicant's policy for admissions as it relates to women, racial and ethnic minorities, low income groups, the handicapped, and the elderly and discuss the accessibility of the service or institution to those groups.

9. Please provide written assurance that the proposed institution will comply with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and government or professional standards pertaining to licensure and/or Medicaid/-Medicare certification.

10. If the applicant is an existing facility or agency, please specify the percentage of the gross revenue that represents Medicare, Medicaid, bad debt, and free care for the past two annual reporting periods.

Criterion 2: The economic feasibility of the proposed facility or service may be evaluated with reference to:

(a) availability of less costly or more effective alternative methods of providing the benefits intended by the proposal;
(b) immediate and long term financial feasibility of the proposal; and
(c) estimated impact of future state appropriations and/or expenditures.

QUESTIONS

1. Please describe alternatives to this project which were considered and include the positive and negative effects as well as the projected costs and charges of each alternative.

2. Identify the sources of funds for financing this project and provide appropriate documentation of each. Briefly summarize how any debt incurred for this project will be retired.

   A. Commercial loan — letter from lending institution or guarantor stating favorable initial contact, proposed loan amount, expected interest rates, and any restrictions or conditions;

   B. Tax exempt bonds — copy of preliminary resolution or a letter from the issuing authority stating favorable initial contact and a conditional agreement from an underwriter or investment banker to proceed with the issuance;

   C. General obligation bonds — copy of resolution from issuing authority or minutes from the appropriate meeting;

   D. Grants — notification of intent form for grant application or notice of grant award;

   E. Other documentation as appropriate (e.g., amortization schedule, etc.)

3. Provide copies of the most recent audited financial statements, and a balance sheet and income statement from the most recent reporting period of the institution.

4. Complete Charts A and B. Chart A represents revenue and expense information for the last two (2) years for which complete data is available for the institution. Chart B requests information for the two (2) years following the completion of this proposal. Chart B should reflect revenue and expense for the <u>proposal only</u>.

CHART A

HISTORICAL DATA

Give information for the last two (2) years for which complete data are available for the facility or agency.

		19____	19____
A.	Utilization/Occupancy Rate	_____	_____
B.	Revenue from Services to Patients		
	In-Patient Services	$_____	$_____
	Routine (Nursing Service Areas)	$_____	$_____
	Other (Specify) _____	$_____	$_____
	Out-Patient Services	$_____	$_____
	Emergency Services	$_____	$_____
	Other Operating Revenue (Specify) _____	$_____	$_____
	Gross Operating Revenue	$_____	$_____
	Deductions from Operating Revenue		
	Contract Adjustments	$_____	$_____
	Provision for Charity Services	$_____	$_____
	Provision for Uncollectibles	$_____	$_____
	Total Deductions	$_____	$_____
	Net Operating Revenue	$_____	$_____
C.	Operating Expenses		
	Salaries and Wages	$_____	$_____
	Physician's Salaries and Fees	$_____	$_____
	Supplies	$_____	$_____
	Taxes	$_____	$_____
	Depreciation	$_____	$_____
	Rent	$_____	$_____
	Interest (Other than Mortgage)	$_____	$_____
	Other Expenses	$_____	$_____
	Operating Expenses	$_____	$_____
	Capital Expenditure		
	Retirement of Principal	$_____	$_____
	Interest	$_____	$_____
	Capital Expenditure	$_____	$_____
	Total Expenses (Operating and Capital)	$_____	$_____
	Operating Income (Loss)	$_____	$_____
	Other Revenue (Expense) — Net	$_____	$_____
D.	NET INCOME (LOSS)	$_____	$_____

CHART B

PROJECTED DATA

Give information for two (2) years following completion of this proposal.

		19____	19____
A.	Utilization/Occupancy Rate	_____	_____
B.	Revenue from Services to Patients		
	In-Patient Services	$_____	$_____
	Routine (Nursing Service Areas)	$_____	$_____
	Other (specify) _____	$_____	$_____
	Out-Patient Services	$_____	$_____
	Emergency Services	$_____	$_____
	Other Operating Revenue (specify)	$_____	$_____
	Gross Operating Revenue	$_____	$_____
	Deductions from Operating Revenue		
	Contract Adjustments	$_____	$_____
	Provision for Charity Services	$_____	$_____
	Provision for Uncollectibles	$_____	$_____
	Total Deductions	$_____	$_____
	Net Operating Revenue	$_____	$_____
C.	Operating Expenses	$_____	$_____
	Salaries and Wages	$_____	$_____
	Physician's Salaries and Fees	$_____	$_____
	Supplies	$_____	$_____
	Taxes	$_____	$_____
	Depreciation	$_____	$_____
	Rent	$_____	$_____
	Interest (Other than Mortgage)	$_____	$_____
	Other Expenses	$_____	$_____
	Operating Expenses	$_____	$_____
	Capital Expenditure		
	Retirement of Principal	$_____	$_____
	Interest	$_____	$_____
	Capital Expenditure	$_____	$_____
	Total Expenses (Operating and Capital)	$_____	$_____
	Operating Income (Loss)	$_____	$_____
	Other Revenue (Expense) — Net	$_____	$_____
D.	NET INCOME (LOSS)	$_____	$_____

5. Please provide current and proposed charge schedules. If current charges are adjusted as a result of this proposal, please explain the reasons.

6. Project Costs

A. Construction and equipment acquired by purchase.

1. Architectural and Engineering Fees _____
2. Legal, Administrative, Consultant Fees _____
3. Acquisition of Site _____
4. Preparation of Site _____
5. Construction Costs _____
6. Contingency Fund _____
7. Fixed Equipment not included in Construction Contract _____
8. Moveable Equipment (Please attach a list of all equipment over $50,000) _____
9. Other (Specify) _____

B. Acquisition by gift, donation, or lease.

	Annual Lease Payment	Years of Lease	Fair Market Value
1. Facility (Building and Land)			
2. Building			
3. Land			
4. Equipment (Specify)			
5. Other (Specify)			
Subtotal			

C. Financing Costs and Fees

1. Interim Financing _____
2. Underwriting Costs _____
3. Reserve for one year's debt service _____
4. Other (Specify) _____

Subtotal _____

D. Total Estimated Project Cost (A + B + C) TOTAL _____

E. Cost per square foot

_____ ÷ _____ = _____

Total Cost in D above ÷ Total Square feet

F. Debt Cost per patient day/visit at the estimated utilization rate during the first year.

_____	÷	_____	=	_____
Interest other than mortgage for Year One		Expected utilization rate for Year One		

Utilization rate for facilities with licensed beds is calculated by multiplying the number of beds, the number of days available (365 days/year) and the estimated occupancy rate. For other institutions, the utilization rate is the number of visits or procedures depending on facility type.

7. Explain the methods of construction.

8. Discuss the impact of this proposal on future state appropriations (i.e. Medicaid and/or state expenditures).

Criterion 3: The contribution which the proposal will make to the orderly development of an adequate and effective health care delivery system may be evaluated with reference to:

(a) the relationship of the proposal to the existing health care system;
(b) the availability of resources including health manpower and management personnel;
(c) the special needs and circumstances of those entities which provide a substantial portion of their services or resources, or both, to individuals not residing in the health service areas in which the entities are located or in adjacent health service areas;
(d) the relationship of the proposed health service to ancillary and support services; and
(e) the need of health care institutions to conserve energy.

QUESTIONS

1. Discuss the availability of similar services or institutions in the proposed service area and any advantages/disadvantages of the proposed project.

2. List the existing providers with which the applicant will have or does have transfer agreements, contractual relationships, working relationships, and other agreements.

3. Provide utilization data for your institution for the past year by month and annual utilization for each of the two years following completion of the project.

4. Provide the name of the entity from which the applicant has received or will receive accreditation, certification or licensure.

5. Discuss the relationship of this proposal to the clinical needs of training programs for health professionals in the service area.

6. Please provide a complete staffing pattern of health personnel by shift and by function for this project. Identify the sources for recruiting personnel and include proposed annual salary schedules for each employee. For these purposes, health personnel include physicians, psychiatrists, psychologists, R.N.'s, L.P.N.'s, nursing assistants/aides, physician's assistants, specialized technicians, therapists, psychological counselors, social workers, and case workers.

7. Identify any special needs or circumstances which have an impact on this proposal. Include a discussion of services provided to individuals that reside outside the health service area.

8. Discuss the relationship of this proposal to ancillary or support services within the institution.

9. Provide the estimated cost and selected method of providing energy to the institution.

10. Provide the number of months after Commission approval of this project that the following will be completed.

    A. Final plan approval, commitments to acquire _____ months

    B. Financing secured _____ months

    C. Construction started, implementation of service certified _____ months

    D. Project completion _____ months.

(Please refer to Commission Rule 0720-3-.05 for additional information for this question.)

AFFIDAVIT

STATE OF TENNESSEE
COUNTY OF _____

_____, being first duly sworn, says that he/she is the applicant named in this application or his/her lawful agent, that this project will be completed in accordance with the application, that the applicant has read the directions to this application, the Commission Rules and T.C.A. Section 68-11-101 et seq., and that the responses to questions in this application or any other questions deemed appropriate by the Tennessee Health Facilities Commission are true and complete.

_____
Signature / Title

Sworn to and subscribed before me this the _____ day of _____, 19 _____, a Notary Public in and for the County/State of _____.

_____
NOTARY PUBLIC

My Commission expires _____, 19 _____.

APPENDIX B

SAS 1
17:38 THURSDAY, JANUARY 8, 1987

SMSA=1

OBS	FACCODE	FACNAME	COUNTY	HSA
1	3320	ERLANGER MEDICAL CENTER	33	3
2	3321	RED BANK COMMUNITY HOSPITAL	33	3
3	3322	NORTH PARK HOSPITAL	33	3
4	3326	DIAGNOSTIC CENTER HOSPITAL	33	3
5	3329	DOWNTOWN GENERAL HOSPITAL	33	3
6	3332	MEMORIAL HOSPITAL	33	3
7	3335	METROPOLITAN HOSPITAL	33	3
8	3338	PARKRIDGE HOSPITAL	33	3
9	3339	EAST RIDGE COMMUNITY HOSP	33	3
10	5822	WHITWELL MEDICAL CENTER	58	3
11	5823	SOUTH PITTSBURG MUNICIPAL	58	3
12	7720	SEQUATCHIE GENERAL HOSPITAL	77	3

SMSA=2

OBS	FACCODE	FACNAME	COUNTY	HSA
13	1022	CARTER CO MEMORIAL HOSPITAL	10	1
14	3722	HAWKINS COUNTY MEMORIAL HOSP	37	1
15	8220	BRISTOL MEMORIAL HOSPITAL	82	1
16	8221	HOLSTON VALLEY HOSPITAL	82	1
17	8224	KINGSPORT HOSPITAL	82	1
18	8225	INDIAN PATH HOSPITAL	82	1
19	8621	UNICOI CO MEMORIAL HOSPITAL	86	1
20	9023	NORTHSIDE HOSPITAL	90	1
21	9025	JOHNSON CITY EYE AND EAR HOSP	90	1
22	9028	JOHNSON CITY MEDICAL CENTER	90	1

SMSA=3

OBS	FACCODE	FACNAME	COUNTY	HSA
23	120	METHODIST MEDICAL CENTER	1	2
24	121	ST MARYS NORTH HOSPITAL	1	2
25	520	BLOUNT MEMORIAL HOSPITAL	5	2
26	4524	JEFFERSON MEMORIAL HOSPITAL	45	2
27	4721	FORT SANDERS REGIONAL MED CTR	47	2
28	4724	ST MARY'S MEDICAL CENTER	47	2
29	4725	EAST TENNESSEE BAPTIST	47	2
30	4728	UT MEMORIAL HOSPITAL	47	2
31	4729	EAST TENNESSEE CHILDREN'S	47	2
32	4731	NORTHWEST GENERAL HOSPITAL	47	2
33	4732	PARK WEST HOSPITAL	47	2
34	7823	FORT SANDERS SEVIER MED CTR	78	2

SMSA=4

OBS	FACCODE	FACNAME	COUNTY	HSA
35	7920	BAPTIST-MEDICAL CENTER	79	6
36	7922	UT MEDICAL CENTER	79	6
37	7924	REGIONAL MEDICAL CENTER	79	6
38	7925	ST JUDE CHILDREN'S RESEARCH	79	6
39	7926	HUMANA SPECIALTY HOSPITAL	79	6
40	7927	METHODIST HOSPITAL CENTRAL	79	6
41	7928	ST JOSEPH HOSPITAL	79	6
42	7930	LE BONHEUR CHILDREN'S MED CTR	79	6
43	7931	BAPTIST HOSPITAL REG REHAB	79	6
44	7932	BAPTIST HOSPITAL EAST	79	6
45	7933	METHODIST HOSPITAL SOUTH	79	6
46	7934	METHODIST HOSPITAL NORTH	79	6
47	7937	MID SOUTH HOSPITAL	79	6
48	7938	EASTWOOD HOSPITAL	79	6
49	7939	ST FRANCIS HOSPITAL	79	6
50	8425	BAPTIST MEMORIAL HOSPITAL	84	6

SMSA=5

OBS	FACCODE	FACNAME	COUNTY	HSA
51	1921	SOUTHERN HILLS MEDICAL CTR	19	4
52	1922	G W HUBBARD HOSPITAL	19	4
53	1923	MADISON HOSPITAL	19	4
54	1924	METRO-NASHVILLE GENERAL	19	4
55	1925	BAPTIST HOSPITAL INC	19	4
56	1927	ST THOMAS HOSPITAL	19	4
57	1928	VANDERBILT UNIVERSITY HOSP	19	4
58	1930	EDGEFIELD HOSPITAL	19	4
59	1932	PARK VIEW MEDICAL CENTER	19	4
60	1933	NASHVILLE MEMORIAL HOSPITAL	19	4
61	1934	DONELSON HOSPITAL	19	4
62	1935	WEST SIDE HOSPITAL	19	4
63	2220	GOODLARK MEDICAL CENTER	22	4
64	7421	JESSE HOLMAN JONES HOSPITAL	74	4
65	7521	MIDDLE TENNESSEE MED CTR	75	4
66	7524	SMYRNA HOSPITAL	75	4
67	8320	HIGHLAND HOSPITAL	83	4
68	8324	SUMNER MEMORIAL HOSPITAL	83	4
69	8325	HENDERSONVILLE HOSPITAL	83	4
70	9423	WILLIAMSON COUNTY HOSPITAL	94	4
71	9520	HUMANA HOSPITAL MCFARLAND	95	4
72	9522	UNIVERSITY MEDICAL CENTER	95	4

APPENDIX C

Certificate of Need Profile

Hospital Name:
Facility Code:
HSA:
SMSA:
Date CON filed:
Project title and short description:

1. Type of Review
   a. new facility
   b. replacement of existing facility
   c. remodeling of existing facility
   d. addition of new service
   e. discontinuance of service
   f. acquisition of equipment
   g. replacement of equipment
   h. change in licensed bed complement
   i. change in location
2. Total estimated project cost
3. Sources of Funds--Financing
   a. commercial loans
   b. tax-exempt revenue bonds
   c. general obligation bonds
   d. grants
   e. depreciation funds
   f. lease
   g. other
4. Is project in long-range or strategic plan of hospital?
5. Project justification
   a. change in demand for existing service
   b. develop new market
   c. change in technology--diffusion of technology
   d. new product--first in market
   e. decrease cost to consumer
   f. enhance efficiency
   g. enhance quality
   h. meet code specifications
   i. meet need for previously unserved population
   j. fill out product/service line
   k. increase continuity of care
   l. other
6. Effect on existing health care system
   a. no effect
   b. introduce efficiency--reward low cost provider
   c. encourage competition--offer choice to consumer
   d. fill gap where no service currently exists
   e. other
7. Additional pertinent information

APPENDIX D

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT

Joint Annual Report of Hospitals

A Cooperative Data Collection Effort
Of
Division of Health Planning, TDHE
State Center for Health Statistics, TDHE
Division of Health Care Facilities, TDHE
Tennessee Health Facilities Commission
Tennessee Hospital Association
Health Systems Agencies
January 1, 1984 - December 31, 1984

SCHEDULE A - IDENTIFICATION

1. NAME OF HOSPITAL_____
2. ADDRESS OF FACILITY: STREET_____ CITY_____
   COUNTY_____ STATE_____ ZIP_____
   TELEPHONE NUMBER_____ AREA CODE_____
3. NAME OF CHIEF EXECUTIVE OFFICER_____
4. NAME OF GOVERNING BODY_____
5. BUILDING OWNERSHIP_____
6. NAME OF PERSON(S) COORDINATING FORM COMPLETION_____
7. DATE OF COMPLETION OF FORM_____
8. REPORTING PERIOD IF DIFFERENT THAN JAN. 1 - DEC. 31. BEGINNING_____ ENDING_____

SCHEDULE B - CLASSIFICATION

1. TYPE OF ORGANIZATION WITH LEGAL RESPONSIBILITY (OWNERSHIP) FOR HOSPITAL: (CHECK ONE)

   NONPROFIT: CHURCH RELATED_____ NONPROFIT CORPORATION_____ OTHER NONPROFIT_____
   PROPRIETARY: INDIVIDUAL_____ PARTNERSHIP_____ CORPORATION_____
   GOVERNMENTAL: STATE_____ COUNTY_____ CITY_____ CITY-COUNTY_____
   HOSPITAL DISTRICT_____ FEDERAL_____

2. DO YOU HAVE A CONTRACT WITH A MANAGEMENT FIRM TO PROVIDE GENERAL MANAGEMENT FOR THIS FACILITY?
   YES____ NO____ IF YES, PLEASE SPECIFY NAME_____
3. TYPE OF HOSPITAL:
   GENERAL_____ PSYCHIATRIC_____ CHRONIC_____
   OTHER (SPECIFY)_____

SCHEDULE C - ACCREDITATION AND APPROVALS

CHECK THOSE APPLICABLE:

____LICENSED BY STATE
____ACCREDITED BY THE JOINT COMMISSION ON ACCREDITATION OF HOSPITALS
DATE OF MOST RECENT ACCREDITING LETTER OR SURVEY RECEIVED FROM THE JOINT COMMISSION ON ACCREDITATION OF HOSPITALS_____
LENGTH OF YOUR MOST RECENT ACCREDITATION BY THE JOINT COMMISSION ON ACCREDITATION OF HOSPITALS:
ONE YEAR_____ TWO YEARS_____ THREE YEARS_____
____CERTIFIED FOR MEDICARE -NO. OF BEDS CERTIFIED ON DECEMBER 31_____
____CERTIFIED FOR MEDICAID -NO. OF BEDS CERTIFIED ON DECEMBER 31_____ SKILLED
_____ INTERMEDIATE
____AMERICAN MEDICAL ASSOCIATION APPROVAL FOR RESIDENCIES (INCLUDING INTERNSHIPS)
____STATE APPROVED SCHOOL OF PROFESSIONAL NURSING
____MEMBERSHIP IN AMERICAN HOSPITAL ASSOCIATION
____MEMBERSHIP IN TENNESSEE HOSPITAL ASSOCIATION
____BLUE CROSS PARTICIPATION
____MEDICAL SCHOOL AFFILIATION
____PROVISION OF STUDENT PRACTICAL NURSE CLINICAL EXPERIENCE
____LICENSED LABORATORY
____CLASSIFICATION OF EMERGENCY DEPARTMENT A____ B____ C____ D____ NONE____
____OTHER (SPECIFY)_____

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SCHEDULE D - FACILITIES AND SERVICES

CHECK IN THE COLUMN HEADED "IN HOUSE", SERVICES WHICH ARE ACTUALLY AVAILABLE WITHIN AND ARE AN INTEGRAL PART OF THE INSTITUTION. IF HOSPITAL CONTRACTS OR SHARES, CHECK THE APPROPRIATE SPACE AND COMPLETE THE COLUMN "WITH WHOM". IF YOU HAVE THE FACILITY OR SERVICE, COMPLETE THE COLUMN "TOTAL FOR YEAR". INCLUDE TOTAL UTILIZATION OF SERVICES (BOTH INPATIENT AND OUTPATIENT UTILIZATION) UNLESS ITEM SPECIFICALLY REQUESTS EITHER INPATIENTS OR OUTPATIENTS. DO NOT INCLUDE SERVICES PROVIDED TO PATIENTS WHO HAVE BEEN ADMITTED TO A DIFFERENT HOSPITAL THAT SHARES OR CONTRACTS FOR THE SERVICE WITH YOUR HOSPITAL.

I. HOSPITAL SERVICES:	IN HOUSE	CONTRACT	SHARE	WITH WHOM	TOTAL FOR YEAR
A) MEDICAL - SURGICAL:					
ABORTION SERVICE (INPATIENT)					
IF YES, NO. OF BEDS_____					
ABORTION SERVICE (OUTPATIENT)_____					NO. OF VISITS_____
AUDIOLOGY_____					NO. OF PATIENTS_____
AUTOPSIES_____					NO. OF AUTOPSIES_____
BLOOD CHEMISTRY ANALYZER_____					NO. OF PROFILES_____
NO. OF TESTS_____					
BLOOD_____					NO. OF UNITS USED_____
CLINICAL LABORATORY_____					
CHEMOTHERAPY (ONCOLOGY ONLY)_____					NO. OF TREATMENTS_____
DENTAL FACILITIES_____					NO. OF VISITS_____
ECHOENCEPHALOGRAPHY_____					NO. OF PROCEDURES_____
ELECTROCARDIOGRAPHY_____					NO. OF PROCEDURES_____
ELECTROENCEPHALOGRAPHY_____					NO. OF PROCEDURES_____
ELECTROMYOGRAPHY_____					NO. OF PROCEDURES_____
FAMILY PLANNING_____					NO. OF VISITS_____
GENETIC COUNSELING_____					NO. OF PATIENTS_____
HISTOPATHOLOGY LAB_____					NO. OF TESTS_____
OBSTETRICAL DELIVERY ROOM_____					NO. OF DELIVERIES_____
IF YES, NO. OF DELIVERY ROOMS _____					
OPERATING SUITE_____					NO. OF OPERATIONS_____
IF YES, NO. OF OPERATING ROOMS ____					
ONE DAY (OUTPATIENT) SURGERY					
IF YES, NO. OF DEDICATED ORs_____					NO. OF OPERATIONS_____ (EXCLUDE E.R. PROCEDURES)
ORGAN BANK_____					NO. OF TRANSPLANTS_____
TYPES_____					
OUTPATIENT DEPARTMENT_____					NO. OF VISITS_____
PATHOLOGY LABORATORY_____					
PHARMACY_____					NO. OF RX FILLED_____
POST OPERATIVE RECOVERY ROOM_____					NO. OF VISITS_____
NO. BEDS_____					
PODIATRIST FACILITIES_____					NO. OF PATIENTS_____
PULMONARY FUNCTION TEST FACILITY_____					NO. OF TESTS_____
RENAL DIALYSIS (INPATIENT)_____					NO. OF PROCEDURES_____
RENAL DIALYSIS (OUTPATIENT)_____					NO. OF VISITS_____
SPEECH PATHOLOGY SERVICE_____					NO. OF PATIENTS_____
KIDNEY TRANSPLANT_____					NO. OF PATIENTS_____
TUMOR REGISTRY_____					NO. OF PATIENTS_____

SCHEDULE D CONTINUED ON PAGE 3

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	IN HOUSE	CONTRACT	SHARE	WITH WHOM	TOTAL FOR YEAR
B) PSYCHIATRIC:					
PSYCHIATRIC INPATIENT UNITS					
PSYCHIATRIC OUTPATIENT UNITS					NO. OF VISITS
PSYCHIATRIC EMERGENCY UNITS					NO. OF VISITS
PSYCH. PARTIAL HOSPITALIZATION					NO. OF VISITS
PSYCH. FOSTER AND/OR HOME CARE					NO. OF PATIENTS
PSYCHIATRIC CONSULTATION AND EDUCATION SERVICE					NO. OF VISITS
CLINICAL PSYCHOLOGY SERVICE					NO. OF PATIENTS
C) THERAPY:					
INHALATION					NO. OF TREATMENTS
OCCUPATIONAL					NO. OF TREATMENTS
PHYSICAL					NO. OF TREATMENTS
OTHER					NO. OF TREATMENTS
D) RADIOLOGY:					
DIAGNOSTIC (EXCLUDE CAT SCANNERS)					NO. OF PROCEDURES
THERAPEUTIC (EXCLUDE RADIATION THERAPY-MEGAVOLTAGE)					NO. OF PROCEDURES
NUCLEAR MEDICINE FACILITY					NO. OF PROCEDURES
IF YES, IS IT:					
DIAGNOSTIC					NO. OF PROCEDURES
THERAPEUTIC					NO. OF PROCEDURES
RADIUM THERAPY					NO. OF PROCEDURES
ULTRASOUND					NO. OF PROCEDURES
E) SPECIAL UNITS:					
ALCOHOLIC UNIT					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS _____					
BURN CARE UNIT					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS _____					

SCHEDULE D CONTINUED ON PAGE 4

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	IN HOUSE	CONTRACT	SHARE	WITH WHOM	TOTAL FOR YEAR
INTENSIVE CARE UNIT (CARDIAC) (WITH MONITORS)					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					
DETOXIFICATION UNIT					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					
DRUG TREATMENT CENTER					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					
INTENSIVE CARE UNIT (EXCL. CARDIAC)					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					
INTENSIVE CARE UNIT (MIXED)					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					
PREMATURE NURSERY					NO. OF PATIENT DAYS
IF YES, NO. OF INCUBATORS					
REHABILITATION					
OUTPATIENT UNIT					NO. OF VISITS
SELF CARE UNIT					NO. OF PATIENT DAYS
IF YES, NO. OF BEDS					

F) SUPPORTIVE:

ELECTRONIC DATA PROCESSING				
HOSPITAL AUXILIARY				
MEDICAL LIBRARY				
SOCIAL SERVICE DEPARTMENT				
LAUNDRY SERVICE				
FOOD SERVICE				
HOUSEKEEPING SERVICE				
VOLUNTEER SERVICE DEPARTMENT				

2. OTHER HEALTH CARE FACILITIES OR SERVICES: (CHECK APPLICABLE STATEMENTS)

____HOSPITAL OPERATES A NURSING HOME UNDER A SEPARATE LICENSE.
IF SO, NAME OF HOME OR FACILITY _____
____HOSPITAL HAS A NURSING HOME OR EXTENDED CARE FACILITY UNDER CONSTRUCTION.
____HOSPITAL HAS A NURSING HOME OR EXTENDED CARE FACILITY IN THE PLANNING STAGES.
____HOSPITAL OPERATES A HOME HEALTH PROGRAM.
IF YES, NO. OF VISITS _____
____HOSPITAL REFERS PATIENTS TO AN ORGANIZED HOME HEALTH PROGRAM. IF YES, NO. OF REFERRALS _____
____HOSPITAL HAS A TRANSFER AGREEMENT WITH A MEDICARE CERTIFIED EXTENDED CARE FACILITY.
____HOSPITAL BASED AMBULANCE SERVICE.
____HOSPITAL OWNS OR OPERATES FREE STANDING OUTPATIENT FACILITY.
____HOSPITAL CONTRACTS WITH A HEALTH MAINTENANCE ORGANIZATION (H.M.O.).
____HOSPITAL OWNS A DOCTORS OFFICE BUILDING.

3. DISCHARGE ABSTRACT SERVICE

PLEASE SPECIFY THE NAME OF ALL ABSTRACT SERVICES THAT YOUR HOSPITAL USES (PAS, McAUTO, INTERQUAL HOSPITAL UTILIZATION PROFILE, ETC.). IF YOUR HOSPITAL DOES DISCHARGE ABSTRACTING IN-HOUSE, PLEASE SPECIFY THIS IN THE BLANK BELOW. IN THE SECOND BLANK, PLEASE SPECIFY THE NAME OF THE INDIVIDUAL IN YOUR FACILITY WHO HAS AUTHORITY TO APPROVE ACCESS TO DISCHARGE ABSTRACT DATA.

NAME OF SERVICE(s) _____

_____

NAME OF APPROVING AUTHORITY _____

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SCHEDULE E — FINANCES

USE INFORMATION FROM MOST RECENT ANNUAL FINANCIAL REPORT. PLEASE GIVE DATE: _____

1. WHAT WERE YOUR GROSS CHARGES (REVENUE) FOR THE YEAR BASED ON FULL ESTABLISHED RATES?
   - INPATIENT _____
   - OUTPATIENT _____
   - NEWBORN _____
   - TOTAL _____

2. WHAT WERE YOUR ADJUSTMENTS TO GROSS REVENUE THIS YEAR?
   - GENERAL:
     - BAD DEBTS _____
     - CHARITY _____
   - CONTRACTUAL:
     - MEDICARE _____
     - MEDICAID _____
   - ALL OTHER _____
   - TOTAL _____

3. OPERATING COSTS: (EXCLUDE ALL DEPRECIATION)
   - PAYROLL _____
   - FRINGE BENEFITS (SOCIAL SECURITY, GROUP INSURANCE, RETIREMENT, ETC.) _____
   - SUBTOTAL _____
   - ALL OTHER OPERATING COSTS _____
   - TOTAL _____

4. CAPITAL ASSETS:

	ACQUISITION VALUE	DEPRECIATION ANNUAL	DEPRECIATION ACCUMULATIVE
BUILDING			
EQUIPMENT			
ALL OTHER (LAND, ENDOWMENT FUNDS, INVESTMENTS, ETC.)			
TOTAL			

5. OFFICE USE ONLY _____

6. WHAT WAS YOUR LONG TERM DEBT RECORDED ON BALANCE SHEET AT END OF REPORTING PERIOD?
   _____

7. INDICATE AMOUNT OF ALL OTHER REVENUE (TOTAL APPROPRIATIONS, GRANTS, CONTRIBUTIONS, AND ADJUSTMENTS FROM PREVIOUS YEARS AS FOLLOWS:
   - A. OTHER OPERATING REVENUE _____
   - B. OTHER NON-OPERATING REVENUE _____
   - TOTAL ALL OTHER REVENUE _____

8. DOES YOUR HOSPITAL BILL FOR THE FOLLOWING PROFESSIONAL SERVICES?
   RADIOLOGY__YES __ NO PATHOLOGY__YES __ NO ___ OTHER (SPECIFY)_____

9. DESCRIBE ADDITIONS OR CHANGES TO FACILITIES DURING CALENDAR YEAR ENDED. _____

10. ADDITIONS OR CHANGES PLANNED FOR NEXT CALENDAR YEAR AND ESTIMATED COST. _____

11. ADDITIONS OR CHANGES PLANNED FOR SECOND THROUGH FIFTH YEARS AND ESTIMATED COST. _____

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SCHEDULE F - BEDS AND BASSINETS

1. NUMBER OF LICENSED BEDS AS OF DEC. 31 (EXCLUDE NON-LICENSED BASSINETS)_____
2. ADULT AND PEDIATRIC BEDS SET UP AND STAFFED FOR USE AS OF DEC. 31 (EXCLUDING NON-LICENSED BASSINETS)____
3. NEWBORN NONLICENSED BASSINETS SET UP AND STAFFED DEC. 31____

4.

BEDS CLOSED DURING YEAR			BEDS OPENED DURING YEAR		
NO. OF BEDS	SERVICE	DATES	NO. OF BEDS	SERVICE	DATES

SCHEDULE G - UTILIZATION

I. INPATIENT UTILIZATION BY SERVICE: (EXCLUDING NEWBORN)
A. PATIENT CENSUS RECORDS:

SERVICE	*BEDS ASSIGNED	ADMISSIONS (EXCLUDING BIRTHS)	DISCHARGES (INCLUDING DEATHS)	DEATHS	DISCHARGE PATIENT DAYS	INPATIENT DAYS	DO NOT WRITE IN THIS SPACE. OFFICIAL USE ONLY
MEDICAL							
SURGICAL							
MEDICAL/SURGICAL							
GYNECOLOGICAL							
OBSTETRICAL							
PEDIATRIC							
E.E.N.T.							
ORTHOPEDIC							
REHABILITATION							
CHRONIC/ EXTENDED CARE							
PULMONARY							
PSYCHIATRIC							
OTHER							
UNASSIGNED							
TOTAL							

*IF BEDS ARE NOT ASSIGNED TO SEPARATE SERVICES, INDICATE ALL BEDS UNDER "UNASSIGNED". THE TOTAL NUMBER OF BEDS SET UP AND STAFFED FOR USE ON DECEMBER 31, SHOULD BE RECORDED IN "TOTALS".

B. NUMBER OF PATIENTS IN HOSPITAL ON DECEMBER 31.

_____

SCHEDULE G CONTINUED ON PAGE 7

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2. TOTAL DISCHARGES AND DISCHARGE PATIENT DAYS BY AGE GROUP:

	DISCHARGES*	DISCHARGE PATIENT DAYS*
TOTAL		
UNDER 15 YEARS		
15 TO 64 YEARS		
65 YEARS AND OLDER		

*TOTAL AS GIVEN IN G.1.A., BROKEN DOWN BY AGE AT DISCHARGE.

3. ORIGIN (USUAL RESIDENCE) OF INPATIENTS EXCLUDING NEWBORNS FOR THE REPORTING PERIOD: TOTAL ADMISSIONS OR DISCHARGES AS GIVEN IN G.1.A. BROKEN DOWN BY PLACE OF RESIDENCE.

	COUNTY OF RESIDENCE	NUMBER OF DISCHARGES/ ADMISSIONS	COUNTY OF RESIDENCE	NUMBER OF DISCHARGES/ ADMISSIONS
A. COUNTY IN WHICH HOSPITAL IS LOCATED:				
B. OTHER TENN. COUNTIES: (SPECIFY)				

CONTINUE TOP NEXT COLUMN FOR QUESTION B

C. OTHER: (SPECIFY STATE OR COUNTRY)

CONTINUE AT TOP NEXT COLUMN FOR QUESTION C

USED ADMISSIONS _____ OR DISCHARGES _____

TOTAL DISCHARGES/ADMISSIONS _____ (SUM OF A + B + C)

SCHEDULE G CONTINED ON PAGE 8

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9. INPATIENT – NEWBORN:
   A. BIRTH AND DEATH RECORDS:
      NUMBER OF INFANTS BORN ALIVE_____
      NUMBER OF DEATHS OF INFANTS BORN ALIVE_____
      NUMBER OF FETAL DEATHS*_____
      NUMBER OF SPONTANEOUS ABORTIONS**_____
      NUMBER OF ALL INDUCED ABORTIONS REGARDLESS OF GESTATIONAL AGE _____
   B. TOTAL NUMBER OF NEWBORN PATIENT DAYS CARE_____
   C. NUMBER OF NONLICENSED BASSINETS IN NEWBORN NURSERY_____
   D. NUMBER OF MATERNAL DEATHS DURING YEAR_____

   * FETUS WEIGHT OF 500 GRAMS OR MORE OR IN ABSENCE OF WEIGHT, 22 OR MORE WEEKS OF GESTATION EXCLUDING INDUCED ABORTIONS.

   **FETUS WEIGHT OF LESS THAN 500 GRAMS OR IN THE ABSENCE OF WEIGHT, LESS THAN 22 WEEKS OF GESTATION EXCLUDING INDUCED ABORTIONS.

SCHEDULE H -EMERGENCY DEPARTMENT

I. A. EMERGENCY DEPARTMENT: NUMBER OF VISITS_____
   B. FULL-TIME PERSONNEL ASSIGNED? YES__NO__SHIFTS COVERED: 7-3__3-11__11-7__
   C. FULL-TIME PHYSICIANS ASSIGNED? YES__NO__SHIFTS COVERED: 7-3__3-11__11-7__
   D. INDICATE WHICH OF THE FOLLOWING STAFF MEMBERS ARE AVAILABLE IN THE HOSPITAL AND ON WHAT BASIS THEY ARE AVAILABLE 24 HOURS PER DAY TO THE EMERGENCY DEPARTMENT:

STAFF MEMBER - EMERGENCY DEPARTMENT:	IN HOUSE	ASSIGNED CALL? (AVAILABLE IN MINUTES)	ON CALL?
PHYSICIANS EMERGENCY DEPARTMENT:			
NUMBER OF SPECIALISTS & SUBSPECIALISTS AVAILABLE TO MANAGE LIFE THREATENING EMERGENCIES			
NUMBER OF QUALIFIED EMERGENCY PHYSICIANS			
NUMBER OF PSYCHIATRISTS (FOR CONSULTATION)			
NURSES - EMERGENCY DEPARTMENT:			
NUMBER OF R.N.'S WITH FORMAL EMERGENCY TRAINING AND EXPERIENCE			
NUMBER OF OTHER R.N.'S			
NUMBER OF L.P.N.'s AND OTHER NURSING SUPPORT PERSONNEL			
NUMBER OF CLERICAL STAFF			

SCHEDULE H CONTINUED ON PAGE 9

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OTHER - EMERGENCY DEPARTMENT:

NUMBER OF E.M.T.	_____	_____	_____
NUMBER OF E.M.T. ADVANCED	_____	_____	_____

E. INDICATE WHICH OF THE FOLLOWING BEST DESCRIBES YOUR EMERGENCY DEPARTMENT ORGANIZATION:

( ) DEPARTMENTAL STATUS WITH FULL-TIME MEDICAL DIRECTOR
( ) DEPARTMENTAL STATUS WITHOUT FULL-TIME MEDICAL DIRECTOR
( ) NON-DEPARTMENTAL STATUS WITH FULL-TIME NURSING SUPERVISOR
( ) NON-DEPARTMENTAL STATUS WITHOUT FULL-TIME NURSING SUPERVISOR
( ) EMERGENCY CARE IS MONITORED BY AN EMERGENCY CARE COMMITTEE UNDER THE EXECUTIVE COMMITTEE OF THE MEDICAL STAFF
( ) EMERGENCY CARE IS SUPERVISED BY THE MEDICAL STAFF

F. SUPPORTIVE SERVICES:

COMMUNICATIONS:	YES	NO
TWO-WAY RADIO IN ED WITH ACCESS TO:		
CENTRAL EMERGENCY DISPATCH CENTER	_____	_____
AMBULANCES	_____	_____
OTHER HOSPITALS	_____	_____
HELIPORT:	_____	_____
PHARMACY IN ED	_____	_____
SPECIALIZED CAPABILITY:		
TRAUMA	_____	_____
PSYCHIATRIC	_____	_____
PEDIATRIC	_____	_____
OTHER (SPECIFY)_____	_____	_____
BLOOD BANK:		
FULLY STOCKED	_____	_____
COMMON BLOOD TYPES ONLY	_____	_____
BLOOD EXPANDERS	_____	_____

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SCHEDULE I – OUTPATIENT DEPARTMENT

1. ORGANIZED OUTPATIENT CLINIC

TYPE OF OUTPATIENT CLINIC	NUMBER OF VISITS	TYPE OF OUTPATIENT CLINIC	NUMBER OF VISITS
ALLERGY		NEUROSURGICAL	
CARDIOVASCULAR		NEUROLOGICAL	
PULMONARY, MEDICAL		ORTHOPEDIC	
PULMONARY, SURGICAL		PEDIATRIC	
DENTAL		PLANNED PARENTHOOD	
DERMATOLOGY		POSTPARTUM	
DIABETIC		PRENATAL	
EAR, NOSE AND THROAT		SCREENING	
EYE		SURGICAL, GENERAL	
GYNECOLOGY		TUMOR	
MEDICAL, GENERAL		UROLOGY	
MENTAL HEALTH		OTHER	
		TOTAL	

2. TOTAL NO. OF REFERRED (BY PHYSICIANS) PATIENT VISITS TO OTHER THAN OUTPATIENT DEPARTMENT OR EMERGENCY DEPARTMENT _____

3. DOES YOUR FACILITY PROVIDE PRIVACY TO OUTPATIENTS DURING INTERVIEW, EXAMINATIONS, AND TREATMENT? YES___ NO___

SCHEDULE J – APPOINTED MEDICAL STAFF

PHYSICIANS ON APPOINTED STAFF: (PLEASE COUNT EACH PHYSICIAN IN ONLY ONE CATEGORY.)

	TOTAL	FAM. PRACT. OR G.P.	INTERNAL MED.	ALL SURG.	OB/ GYN	PED	OTHER
ACTIVE STAFF							
CONSULTING STAFF							
ALL OTHER STAFF							
TOTAL							

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SCHEDULE K — HOSPITAL EMPLOYEES AS OF DECEMBER 31

1. TOTAL HOSPITAL-EMPLOYED PERSONNEL* (EXCLUDE MEDICAL STAFF):	CONTRACT/ CONSULTANT	FULL-TIME	PART-TIME	PART-TIME EMPLOYEES IN FULL-TIME EQUIVALENT	BUDGETED VACANCIES
PROFESSIONAL NURSES (R.N.)					
LICENSED PRACTICAL NURSES					
NURSING SUPPORT PERSONNEL (NONLICENSED):					
NURSE TECHNICIANS					
NURSE AIDES					
ORDERLIES & ATTENDANTS					
OTHER WARD UNIT PERSONNEL					
LABORATORY PERSONNEL:					
MEDICAL LABORATORY DIRECTORS					
MEDICAL LABORATORY SUPERVISORS					
MEDICAL LABORATORY TECHNOLOGISTS					
OTHER MEDICAL LABORATORY PERSONNEL					
RADIOLOGIC TECHNOLOGISTS					
RADIOLOGIC TECHNICIANS					
OTHER RADIOLOGIC PERSONNEL					
PHYSICAL THERAPISTS					
PHYSICAL THERAPISTS ASST. & AIDES					
OCCUPATIONAL THERAPISTS					
OCCUPATIONAL THERAPISTS ASST. & AIDES					
RESPIRATORY THERAPISTS (INHALATION)					
RECREATIONAL THERAPISTS					
REGISTERED PHARMACISTS					
PHARMACY TECHNICIANS					
MEDICAL SOCIAL WORKERS (M.S.W.)					
OTHER SOCIAL WORKERS					
REGISTERED RECORDS ADMINISTRATORS					
ACCREDITED RECORD TECHNICIANS					
CHIEF EXECUTIVE OFFICER AND ASSTS.					
ADMINISTRATIVE STAFF					
REGISTERED DIETITIANS					
DIETETIC TECHNICIANS					
HOUSEKEEPING					
MAINTENANCE AND GROUNDS					
LAUNDRY					
OTHER HEALTH PROFESSIONALS					
OTHER NON HEALTH PERSONNEL					
TOTAL					

* WHERE ONE OR MORE PHYSICIANS MAINTAIN OFFICES FOR PRIVATE PRACTICE IN THE HOSPITAL, DO NOT INCLUDE PERSONNEL EMPLOYED WITH THE OFFICE PRACTICE. IN SUCH CASES, THE TIME FOR SOME EMPLOYEES WILL HAVE TO BE PRORATED BETWEEN OFFICE AND HOSPITAL PRACTICE.

SCHEDULE K CONTINUED ON PAGE 12

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SCHEDULE K (CONTINUED)

2. TOTAL HOSPITAL MEDICAL STAFF:

	CONTRACT/ CONSULTANT	FULL-TIME	PART-TIME	PART-TIME EMPLOYEES IN FULL TIME EQUIVALENT
RESIDENTS (INCLUDE INTERNS)				
EXTERNS				
RADIOLOGISTS				
PATHOLOGISTS				
DENTISTS				
DENTAL INTERNS & RESIDENTS				
PODIATRISTS				
OTHER PHYSICIANS				
TOTAL				

*DO NOT INCLUDE PHYSICIANS WHOSE ONLY CONNECTION IS PRIVATE PRACTICE IN THE HOSPITAL; INCLUDE ONLY THOSE EMPLOYED ON PAYROLL BASIS.

3. TOTAL IN TRAINING PROGRAMS:

	CONTRACT	FULL-TIME	PART-TIME	PART-TIME EMPLOYEES IN FULL TIME EQUIVALENT
PROFESSIONAL STUDENT NURSES				
PRACTICAL NURSE STUDENTS				
PARAMEDICAL TRAINING PROG.				
OTHER				
TOTAL				

SCHEDULE L — MISCELLANEOUS

PHARMACY:

	YES	NO
IS YOUR HOSPITAL PHARMACY OPEN TO THE PUBLIC?		
DO YOU DISPENSE DRUGS THROUGH A UNIT DOSE SYSTEM?		
DO YOU FURNISH DRUGS TO OUTPATIENTS?		
DO YOU FILL PRESCRIPTIONS FOR OUTPATIENTS?		
DO YOU HAVE A STANDING LONG-RANGE PLANNING COMMITTEE?		
HOW FREQUENTLY DOES IT MEET?		
DO YOU HAVE A WRITTEN LONG-RANGE DEVELOPMENT PLAN COVERING FIVE OR MORE YEARS?		
DO YOU HAVE A FUNCTIONING INFECTION CONTROL COMMITTEE?		

HOW MANY DAYS A WEEK MAY ELECTIVE SURGERY BE SCHEDULED? _____

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SCHEDULE M - SUPPLEMENTAL SURVEY TO MEET NATIONAL GUIDELINES FOR HEALTH PLANNING

1. NEONATAL SPECIAL CARE UNIT:

(Please indicate the number of licensed beds in the neonatal special care unit of your facility according to the categories presented. A "Bed" includes heated units and bassinets. "Infants Admitted" includes in-born and referral infant patients.)

Type of Beds (Bassinets)	Number of Beds (Bassinets)	Number of Infants Admitted	Number of Patient Days
Intensive	_____	_____	_____
Intermediate	_____	_____	_____
Total	_____	_____	_____

2. OPEN HEART SURGERY:
(Please indicate the number of open heart operations performed by your facility with cardiopulmonary by-pass machine.)

	Number of Operations
Adult	_____
Pediatric	_____
Total	_____

Date open heart surgery unit was initiated: _____

3. CARDIAC CATHETERIZATION LABORATORY:

(Please indicate the number of cardiac catheterizations performed by your facility according to the categories presented. By definition, the term "cardiac catheterization" includes all studies of the central circulatory system whether or not the catheter enters the heart or coronary arteries. Procedures are those which must be performed in a cardiac catheterization laboratory and do not include studies with "float" catheters performed at the bedside or in other settings outside of a cardiac catheterization laboratory.)

Type of Catheterization		Number of Catheterizations
A. Intra-cardiac or coronary artery	Adult	_____
	Pediatric	_____
	Subtotal	_____
B. Other cardiac catheterizations	Adult	_____
	Pediatric	_____
	Subtotal	_____
	Total	_____

Date cardiac catheterization laboratory unit was initiated: _____

SCHEDULE M CONTINUED ON PAGE 14

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SCHEDULE M - (CONTINUED)

4. RADIATION THERAPY - MEGAVOLTAGE:

(Please list your megavoltage units separately by type, and indicate the date that each unit was initiated and its utilization. By definition a megavoltage unit is considered to be a single machine or energy source of 1.0 megavolts or greater such as a linear accelerator or a betatron. A cobalt 60 teletherapy machine should also be included. A "case" is meant to be a patient with a medical problem that requires radiation therapy and "treatment" is meant to be a patient visit.)

Unit	Date Unit Initiated	Number of Cases	Number of Treatments
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
	Total	_____	_____

5. COMPUTED TOMOGRAPHIC SCANNERS (CT OR CAT SCANNERS):

(Please indicate the number of patient procedures for each scanner according to the categories presented. Attach a separate sheet if necessary. A "patient procedure" includes the initial scan plus any necessary additional scans of the same anatomic area of diagnostic interest during a single visit.)

Scanner (Type or Model): _____

	With Contrast Only	Without Contrast Only	With and Without Contrast	Total
Head	_____	_____	_____	_____
Body	_____	_____	_____	_____
Total	_____	_____	_____	_____

Date Scanner was initiated: _____

Average Number of Hours Staffed per Week _____

Scanner (Type and Model): _____

	With Contrast Only	Without Contrast Only	With and Without Contrast	Total
Head	_____	_____	_____	_____
Body	_____	_____	_____	_____
Total	_____	_____	_____	_____

Date Scanner was initiated: _____

Average Number of Hours Staffed per Week _____

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APPENDIX E

Strategic Response Instrument (SRI)

Based on the information in the CON profile and the JAR profile evaluate the pattern of strategic response for each hospital over the five years from 1981-1985 on the following dimensions. The evaluation should be made using the year 1980 as the baseline.

SPECIALIZATION: The degree to which the hospital focused its efforts in terms of the width of its service/product line, the target customer segments and the geographic markets served.

7	6	5	4	3	2	1
Much More Specialization	Moderate	Little	No Change	Little	Moderate	Much More Diversification

GROWTH: The degree to which the hospital emphasized growth in the primary business, i.e., inpatient services. Record the change in market share in admissions from 1980 to 1984.

Percent market share (admissions), 1980:
Percent market share (admissions), 1984:
Mean SMSA market share (admissions), 1984:

INNOVATION: The degree to which the hospital engaged in innovation in product and service development.

4	3	2	1	0
Much Innovation	Moderate	Some	Little	No Change

COST POSITION: The degree to which the hospital sought a low cost position during the period 1980-1984.

Cost per patient day, 1980:
Cost per patient day, 1984:
Mean SMSA cost per patient day, 1984:

LEVERAGE: The degree to which the hospital used debt financing as means to expand its facilities and services. Record the change in debt/capital asset ratio from 1980-1984.

Debt/Capital Assets, 1980:
Debt/Capital Assets, 1984:

BRAND IDENTIFICATION: The degree to which the hospital sought brand identification of its facilities and services through name recognition or other brand identification techniques.

4	3	2	1	0
Much More Brand Identification	Moderate	Some	Little	No Change

QUALITY: The extent to which the hospital engaged in quality enhancing activities and/or improvements in amenities.

4	3	2	1	0
Much More Quality Enhancement	Moderate	Some	Little	No Change

APPENDIX F

Definitions of Regression Variables Used in Short-Run Hospital Cost Model

A. Dependent variable

1. Total variable cost (TVC) = Total operating cost - Annual depreciation

B. Independent variables

1. Inpatient days (PD) = annual number of inpatient days
2. Labor (W) = Payroll costs/Total number of full-time equivalents
3. Licensed Beds (K) = number of licensed beds as of December 31
4. Diagnosis Related Groups (DRG) = whether DRGs were in effect

   dummy variable: 1 if year is 1983 or 1984;
   0 if otherwise

5. Ownership Status (OWN) = legal ownership

   dummy variable: 1 if hospital is for-profit;
   0 if otherwise

6. Medical School Affiliation (MSch) = teaching hospital

   dummy variable: 1 if hospital has medical school affiliation;
   0 if no affiliation

VITA

Deborah A. McFarland graduated from Ohio Wesleyan University in 1968. After graduation she served in the Peace Corps in Liberia, West Africa, where her interest in public health was kindled. She subsequently attended the University of North Carolina at Chapel Hill completing a Master of Public Health degree in 1972. She held positions in health administration and policy for six years, first with the United Mine Workers Health and Retirement Funds and then with the East Tennessee Health Improvement Council. In 1979, she began teaching as an instructor in the Division of Public Health at the University of Tennessee, Knoxville. Before entering the doctoral program in the College of Business Administration, University of Tennessee, in the fall of 1982, Miss McFarland completed a year of postgraduate study at the London School of Economics, London, England, and received a Master's degree in economics from that institution in March, 1984.

While a doctoral student, Miss McFarland served as a graduate teaching assistant at the University of Tennessee as well as a research assistant at the Center for Business and Economic Research. She received her Ph.D. in business administration with concentrations in strategic management and industrial organization economics in June, 1987.

Currently, Miss McFarland is an Assistant Professor at Emory University School of Medicine, Atlanta, Georgia. She is a member of the Academy of Management, the American Economic Association, the American Public Health Association, and the Strategic Management Society.