

The Impact of Structured Strategic, Marketing and Management  
Information System Planning on the Performance of Hospitals in  
Northern New England

By  
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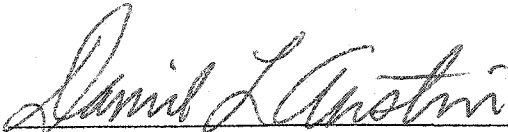
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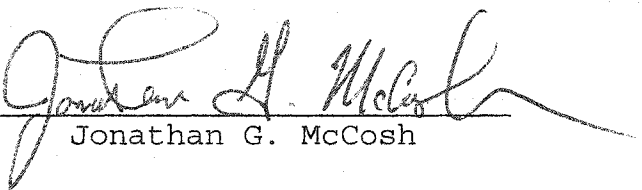
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Jonathan G. McCosh

## ABSTRACT

### The Impact of Structured Strategic, Marketing and Management Information System Planning on the Performance of Hospitals in Northern New England

By  
Jonathan G. McCosh

Today's business environment for hospitals is very competitive due to significant financial pressures placed upon them. Porter (1979) advocated the use of a strategic planning process for competitive industries. The creation of a strategic plan requires a major commitment of time and managerial resources. It is therefore important for hospital executives to be able to substantiate this resource commitment through increased financial performance.

A study that reported a correlation between structured planning and financial performance in hospitals was conducted by Layton (1991). That study recommended the use of structured planning and also suggested that further research be conducted on the marketing component of the plan. The hospital industry has had many changes since the original study was completed including different reimbursement methodologies, reduced patient utilization, cost containment measures, horizontal integration and vertical integration. These developments have created a different organizational climate for this industry, making it important to again validate this correlation.

The study was replicated in four northern New England states to retest the original hypothesis. Additional hypotheses were added to the study to test the inclusion of marketing, management information systems and the increased use of Medicare as components of the structured plan.

Results showed that the correlation between structured planning and profitability could not be proven statistically, although there was evidence to support that a positive relationship does exist. Of the other hypotheses the only one that was supported was that pertaining to marketing. Hospitals with written plans who dedicated between 35% and 50% of the structured plan to marketing and competitive analysis had higher profitability. This finding was even more significant when applied to long-term strategic planning as opposed to short-term operational planning.

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CHAPTER I  
INTRODUCTION

Background

Today's changing health environment has created a situation with many competitive pressures placed upon hospitals. The reimbursement methodologies for hospital services have undergone several significant changes, resulting in lower operating margins. Occupancy rates have also declined. Consequently, hospital corporations are now faced with a more complex and competitive environment than they have previously experienced. Porter (1979) advocated the use of a strategic planning process is of critical importance if a corporation is to survive within the environment such as those in which hospitals now find themselves.

The health care industry of the United States is one of the largest industries in the world. The American Hospital Association (2002) estimates that expenditures for this industry in the year 2000 totaled \$ 1.311 trillion dollars, an increase of 8.3% from the previous year. This figure represents 13.1% of the United States Gross Domestic Product. This amount is almost twice the national health dollar expenditures of 1990 and more than five times the corresponding expenditures in 1980. Of the

total healthcare market, the hospital industry accounts for \$ 415.8 billion dollars or 31.7% of the total expenditures for healthcare services in the year 2000 (Emch, 2000).

Several independent studies were conducted between the years 1998 and 2000 regarding profitability in the hospital industry. The President and C.E.O. of the Federation of American Health Systems summarized the findings from three of these, stating "All three studies come to essentially the same conclusion: Hospital margins are bad and are expected to reach historic lows" (Gardner, 2000). Moody's reported that among the hospitals it rated, 43% had operational losses, an increase of 11% over the previous year. Margins have been particularly poor for the not-for-profit hospitals, which experienced a 63% decrease in profits between the years 1998 and 1999 (Jaklevic, 2000). Adding to the problem is the recent decline in hospital bed utilization. More than half of all hospital beds are now unoccupied on any given day. This results in higher overhead costs per-patient and further negative impact on profit margins (Yafchak, 2000).

#### Purpose of the Study

The literature suggests that a formal strategic planning process will bring about the forecasting and planning necessary for an organization to continue to compete

successfully. Porter stated "strategic positioning means performing different activities from rivals or performing similar activities in different ways," and that the strategic plans need to be formalized or they are not likely to be implemented (Porter, 1966, p. 67). However, the creation of a strategic plan requires a commitment of time and managerial resources are usually dedicated to the hospital's daily operations. It is, therefore, necessary to be able to substantiate the time and effort required to create and follow a strategic planning document will be justified through increased financial performance.

A study designed specifically to address the impact that structured strategic planning has upon the financial performance of hospitals was conducted by Layton (1991). The research focused on determining if there was a difference in the financial profitability of hospitals that performed structured strategic planning. Layton concluded that there appeared to be a positive correlation between profitability and structured strategic planning, and better financial performance resulted from the use of structured strategic planning. Layton recommended that managers in hospitals and other service industries utilize this type of planning. Layton also suggested that further research be conducted on the impact of the marketing component of the strategic plan.

More recent studies have focused upon the importance of the strategic planning process within hospital environments. Horak (1997) linked the strategic planning process for healthcare organizations to the Total Quality Management process advocated by Deming. Olsen (1998) examined how the use of a strategic planning process improves overall communication within a hospital environment. Popovich and Popovich (2000) concentrated on the benefits of collaboratively involving multi-disciplinary teams in the hospital strategic planning process. Rosenstein (2000) concluded that the creation of the hospital strategic plan allows for measurable benchmarks to monitor the facility's ongoing progress. While these research studies advocate the use of a strategic planning process, and the implication is that this will lead to better performance, none of these studies specifically examined the relationship between planning and financial performance as Layton did. It is for this reason that continued research on this relationship using Layton's original model is warranted.

#### Justification of the Study

There are several reasons for the replication of Layton's research model. The primary reason is a need to confirm that the original hypothesis can still be supported in order to justify the time and effort required by hospital administrators

to conduct structured long-term planning. It cannot be automatically assumed that the original research conclusions are still valid because there have been a number of significant changes within this industry during the twelve years since the original study was completed. These changes include: (1) Substantially different reimbursement methodologies are used to pay hospitals by both government and other third party payers; (2) Reductions in utilization of inpatient hospital services by consumers; (3) Cost containment measures have changed the way hospital expenses are managed; (4) Horizontal integration through hospital mergers and acquisitions to create economies of scale; and (5) Vertical integration with other health providers to create both financial incentives and promote a continuum of care (Becker & Potter, 2002). Collectively, these developments have created a different organizational climate for this industry, and further research is needed to verify that Layton's original conclusions are still valid.

In addition to replication of the study to confirm the validity of the original hypothesis, the changing environment of this industry also warrants a continuation of the original research into two specific subcomponent areas of the hospital strategic plan. One of these areas is marketing. Layton specifically recommended further research into the part of the strategic plan devoted to marketing. Competitive changes



within the hospital industry have created an environment in which almost all hospitals, including not-for-profit or government-owned facilities, must be cognizant of the need to promote their operations in order to maintain long-term viability. It is necessary for each hospital to develop and implement a marketing plan that views its facilities and services as products to be effectively marketed to the community and to emphasize its competitive advantages (Petromille & Michalczyk, 1999). Therefore, it is necessary to collect data pertaining to the marketing component of the structured strategic plan as a part of the study.

The other subcomponent of the hospital strategic plan that should be researched is the use of health management information systems. Technological advances within the industry during the past twelve years have been substantial. At the time of Layton's study the vast majority of information systems were financial in nature rather than clinical, with a focus primarily upon accounting, billing and reimbursement. Today's health information technology links financial, clinical and administrative functionality, and creates an ideal mechanism to facilitate and promote planning efforts (Tan & Sheps, 1998). The need of hospitals to have sophisticated health information technology has also increased with the passage of the Health Insurance Portability and Accountability Act, with increased

standards for the confidentiality and privacy of information that went into effect on April 14, 2003 (Calloway & Venegas, 2002). Consequently, it is important to conduct research into the part of the structured strategic plan devoted to the use of information technology.

A final question will be researched regarding the payer mix strategies undertaken by hospitals, to determine if hospital strategic plans are now being implemented to increase reimbursement from specific payer sources, most notably Medicare.

#### Research Questions

The research question posed in Layton's study was stated as follows:

Can competent executive managers in the healthcare industry influence the financial performance and growth (profitability, organizational efficiency, & financial solvency) in their respective organizations utilizing effective structured operational or structured strategic planning methods and a comprehensive business plan? (Layton, 1991, p. 13).

It is this same primary research question that would be replicated in this study. The primary goal of the research would be to validate that the original conclusion is still applicable in today's health environment, given the significant changes that have occurred within the industry. In the case of

not-for-profit facilities profitability will be defined as a net surplus to the fund balance.

The original study also explored the areas of human resource development as patient service satisfaction as sub-component areas within the business plan. This was accomplished through the use of additional hypotheses that addressed these specific issues, and the research instrument used asked if each of these areas was specifically addressed in the hospital's business plan. Two areas of critical importance in today's hospital environment are marketing and management information systems. The proposed model for the current study would substitute marketing and management information systems as the two subjects for these two additional hypotheses, necessitating modification to those lines within the research instrument. The basic research questions pertaining to those two additional sub-component areas would be as follows:

Profitability is significantly greater for hospitals that perform structured planning and address the issue of marketing in its comprehensive business plan.

and

Profitability is significantly greater for hospitals that perform structured planning and address the issue of management information systems in its comprehensive business plan.

Both of these questions will be developed further in order to define the relevant terms.

One final research question should also be developed regarding the sources of hospital payment. There have been significant changes in the reimbursement methodologies used by the Medicare program, and it would be helpful to determine if hospitals are modifying their strategic plans to directly address these reimbursement changes.

#### Scope of the Study

To facilitate the collection of data, the geographic location to be used for this study will be the four northernmost New England States: Maine, Massachusetts, New Hampshire, and Vermont. The geographic region represents the state in which the researcher resides and the three states bordering it. This geographic region comprises a total of 201 acute care hospitals, which constitutes a large enough population to derive a sufficient sample size in order to validate the research findings. The chief executive officer from each of these hospitals will receive a copy of the research instrument as well as a self-addressed stamped envelope in which to return the study in. Additional details regarding the research instrument and implementation of the study are discussed in Chapter III: Methodology.

## Chapter Summary

The hospital industry today is a very competitive environment, with significant financial pressures and many hospitals experiencing financial difficulties. Previous studies have indicated that there appears to be a relationship between the use of a structured planning process and profitability. A research study concluded that this relationship appeared to exist was conducted in 1991. Since the time of the initial study there have been a number of factors and trends have changed the dynamics and structure of this industry. Considering the significance of the changes that have occurred, it is warranted that the original research be replicated to test if this relationship still exists, in order to justify the time and effort required for hospitals to undertake a rigorous planning process. The revised study should also examine both the marketing and management information systems subcomponents of the strategic plan that have become important in today's hospital and business environment.

## CHAPTER II

## REVIEW OF THE LITERATURE

Chapter Overview

In order to analyze the impact of strategic planning on the performance of hospitals it is beneficial to begin with a review of the literature regarding the strategic planning process. This review will start by summarizing the main theories regarding the strategic planning process, examining the work of the earlier theorists in this field and then the more recent theorists with emphasis upon the work of Porter. This will be followed by a narrower review, examining the topic of strategic planning in regards to the health care industry in general and the hospital industry in particular.

It is then necessary to take an in-depth look at the hospital industry as a whole. This will include an examination of how the industry has changed since the time of the original research now being replicated with this study. The major changes and trends that have impacted this industry have included fundamental changes in how the federal government pays for hospital services, including the creation of the Critical Access Hospital designation for rural providers. A brief review of universal health care systems of other

governments will them follow. Recent developments have also impacted the reimbursement methodologies from third party payers. Declining utilization of hospital services is yet another recent development. A related topic is the strategy of hospitals to implement cost containment measures in order to maintain profitability. Other major changes in this industry revolve around the horizontal integration of hospitals and vertical integration of other health providers through merger and acquisition activities designed to produce economies of scale and promote a continuum of care. A summary this industry background section will then be presented using Porter's Five Forces Model (1980).

The literature will also be examined regarding the topic areas of the two sub-hypotheses of the research, namely marketing planning for hospitals and management information systems planning for hospitals. The chapter will then conclude with a summary review of the literature.

### Strategic Planning Literature Review

#### Early Theorists

Operational planning are the plans and preparations needed for day-to-day operations of the business. To examine a corporation's specific current business strategies, it is

helpful to have an understanding of early strategic planning models. The importance of strategic planning was emphasized by some of the earlier management theorists, who focused upon the need for operational planning (Drucker, 1954).

Operational and strategic planning are not new concepts, with writings on the subject go as far back as the sixth century B.C in the writings of Chinese General Sun-Tzu. His text was a treatise on military strategy. The text references the importance of planning, including both an internal assessment of ones own strengths and weaknesses and an external analysis of the opponents. He stated the need for the proper deployment of resources to achieve objectives, and concluded "One who, fully prepared, awaits the unprepared will be victorious." (Sun-Tzu, Sawyer (Trans.), 1994, p. 179).

Taylor (1911) theorized on the topic of scientific management, which emphasized the importance of planning. Taylor's task management system saw planning and production as two separate tasks, and he recommended the establishment of a separate group to perform the planning functions. Operational planning was a critical component of Taylor's principles of scientific management. He saw strategic planning as having a long-term perspective. Gantt later expanded upon this work, applying concepts of scheduling and time management to the planning process (Gantt, 1911/1974). Gantt's work was later



developed by the United States Navy with the Program Evaluation and Review Technique (PERT) system, creating a new tool for operational planning (Dale, 1960).

Another early theorist to emphasize the importance of long-term planning was Fayol. He saw the business plan as being one with five to ten year forecasts, and felt every plan needed to have unity, continuity and precision. He stated that the business plan was a critical element to guide and protect the business in a changing environment. Fayol proposed a systematic approach for the business plan to be developed (Fayol, 1916/1949). It was the foundation established by Taylor, Gantt and Fayol that later theorists further developed.

#### Later Theorists

Later theorists described the need to change from an operational planning perspective to one focused upon strategic planning. Drucker (1954) felt strategic planning was necessary for senior management to make strategic decisions. He described the change in perspective away from the operational short-range plans and towards more long-range strategic planning. His ideas were later refined by Ansoff (1975), who applied the concepts of long-term planning to the corporate environment of military contractor Lockheed Aircraft.

Systematic planning was later described by Hofer (1965), who recognized that the structural and economic changes within corporate business environments made the planning process necessary. He developed a model for the comprehensive business plan process, taking into account areas beyond manufacturing such as marketing. The emphasis on gathering feedback and making changes to the plan was a key part of the Hoffer model. Schilit (1987) later expanded upon this, describing the formal plan as having the following key elements: executive summary, background, objectives, market plan, operational plan, and marketing plan.

Thune and House (1970) conducted comparative studies on the impact of structured planning. They examined firms in several industries, and found there was a correlation between firms with formal business plans of three or more years, and long-term positive economic outcomes. Measures used to evaluate this were gross sales, stock prices, earnings per share, return on common equity and return on capital. In addition to the comparisons to companies without formal plans, they also evaluated each company against its own performance prior to the adoption of formal planning, again finding significant improvements due to the planning process.

A later study by Herold (1972) built upon the work of Thune and House, examining both sales and profits, and comparing

results for a seven-year period. They proved that the formal planners had significantly higher sales and profits. Malik and Karger (1975) used manufacturers of electronics, machinery, and pharmaceuticals to validate this correlation. Wood and LaForge (1979) also validated this finding within the banking industry.

Ang and Chua (1979) conducted research that in addition to a sample of 200 industrial organizations also included 300 service organizations. Fifty service organizations were chosen from six different classification groups: banking, financial, insurance, retail, transportation, and utilities. Their questionnaire focused on planning activities and the planning process. The research showed 73% planned for longer than a year and 51% planned for five or more years. The study made several recommendations that emphasized the importance of long-range planning, including the need to review the strategic plan on a continual basis.

Bracker and Pearson (1986) examined business planning at 555 different organizations. They identified eight key components of the planning process: objective setting; environmental analysis; strengths, weaknesses, opportunities, and threats (SWOT analysis); strategy formulation; financial projections; functional budgets; operating performance measures; and control and corrective procedures. Based on their analysis, four separate planning classification levels were established:

unstructured, intuitive, structured operational, and structured strategic. The unstructured and intuitive classifications are unwritten plans. Both structured operational plans and structured strategic plans are written plans, however they each have a different time perspective and focus. Structured operational plans are short-term, tactical plans, whereas structured strategic plans are long-term, comprehensive strategies. The study found that financial performance was linked to planning activities, and the structured strategic level of planning was the most effective. Firms with a longer planning history performed better than those with a shorter planning history. They also found that both the age and size of the firm had no significant difference on the overall financial performance. The study concluded that the primary factors for successful financial performance were senior management's managerial orientation, successful strategic planning, and understanding the external environment.

A key theorist on the subject of strategic planning was Porter, who put forth a number of business analysis models. Porter (1980) studied the direct relationship between planning and profitability, finding firms who conducted these structured planning activities were the most profitable. His strategic planning models included the Five Forces Model (1979) which analyzed the external competitive environment, the Generic

Business Strategies Model (1980) which provided a template for business analysis of strategic advantages, the Value Chain Analysis Model (1985) which analyzed in detail both the primary and support activities of a firm, the Multi-business Companies Model (1985) which classified diversified companies into market-related, operating and management opportunities, and the Global Strategies Framework (1986) which analyzed businesses based upon international factors for success.

A variety of other strategic planning models are also widely used. The Remote Analysis Model as described by Laczniak and Lusch (1986) is an alternate method of external analysis. This methodology recognizes the industry environment as identified by Porter's Five Forces Model, but also suggests that an analysis be done of the remote environment, comprised of social, technological, ecological, economic and political factors.

Once a thorough understanding of the external environment facing a corporation is developed, it is also necessary to perform an internal analysis regarding the specific strategic business units and strategies of the corporation. The Boston Consulting Group (BCG) developed a planning tool to examine the portfolio of a corporation (Hambrick et al., 1982). The BCG Growth-Share Matrix was designed for managers to identify the specific business strategies for the different businesses in

their company portfolio. The analysis is conducted by comparing each entities' market share to the potential growth rate. This model provides a framework for discussion in comparing the strengths of each entity to their relative position in their respective markets .

A related business-planning tool is the Industry Attractiveness Model, which was developed by McKinsey and Company in conjunction with General Electric (Proctor & Hassard, 1990). Similar to the BCG Growth-Share Matrix, this model was designed as a grid that compared a company or strategic business unit's industry attractiveness to its business strength. The industry attractiveness component was defined as a composite analysis of the elements of Porter's Five Forces Model combined with the social and economic elements of the Remote Analysis Model. The business strength component was defined as the composite analysis of the business's internal environment, including such factors as financial strength, personnel, reputation, and uniqueness of its product offering. An advantage to this model is that it incorporated both the internal and external environments for a comprehensive look at the corporation, addressing multiple strategic issue. A key risk associated with this particular model is the complexity of developing the details of the model and the potential subjectivity inherent in the interpretation of each component.

An alternative strategic planning tool for internal analysis is the resource-based view of the firm (RBV) as developed by Barney (1991). Barney's model is based upon the premise of each corporation having a unique set of resources that should be examined collectively for a sustainable competitive advantage rather than focusing primarily upon the tangible assets. The RBV model defines overall resources as a combination of tangible assets, intangible assets, and organizational capabilities of a firm. Tangible assets are easy to identify, as they would be reported as the physical assets on the firm's balance sheet in the audited financial statements. Intangible assets are harder to quantify, as they include sub-components such as customer loyalty to brand names, a company's reputation, experience of employees, overall morale and other non-visible components that contribute to a company's competitive advantage. Organizational capabilities refer to the combined synergy of skills and processes created through the transformation of inputs into outputs by the people and assets of the firm. It is this overall process of combining the tangible and intangible assets utilizing the organizational capabilities that define the specific strategy of the firm, which Barney saw as the true definition of a firm's competitive advantage.

## Hospital Strategic Planning Literature Review

The majority of the work on the relationship between structured planning and financial performance has been conducted in traditional manufacturing settings, with limited work having been done on this relationship within the service industries. There is a strong need for this type of research, as the United States has been reducing its manufacturing base while increasing its service base. The health services industry is one of the largest service industries in the United States and accounts for approximately fifteen percent of the Gross Domestic Product (Egger, 1999). One study focused upon the services setting also identified and validated the relationship between business strategies and productivity, further supporting the need to expand this field of research (Smith & Reece, 1999).

The American Hospital Association (2001) has identified the need for better management of healthcare organizations due to increasing costs of doing business within a more competitive business environment. There has been a noticeable shift among payment sources, both public and private, from traditional fee-for-service models to managed care. The increase of managed care has had a detrimental effect on hospitals, reducing the average length of stay of patients and therefore lowering occupancy rates. Health organizations are also facing the situation of reduced reimbursement from traditional government



sources, such as Medicare and Medicaid (Systems Work Group, 1997). The United States Congress passed the Balanced Budget Act of 1997, which included provisions which have had a detrimental impact on many different health providers, including hospitals, home health agencies, and nursing homes. Planning is needed by these health institutions in order to address these issues to ensure the long-term financial viability of each organization. Other studies have detailed how the convergence of reduced competition through mergers and acquisitions, increased costs due to rising liability expenses from insurers as well as increases in pharmaceutical costs and shifts among patient payment sources has left hospitals in a vulnerable position (Burnett, 1999).

Forecasting for hospitals has been difficult due to the lack of understanding of how tools developed for other industries can be adapted for use by hospitals. Past attempts to modify tools developed for other industries, including but not limited to linear programming techniques, have not always been successful, due to a wide range of differences between health and non-health firms. It is also a commonly held assumption that health firms would have a differing perspective than a traditional business, with altruistic and not-for-profit motivations as well as model assumptions based on intuition rather than mathematical precision (Edwards & Harrison, 1999).

It has been stated that entirely new approaches to data collection, analysis, and dissemination will be necessary to support the decisions of management (Systems Work Group, 1997). Given the need of forecasting and planning for positive financial performance for the hospital industry, it is important to review specific methods to be used for hospital forecasting and planning. A variety of different forecasting and strategic planning methods are used today by the hospital industry. Other techniques proven in other service-related industries could also be utilized in order to give the industry quantifiable methodologies for forecasting and planning.

McFarlane and McKenney (1983) developed a model for health organizations to decide which applications should be prioritized as being critical to the long-term success of the operation. Further research on planning within the health industry was conducted by Herzlinger and Krasker (1987) who examined variations between for-profit and nonprofit hospitals. They concluded that most for-profit institutions had a business orientation, which led to better business centered plans and a more detailed planning process.

Strategic planning research within the hospital industry was conducted by Thakur (1985) who set out to quantify the level and type of planning being utilized by hospitals. Using a combination of questionnaires and personal interviews, he

examined a number of hospitals. The results showed the planning process was more formal in larger facilities, with 74% of the hospitals having a three to five year plan.

Research by Layton (1991) was conducted to determine if there was a relationship between planning and profitability within the health care industry. She was able to show there was a direct relationship between formal strategic planning and financial performance in hospital settings. At the time the research was conducted, most hospitals were freestanding institutions which were not affiliated with other hospitals or other types of health providers.

Layton focused on the financial profitability, efficiency, and solvency of hospitals where structured operational or strategic planning was being performed, compared to hospitals that did not conduct this comprehensive business planning. Using classification levels defined by Bracker and Pearson (1986), Layton determined the extent that planning was being done by each hospital, and concluded a relationship did exist between profitability and structured planning.

Research conducted at the same time by Spiegel (1991) challenged health facility planners to come up with new and innovative approaches to planning in order to maximize reimbursement. Spiegel applied a six-step methodology that

transfers the traditional industrial profit center model to health environments.

Horak (1997) linked the strategic planning process in healthcare to the work of Deming, emphasizing the total quality management process and strategic planning process must be done together. Horak stated that without this linkage the strategic planning process is only an exercise without the proper focus. The study included many recommendations for the planning process, including the need to identify the needs and expectations of all of the stakeholders involved.

Olsen (1998) addressed the need for planning as a way for the hospital to change from the crisis intervention decision-making model to a true problem-solving model by being proactive. His research indicated that regardless of the type of provider or size of the organization, the planning process was the key to the organization's long-term success and financial viability. The main point of his conclusion was that the planning process needs to be a free-flowing exchange of ideas, without barriers limiting the creativity of the planning team.

Topping (1999) addressed the various trends impacting teaching hospitals, including cost containment strategies and economies of scale derived from strategic alliances, mergers and acquisitions. The research focused on the fact that teaching hospitals commit significant resources to the instruction of

students, which puts them at a financial disadvantage to other hospitals who do not have to fund these types of programs. A study of strategies of teaching hospitals revealed that in order to survive many of these hospitals would need to limit the amount of clinical research they conducted and instead should focus on cost efficient patient care.

A large integrated health system in Portland, Oregon recently conducted an ambitious long-range strategic plan, which projected trends 10 to 15 years forward (Moller-Tiger, 1999). Current trends identified as having a high probability of continuing were: 1) More consumer involvement in health decisions; 2) Demand for more health choices; 3) Physicians being the key gatekeeper for managed care; 4) Declining payments from both public and private payment sources; 5) Increased cost containment; 6) The increased need for productivity; 7) New ways to deliver services. From this, a broad vision was established, which the organization now recognizes as giving them "a much clearer vision of what it is trying to achieve." (Moller-Tiger, p. 35). It is this type of long-term planning that all health organizations should undertake.

This integrated environment has led to increased competition within the health industry, and the need for stronger financial control. Whereas the mergers and acquisition within the industry have, in many cases, reduced the

actual number of competitors within a marketplace, the competition among those remaining has become fierce (Zelman, 1996). The changes in health environment have recently been recognized by the American Hospital Association, which stated "Hospitals and health systems must use a systematic process for determining goals and objectives," (Warden, 1999, p. 159). They conclude that this is a primary component of the planning process.

One technique recommended for the hospital planning process is strategic cycling, which presents a conceptual model based upon contingency planning, establishing a number of different scenarios based upon differing circumstances. Through linking the planning process to discernable and quantified benchmarks, the model is able to quantify more reliable forecasts, as it no longer makes a series of assumptions. The use of this specific type of planning process depends upon information technology resources and software based upon genetic algorithms linking the interrelationships among the key variables. It can also be used as a tool for ongoing assessment rather than a single point-in-time scenario (Begun & Heathwole, 1999).

Research by Popovich and Popovich (2000) focused on the need for key decision-makers and leaders throughout the hospital to be involved in the strategic planning process. It is necessary to first identify exactly who these individuals are,

and then determine a method of how to engage them in the process. They conducted a case study of a large mid-western hospital which used a quantifiable methodology to conduct hospital-wide strategic planning. The results showed a greater consensus existed among the hospital personnel in support of specific strategic direction. The hospital was able to adopt this strategy with minimum resistance to change, as the most influential individuals were included in the strategic planning process.

As health corporations have evolved into more complex structures, the traditional hospital planning activities have needed to be developed in order to meet the needs of the new corporate structure. Planning has to take place beyond the traditional hospital setting. Research is needed to determine the necessity and extent of planning activities for these new and evolving health systems. Furthermore, the revised organizational structures create the need for business process reengineering of their information technology resources in order to meet the current needs of the individual patients. Through the use of redesigned processes, forecasting and decision-making can be done with the assistance of new technology in order to ascertain a profitable position based upon current business situations (Devaraj & Kohli, 2000).

The ability to quantify the strategic plan is critical to successful allocation of resources. Industry case studies are replete with examples of successful planning, where hospitals with either excess capacity or underutilized services and personnel were able to reevaluate their core businesses. The hospitals were then able to make a financial determination of where new or expanded business opportunities existed for increased profitability though a minimum outlay of capital (Zuckerman, 2000).

Further studies show that with the current healthcare trends having a detrimental impact upon potential profits, there is greater need for forecasting and planning measures in order to contain costs and prevent unnecessary expenditures. One suggestion was to use of a Clinical Benchmarking Initiative Report Card, which is essentially a strategic plan for the prioritization of the hospital's clinical utilization that also serves to create measurable benchmarks that can later be used as evaluation criteria (Rosenstein, 2000). Another author cited an example using the Mayo Clinic, where a strategic planning process was developed building upon proven quality improvement concepts which helped to promote not only the organization's key business objectives but also enhanced internal communication through the use of cross-functional teams (Curtright et al., 2000).



Attempts have been made to quantify measures to be used in hospital research related to the strategic planning process. The most traditional approach is through the use of survey research, utilizing a Likert-type scale in order to quantify responses. Surveys of this type have isolated and validated specific strategic planning variables as the basis for strategic planning models and methodologies (Crittenden & Crittenden, 2000). Conclusions have then been made as to what type of planning is most appropriate for differing health settings. An example of this taken from a recent case study focused upon the use of Q methodology, which is a variation on using factor analysis. With this method, the decision makers used a prioritization process in order to derive group consensus. Once these have been developed, it is then possible to do linear projections of the quantified goals and projections (Popovich & Popovich, 2000).

The Generic Strategies Model and Five Forces Model developed by Porter were used in research of 81 European acute care hospitals (Hlavacka et al., 2001). The study identified the more financially successful hospitals as those pursuing strategies to differentiate themselves from competitors in conjunction with other proactive strategies, such as cost reductions to maximize reimbursement. Use of the model identified hospitals with key core business or niche specialties

that could then be focused upon, and, therefore, become the market's provider of choice for that specialty. This is just one example of a Porter model applied to the hospital industry. Other Porter models could also be adapted to be applicable to the study of this particular industry.

#### Hospital Industry Background

The United States hospital industry is fragmented. It has a variety of different forms of ownership and significantly different revenue sources but few dominant corporations. Of the 5,801 hospitals in the United States, 24.4% (1,418) are government-operated facilities, 62.6% (3,629) are non-government not-for-profit, and only 13.0% (754) are for-profit facilities (American Hospital Association, 2003).

The selection process for obtaining services offered by hospitals is unique, because a patient requiring such services usually chooses a facility based upon geographic location and convenience or uses a systems mandated by a third party payer associated with the patient's health insurance. There are also few substitutes for these services. A patient is usually uneducated about his or her choice of hospital options and typically defers this decision to his or her personal physician. The consumer of hospital services is usually not the payer for these services, as a third party pays for the majority of

hospital charges. Private pay patients represent only eight percent of the market; and those charges are primarily the co-payment portion of the total charges. This pattern results in a system in which the actual consumer of the services is typically not concerned about price but instead focuses upon the overall quality of the services. While the payer source does have concerns about quality, price primarily influences its hospital related choices. This ongoing need to find a balance between quality and price is one of the major challenges facing this industry today. This situation also presents unique challenges in the relationships that have developed between insurance providers and hospitals (Becker & Potter, 2002).

A common perception is that the relationship between hospitals and payers should be symbiotic, with the medical need of the patient being the primary focal point. Financial constraints have often shifted this balance into an adversarial relationship, in which price is the primary motivator, even in instances where both the insurer and health provider are classified as not-for-profit entities. The profitability of businesses in this industry is directly related to the sources of revenue and the reimbursement methodologies utilized (Yafchak, 2000). Hospital reimbursement has historically used a fee-for-service model which classifies patient charges into two groups, hospital room and basic services billed using a

fixed fee schedule, and variable charges for ancillary clinical services and specific variable expenses, such as supplies and pharmaceuticals. Both government and other third party payers have been moving away from this traditional model, and now reimburse hospital providers based primarily upon patient diagnosis. Financial projections by the American Hospital Association (2001) for the first decade of the twenty-first century reflect continued increases in revenue, but only modest increases in net earnings. Continued financial pressures combined with the present over-capacity in this industry could potentially force many unprofitable facilities to cease operations.

There have been significant economic changes in the hospital industry during the past decade. These changes are the result of a number of factors and trends including: changes in reimbursement patterns; creation of the Critical Access Hospital designation for the Medicare program to keep rural facilities financially viable; an overall reduction in hospital length-of-stay resulting in over half of all hospital beds being empty on any given day; cost containment measures designed to reduce expenditures; horizontal integration through mergers and consolidations; and vertical integration of other health entities into hospitals (Berenson, 2000). In order to be able to assess and evaluate how strategic planning for this industry

should be carried out with any accuracy, it is first necessary to conduct an analysis and review of the literature regarding each of these factors.

#### Government Payment Sources

Until 1966 the United States government was a minor payer source. In 1960 government payments, which were primarily veterans' benefits, represented less than 25% of national health expenditures. With the creation of the Medicare and Medicaid systems in the mid-1960's, the government's role increased dramatically. By 1985 federal payments represented more than 40% of the nation's health expenditures, with hospital inpatient services showing the greatest annual increase. In 1999 the government payers represented approximately 60% of all hospital payments. Although veteran's benefits and Medicaid payments are included in both of these statistics, the overwhelming majority of federal hospital expenditures are for the Medicare program, which primarily services people aged sixty-five and older (Yafchak, 2000). This high percentage of health expenditures contradicts the position taken by those who oppose a national health policy, stating that the federal government should not be involved with healthcare, as the government is already involved as the majority payer of these services.

The Medicare reimbursement system was originally structured to reimburse hospitals for their full costs of services. This approach did little to encourage efficiencies and cost savings. Hospitals, in fact, saw Medicare as an opportunity to charge a significant amount of their fixed assets to the federal government. This property, plant and equipment could then later be utilized to provide services to patients with other payer sources at more competitive rates. In recognition of these rising costs as well as provider abuses of the system, the Medicare hospital inpatient reimbursement system was changed in 1987 to a prospective payment system. This revised system reimbursed hospital inpatient care at a flat rate based upon the patient's diagnosis-related group (DRG) regardless of the amount of services rendered or costs incurred by the facility (Yafchak, 2000). As a result, hospital profitability from Medicare could only be achieved by incurring fewer expenses for a patient than the DRG reimbursement. This was a paradigm shift for hospitals to make and was slow to occur, as most hospitals continued to focus on their higher margin fee-for-service third party payers, primarily insurance companies. A recent study sampling reimbursement for specific medical conditions showed that on average Medicare was underpaying facilities by \$ 1,234 for each patient compared to the hospital's costs (Hoppszallern, 2003).

Congress passed the Balanced Budget Act of 1997 (BBA) with an initial goal of reducing Medicare spending by \$112 billion over a five-year period. During the years leading to the passage of this legislation the annual expenditures for Medicare had continuously increased and were projected to rise significantly higher during the early part of the twenty-first century. This legislation was enacted to reverse this trend. The BBA had an immediate and direct impact on Medicare hospital inpatient reimbursement, freezing payments for 1998 and reducing the planned percentage of increase for four years thereafter. Other BBA impacts on inpatient care included the reduction of the flat DRG rate so that when patients were transferred to other health settings both health providers would share in the total reimbursement amount. The BBA also mandated increased efforts to investigate fraud and abuse by the Office of the Inspector General. This fraud and abuse directive included increased fines and penalties for billing and accounting discrepancies. The act also mandated the movement of outpatient services to a prospective payment system similar to the methodology used for inpatient care rather than being cost reimbursed (Jaklevic, 2000).

Because of the detrimental impact the BBA had on Medicare providers and hospitals in particular, there has been an intense lobbying effort to amend this legislation with more favorable

terms. In 1999 the BBA was amended to increase reimbursement by over \$16 billion to targeted programs directly impacting children and the elderly. There appears to be a willingness on the part of the United States Congress to mollify the more onerous provisions of the BBA (Gardner, 2000).

#### Critical Access Hospital Designation

Unlike urban areas that usually have several hospitals from which a patient or their physician may choose from, the rural sections of the United States are usually served by a single community hospital holding a monopoly on the market unless people are willing to travel longer distances to receive medical care. A case study was conducted of rural hospitals in Iowa and Illinois regarding the impact that hospitals have on local economic activity (Vaughan et al., 1994). This study looked at both the direct impact of the hospital's purchasing of wages, equipment and services, as well as the indirect impact caused by the multiplier effect of incremental dollars continuing to change hands in the community, conservatively determining this multiplier to be approximately 2.5. The economic condition of rural communities is more dependent upon a number of variable factors such as the weather and agricultural price fluctuations than their urban counterparts. This creates an economic volatility which by extension has an impact the financial



viability of rural hospitals. Rural hospitals also tend to be one of the principle employers in the communities in which they operate. The hospitals are often the nexus of a health system employing up to twenty percent of the local population. If a rural hospital were to close due to financial problems it can have a devastating impact on a community (Fox, 2000).

Research by Coburn and Bolda (1999) focused upon the health care needs of elderly rural individuals. The research found that when compared to their urban counterparts, the rural residents had a poorer health status, used fewer preventative care services, used fewer emergency care services and were less likely to have supplemental health insurance. The result was that their out-of-pocket expenses for medical care were 6.3% higher than urban residents, and the percentages of their income spent on medical expenses was 5.0% higher. The study also found differences existed between urban and rural hospitals, in that rural facilities usually cover significantly larger services areas, have fewer skilled professionals especially in clinical specialties, have greater interdependencies with other provider types, and service beneficiaries with less disposable income (Coburn et al., 2001).

Rural hospitals typically rely on fewer payers as the regions are covered by fewer insurance carriers, with Medicare accounting for 50% of rural hospital patient bed days, as

opposed to 37% for urban hospitals (Fox, 1999). In some rural hospitals Medicare accounts for up to 80% of inpatient revenues (Myers, 1999). As the number of rural patients having private third party payers is small, rural hospitals are placed in an unfavorable position when negotiating rates with managed care companies and other insurers. When the BBA was enacted the assumption was that there would be sufficient patient volume to keep an average hospital in a positive cash flow situation. It was recognized that this assumption was not necessarily true for smaller rural hospitals.

As a result, the legislation created a new category of hospitals that receives significantly higher Medicare reimbursement designated the Critical Access Hospital (CAH). A CAH was defined as an institution which has no more than fifteen acute care beds and no more than ten skilled nursing facility beds; an annual average length-of-stay of no more than ninety-six hours, and location in most cases of at least fifteen miles from the next nearest hospital. The Balanced Budget Refinement Act of 2000 further removed constraints which had kept hospitals from applying for and maintaining this designation (Berenson, 2000).

While the CAH designation has helped to make rural facilities financially viable, it has also received criticism. Representative Stark of California questioned the need for the

CAH. He recommended legislation providing targeted assistance for only those rural hospital experiencing severe financial difficulty would be a better use of resources. In fact, he suggested instances where it would be more cost effective to maintain an emergency helicopter and pilot in rural areas than an acute care hospital. Another suggestion was that if there are several small hospitals in financial trouble located in the same geographic area, than perhaps some should close (United States House of Representatives, 2001). Because of the financial importance of CAH it is justified to include a question asking if the hospital has a CAH designation when conducting survey research of hospitals regarding profitability.

#### Universal Health Care Systems

In contrast to the government payment sources of the United States, a number of other countries have adopted universal health care systems. Knowledge of how these systems operate is important to hospital managers within the United States, not only because this is an area that is periodically examined by the federal legislature, but also because of a growing number of international hospital corporations. For example, the largest hospital chain within the United States, H.C.A. Incorporated, also operates hospitals within Europe and other hospital chains

have facilities in both the United States and Canada (H.C.A. Incorporated, 2003).

The Canadian universal coverage system was enacted over thirty years ago, and provides coverage to all citizens for medically necessary procedures. Hospitals are reimbursed through an annual budget and physicians are paid on a fee-for-service basis. This federal health care system accounts for 69.6% of health expenditures, which is not much higher than the United States federal expenditure percentage. The remainder of Canadian health expenditures is for non-acute care services, including prescription drugs, long term care and dental services (Evans, 2000). Critics of this system have provided much anecdotal evidence of inferior utilization of services and disproportionate care based on local economic conditions. Referenced studies have found that these are actually not the case, which the service utilization is high and has not been impacted by the nuances of this particular reimbursement system. The primary longitudinal change regarding service utilization that has been found in the Canadian system is a gradual shifting of care from in-patient to out-patient care settings, a trend that is also consistent with the United States health care system (Carriere et al., 2000). It has been noted that there is a long waiting period for services, shown to be 16.5 weeks in a 2002 study, however this average is skewed upward by the number

of patients waiting for non-emergency care which is considered a low priority in the system (Scott, 2003).

Great Britain instituted its National Health Service shortly after World War II as an augmentation of the Emergency Medical Service program that had been implemented during the war, which nationalized all hospital and physician practices. Funded through taxes, the program offered universal health care services to all British citizens. Most services were free with large subsidies for other related service areas such as optometry, pharmaceuticals, and nursing home care. Like the Canadian system, waiting lists arose, with the average waiting time for elective services now at 46 days. One modification to the British model is the allowance of a private sector model for elective services. Utilized primarily by the affluent within major metropolitan areas, approximately 11.5% of the British population participates in private insurance plans, which account for 2.2% of all medical cases (Light, 2003). Significant changes were enacted to the system during the administration of Prime Minister Margaret Thatcher in order to make the health markets more competitive, however an unintended consequence of those changes was an increased cost of services due in part to added administrative expenses. Longstanding criticism of the National Health Service has resulted in a number of recent reforms, including the implementation of new

quality standards by which physicians and hospitals are measured, as well as the inclusion of patient advocates on governing boards.

Germany has adopted a similar system, based upon the British model, however their system has been less successful due to severe budget shortages caused in part by inequities of health services between the former East Germany and West Germany. Reforms are being enacted to the system to curtail costs. These reforms include requiring patients to see a primary care physician prior to visiting a specialist and to also limit the number of follow-up opinions and tests that can be sought (Sperschneider & Kleinert, 2002). Other European countries that have recently enacted national universal health care systems include Greece, Italy, Portugal and Spain (Guillen, 2002).

#### Managed Care and Insurance Sources

Third party payers have historically been the favored payers for hospitals, as insurance companies traditionally paid the full fee-for-service charges set by the facilities. This has also changed significantly during the past decade. Health Maintenance Organizations (HMO) began to replace traditional insurance plans. HMO's used the tactic of forcing hospitals within the same geographic area to compete against each other,

with the HMO awarding an exclusive contact for services to the lowest bidder. Hospital systems were encouraged to negotiate a single contract for all facilities. This notion was based on the opportunity for the hospital system to increase their overall market share, while the HMO could achieve cost savings through avoiding having to negotiate with each individual facility as well as through billing efficiencies. The perception of most hospitals was that they had no choice but to join in these agreements, which the majority of hospital administrators perceived as favorable to the insurer at the expense of the hospital profit margins (Bellandi, 1998). Total United States HMO enrollment peaked in 1999 at 81.1 million enrollees and declined to 76.1 million by the year 2001 (Hoppszallern, 2003).

HMO's and other managed care entities seek to contract for hospital services based primarily the factors of price and geographic location, although other factors considered include the range of services provided, quality of care as determined by both accreditation processes and patient satisfaction feedback. There is also the factor of the level of effort required for the contracting company to seek out and negotiate new rates, as it may already have ongoing business relationships with providers of similar services in the same geographic area (Responsive Database Services, 1999). Large insurance companies have also

sought to use their clout to force lower prices onto hospitals. One corporation accomplishing this is the conglomerate Aetna, Kaiser Permanente and Humana, as a result of its current market share of insuring approximately 10% of the United States population (Yafchak, 2000).

As HMO's and other third party payers have continued to negatively impact the profit margins of hospitals, some facilities have begun adjusting their overall patient mix to include a higher percentage of Medicare patients. Medicare was historically viewed as having low profit potential, but as hospitals have worked to curtail excess costs as well as develop economies of scale, some are now perceiving inpatient Medicare as an opportunity. If a facility can collect a full DRG payment while providing lower cost services, the potential exists to maximize profits. The profit margin for hospital Medicare patients averaged 14% in 1997 and is projected to rise to 15.3% by the year 2002. This is consistent with a recent study (Young et al., 2002) which conducted an eight-year longitudinal study of all nonfederal acute care hospitals in the state of Florida. It concluded that profit margins for Medicare payers were increasing while profit margins for HMO payers were declining. Targeting the Medicare market also coincides well with national demographic trends of the aging population of the United States (Bellandi, 1998). There has not



been a significant amount of research conducted on this particular topic and it is an area that should be further explored.

#### Occupancy Rates

Utilization of inpatient services by patients is another key aspect of the hospital industry. The average length of stay in hospitals has been continually decreasing. By keeping Medicare patients for shorter inpatient visits, given the flat reimbursement rate based entirely on patient diagnosis, hospitals can maximize reimbursement by minimizing costs (Emch, 2000). Managed care organizations also wish to incur fewer costs and tend to mandate the maximum number of inpatient hospital days that they will pay for based upon the patient's specific treatment. Another related trend has been the shift from inpatient to outpatient services in order to curtail costs. These factors have contributed to shorter hospital inpatient lengths of stay, the average length of stay for an inpatient hospital visit now being at 4.2 days (Hoppszallern, 2003). A recent statistics showed the average hospital occupancy rates was at a record low of 44.7% (Responsive Database Services, 1999). With more than half of all hospital beds empty at any given point in time, the per-patient cost of overhead increases, as there are fewer patients to absorb fixed costs, requiring

hospitals either to raise their rates or incur reduced profit margins (Yafchak, 2000).

#### Cost Containment Measures

To address directly the trend of reduced reimbursement from the majority of payer sources combined with the trend of shorter occupancy rates, hospitals have undergone a variety of cost containment measures. Included in these measures is the discontinuation of service of unprofitable departments. In the case of multi-hospital systems, unprofitable hospitals have either been closed or converted into other types of health facilities. This is an extremely unpopular strategy to undertake, as it impacts the local communities with both the losses of jobs as well as safety concerns of the neighborhood hospital not being easily accessed in the event of an emergency. A study explored the relationship between length-of-stay and hospital cost containment strategies (Carey, 2000). Rather than being a localized study with a small number of hospitals, this study examined financial indicators for approximately forty percent of all United States hospitals over a five-year period. The conclusions reached from this analysis were the actual cost savings derived from shortened length-of-stays have been greatly overestimated, especially when evaluated against quality of care and the high costs incurred when needing to readmit a patient

for complications developed after being discharged prematurely from the hospital facility. This study was consistent with past studies in finding that radical reductions in length-of-stay to actually be counter-productive and that identified cost savings are not actually realized, but instead only shifted to alternative health settings (Reinhardt, 1996).

Other cost containment measures include corporate downsizing through the elimination of personnel, primarily those not involved with direct patient care, has been increasing since the mid-1990's. One example of this is the New York City Health and Hospital Department, the nation's fifth largest hospital system, eliminating more than 2,600 positions in 1997 and 1998 (Bellandi, 1998). Even when the downsizing is isolated to the non-direct staff, such as laundry, food services and housekeeping personnel, the resulting reduced levels of these services require supplementing of these services by direct staff, reducing the actual amount of time spent on direct patient care.

One hindrance to cost containment efforts is the current problem faced by many hospitals in hiring an adequate number of direct patient care staff. There is a nationwide shortage of skilled clinical personnel, especially with registered nurses, licensed practical nurses and certified nurses' aides.

Hospitals must also compete against nursing homes and home care

organizations for these skilled clinical workers. This problem has resulted in a situation where signing bonuses and other financial incentives are common. When an adequate number of staff cannot be hired, the hospitals must supplement their staffing with per-diem staff from outside agencies at a significantly higher rate. The use of supplemental staff also presents other problems, as they are oftentimes unfamiliar with the facility and its specific policies and procedures. The area of supplemental staff is also unregulated in most states, leaving the onus on the hospital rather than the staffing agency to ensure that these individuals have the appropriate training, even though it is clearly unrealistic to expect an understaffed facility to devote training resources to instruct temporary employees (Serb, 2002).

Another critical area also impacting the profit margins of hospitals is the rising price of pharmaceuticals. While these increases in price can be passed on to many third party payers, pharmaceuticals are not a covered service for outpatient services in the Medicare program, and the patients are frequently unable to incur this expense. Hospitals also have capitation arrangements with HMO's, where they agree to provide services for a flat amount per patient. These long-term capitation agreements were frequently negotiated in anticipation of more modest increases in pharmaceutical prices. This

situation has also had a negative impact on hospital profit margins, in that hospitals are therefore not fully reimbursed for the pharmaceutical prices incurred (Yafchak, 2000). The multiple pressures on the industry have also had an impact on the hiring of executive personnel, with experienced managers being able to command a premium for their skills. A recent survey of executive and managerial compensation showed that from January 1999 to January 2000 the average compensation increase was 6.7% as opposed to only 3.5% for the prior twelve-month period (Moore, 2000).

#### Horizontal Integration

One basic tenant of business strategy is based on the concept of economies of scale, whereby companies can create horizontal integration within their industry through alliances with similar entities, and therefore reduce resources. The hospital industry is an excellent example of an industry where many of these economies naturally exist. Modern medical specialty and surgical equipment is very costly, resulting in very high fixed costs for equipment, which in many cases may sit idle for the majority of the time. By hospitals aligning themselves, certain types of procedures could be consolidated to a single location. Other economies can also be achieved through the consolidation of administrative functions (Ackerman, 1996).

The corporate infrastructure of the United States hospital industry has changed significantly during the past decade as a result of horizontal integration. Horizontal integration has resulted from hospitals merging into multi-hospital networks. The purposes of the mergers and acquisitions created by this integration were cost savings through economies of scale. Recognition of these economies of scale, as well as the existence of certificate-of-need requirements for growth, has led to horizontal integration through the mergers and acquisitions of hospitals. This type of consolidation peaked in 1997 with 197 hospital mergers. The number of mergers has been declining since then, with 140 in 1998 and 110 in 1999 (Hoppszallern & Hortillo, 2000).

One of the more controversial issues within the hospital industry has been the question of whether economies of scale truly exist to justify the strategy of mergers and acquisitions. A number of academic studies on this topic have been conducted for the hospital industry, beginning with Carr and Feldstein who analyzed the majority of U.S. hospitals in 1967, finding no significant correlation between hospital economies of scale and profitability. Friedman and Pauly found a slight correlation in 1981. In 1990, Dranove specifically looked at multi-hospital systems, finding no clear evidence of economies of scale (Yafchak, 2000).

Growth in most industries is limited primarily through market considerations. The hospital industry is constrained by the additional limitation of government regulation. States have in place certificate of need laws, which limit the types of services and number of licensed beds facilities can have. Hospital providers, therefore, cannot expand unless they can demonstrate there is a community need for services not met by the present facility. Since there is currently excess capacity in this industry as a whole, this creates a difficult hurdle for a hospital wishing to grow, with very few certificates of need being granted. This is one of the contributing factors to hospital systems expanding geographically through mergers and acquisitions of existing hospitals rather than through the physical expansion of the current facilities. Historically there were few hospital mergers because the Federal Justice Department viewed this type of merger as violations of the Sherman Antitrust Act restricting competition (Yafchak, 2000). During the Clinton administration the Justice Department took a more favorable approach towards this type of industry consolidation, which led to the increased number of these mergers during the 1990's.

Given the number of mergers and consolidations during the decade since Dranove's study was conducted, there was a real need to research this subject again. Building upon Demsetz's

1973 cross-industry theory of efficiency through growth, Frech and Mobley (2000) applied the concept to the hospital industry, finding support within the industry for the notion that there is a positive correlation between efficiencies and profitability. Concurrent research by Yafchak (2000) uses the Cobb-Douglas production function as a basis, and reaches the same conclusion that economies of scale do exist for the hospital industry. A significant aspect of Yafchak's research was this being a longitudinal study, comparing the same facilities to those studied nine years earlier, thus giving further credence to his findings.

Another empirical study on the subject of economies of scale was conducted by Chan et al. (1999) that focused upon rural hospital and the advantages that can be achieved through collaborative arrangements with other hospitals. They examined 330 rural facilities, focusing upon key measures such as overall operating profits, cost per admission and revenue per admission, in relationship to the use and size of health consortia through horizontal integration. They found there was evidence to support the theory that economies of scale through collaborative efforts, particularly in regards to joint purchasing of supplies and pharmaceuticals. There was also the advantage of being able to combine the financial resources of the different hospitals. Profitable hospitals in a consortia were found to be able to



provide a short-term financial buffer to consortia members when regional variations occurred. The study also found that the law of diminishing returns also factored into the situation, as once the health consortia became too large the incremental administrative burden exceeded the potential cost savings.

Even though the research tends to support economies of scale within this industry, many of the larger for-profit corporations clearly found themselves in situations where they had overextended themselves into regions and markets where their standardized approach to health care was inconsistent with the local perceptions of the community hospital. There have also been several instances where recent mergers have failed to work due to substantial differences in corporate culture. Oftentimes, these differences in culture result from the merger of a for-profit and not-for-profit institution. Other philosophical differences arise when religious and non-secular institutions merge, with varying attitudes towards social issues, charity and free care to the community. Specific examples of recent mergers are now undergoing costly break-ups include the Penn State University Hospital and the Hershey Medical Center in Pennsylvania; the Catholic Medical Center and Elliot Hospital in Manchester, New Hampshire; the Unity Health System and St. Anthony's Hospitals in St. Louis, Missouri; and the Appalachian Regional Healthcare system of West Virginia and

Kentucky. Each of these was an instance where the financial economies of scale supported the merger but adequate due diligence had not been conducted regarding corporate philosophy and corporate culture (Becker, 2000).

An alternative to the economies of scale dilemma has been proposed by Dor and Watson (1998) who recommended that for-profit and not-for-profit hospitals negotiate a mutually advantageous arrangement in which the hospital selected to serve a particular patient would be made based upon the combination of procedures needed and patient payer, in order to maximize reimbursement. While this plan would theoretically work, and in some cases has actually been implemented in some settings where a for-profit and not-for-profit hospital share the same parent organization with centralized admissions offices, this plan would not be practical in most instances due to the logistics involved as well as the potential violation of laws regarding patient choice in choosing a health provider.

#### Vertical Integration

The infrastructure of the overall United States health care industry has also changed significantly during the past decade as a result of vertical integration. The stated purpose of these corporate alliances is to provide better patient care through better communication between health providers. Vertical

integration has resulted from hospitals merging with other health providers, such as skilled nursing facilities (nursing homes), home health agencies, rehabilitation/therapy providers, physician group practices, assisted living facilities, and medical laboratories. Theoretically, this type of integration is to be able to provide patients with a full continuum of care. The other health provider types have also seen significant horizontal integration within each of their own industries. By acquiring other types of health providers, hospitals could market themselves to both patients and health maintenance organizations as offering the full spectrum of health services needed. This type of arrangement also had significant financial advantages, as some hospital fixed costs could be shifted to the other entities, which were reimbursed by Medicare and Medicaid based upon cost incurred rather than patient diagnosis. This led to a trend in hospitals increasing their ownership of cost-reimbursed outpatient care facilities. For example, from 1990 to 1995, the number of hospital-based home care agencies increased from 1,543 to 2,346 (Responsive Database Services, 1997). An economy of scope advantage to hospitals vertically integrating is that it also helps to assure a consistent referral flow to the hospital from the other entities within the same health system.

The passage of the BBA has begun to curtail many of the favorable financial advantages of these vertical integration advantages. Much of this cost shifting has been disallowed, and even the allowable portions are now under closer government scrutiny. For example, hospital-owned home care agencies previously allowed for the allocation of most hospital cost centers, including general services such as cafeteria expenses. Medicare auditors no longer allow that practice, arguing that the home care nurses are eating their lunches out in the community and not coming to the hospital to eat. The government has also determined that internal system referrals between provider types limit patient choice, and providers are now required to disclose all potential providers of other services, rather than just those affiliated with the hospital.

Because of these changes, many hospitals have begun to divest themselves of these other provider types.

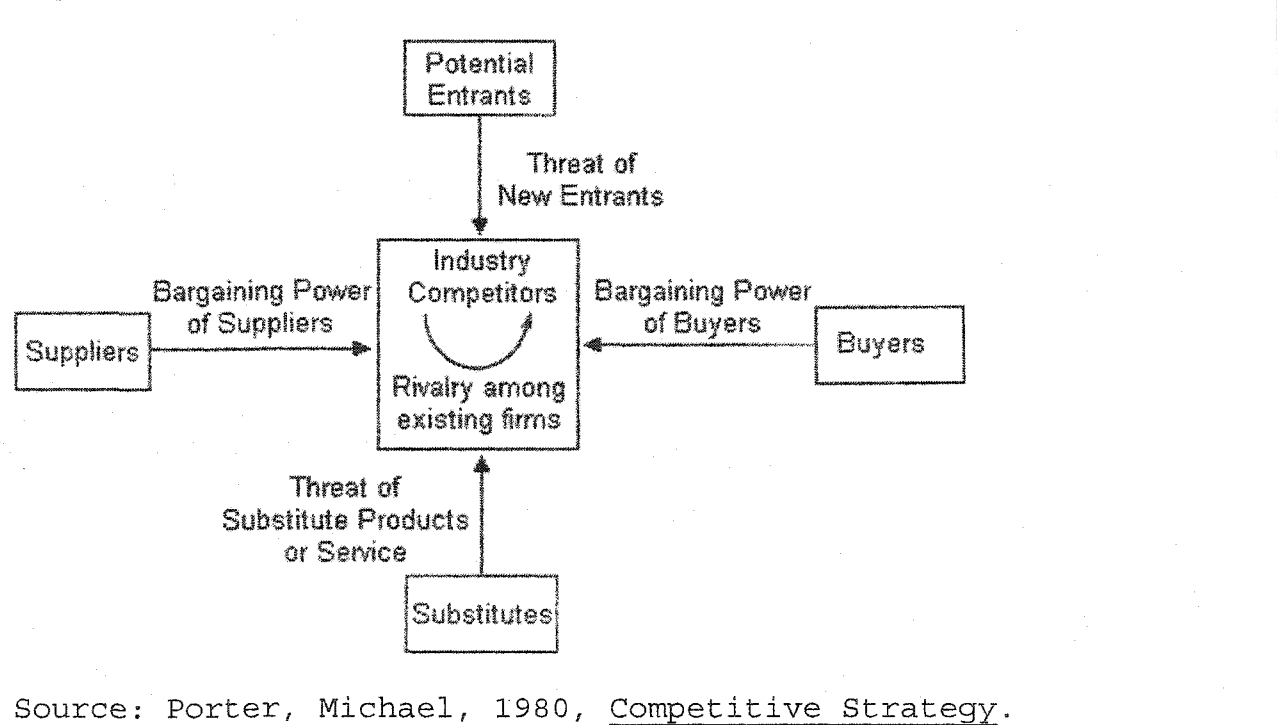
One of the largest hospital corporations, Columbia/Hospital Corporation of America, sold the majority of their 550 home care operations in 1998. Such hospital systems are finding either there was not a strategic fit between the entities or the association is no longer financially advantageous. Frequently it is the other health providers who wish to sever the relationship, believing that they are perceived as a minor player in the overall hospital system, and consequently not

given the resources needed to be successful with their own strategic plans (Haugh, 2001).

### Hospital Industry Summary Using the Porter Five Forces Model

Porter's Five Forces Model is useful in conducting an external analysis of the hospital industry, that summarizes the background information regarding this industry. The model is illustrated as follows:

Figure 1: Porter's Five Forces Model



The purpose of the model is to gain a thorough understanding of a particular industry by analyzing the external environment through analysis of five identified competitive forces. From this analysis, a determination can be made of

both the competitive situation and profit potential of a particular industry (Porter, 1980). Each of the five elements of this model can be examined in relation to the hospital industry.

#### Potential Entrants

The first element is the threat of new entrants into the markets. This could be due to a variety of reasons including a need for capital, a need for brand awareness, a need for economies of scale or the result of government regulations. Government regulations have constrained growth this industry through the certificate of need laws of the various states. This limitation on the types of services and number of licensed beds facilities can provide prevents hospitals from expanding existing facilities, resulting in growth only through mergers and acquisitions of existing hospitals. This was a major trend during the 1990's, but the number of mergers have declined in more recent years (Hoppszallern, 2002). Analysis of this element shows this is a difficult industry for new competitors to join.

#### Suppliers

The second element of the model is the power of suppliers. In any industry suppliers exert significant influence through

the availability of raw materials and the subsequent impact on costs. The primary supply issue facing the hospital industry today is a shortage of licensed medical personnel. The demand for skilled clinical personnel exceeds supply, with hospitals competing with other health providers for this same pool of workers. The use of hiring bonuses, increased wages and supplementary staff from outside agencies has driven up industry costs of this scarce resource. Experienced managerial personnel within this industry are also in short supply (Moore, 2000). The bargaining power of suppliers is also a factor regarding pharmaceuticals. Hospitals have little choice than to pay the price charged by manufacturers, even when these costs cannot be passed on to payers (Eddy et al., 2000). The analysis of this element shows there are currently supply issues impacting this industry.

#### Buyers

Porter's third element is the power of buyers. This represents the extent of bargaining the buyers of the product can exert in regards to the industry or business. Nearly all hospital services are purchased by third party payers, either through government programs, private insurance companies or health maintenance organizations. These buyers of hospitals services focus primarily upon price. Government imposed payment

systems as well as contracts negotiated by other third party payers have had a negative impact upon hospital profit margins (Bellandi, 1998). Analysis of this element shows that the primary buyers of services within this industry exert considerable influence on the reimbursement for this industry.

#### Substitutes

The fourth element is the availability of substitute products. The availability and pricing of substitute products can have a significant impact on a business strategy (Porter, 1980). The health services offered by hospitals are unique with few if any substitutes for these services of this nature. However, alternative venues for many health services constitute a growing trend. For example, freestanding outpatient surgery centers are now available in most metropolitan areas as an alternative to having a medical procedure performed in an acute care hospital. Analysis of this element shows that few substitutes exist, but alternate venues for hospital services are increasing, which could have a long-term effect on the industry.

#### Industry Competition

The final element is industry rivalry. The number of competitors, degree of product differentiation, cost conditions



and overall competitive diversity can have substantial impact on strategies to be adopted. An assumption related to the horizontal integration of hospitals through mergers into a combined system is that economies of scale will result. There is considerable literature to support the notion that economies of scale can be achieved within this industry. However, evidence has also found that the law of diminishing returns exists, in that health conglomerates that are significantly large become administratively burdensome and costly (Chan et al., 1999). Vertical integration combines hospitals with other health entities and are designed to create a full continuum of health care services, to offer a comprehensive spectrum of health services to buyers. This strategy also takes advantage of shifting costs to maximize reimbursement, as well as establishing a consistent source of patient referrals (Yafchak, 2000). The result of this activity is that, while there become fewer total health entities due to these consolidations, the combined health systems have more resources and can operate more competitively than if they had remained independent facilities. Analysis of this element of the Five Forces Model shows this to be a very competitive industry.

In conclusion, the Porter model summarizes that the hospital industry is one of continued fragmentation with competitive pressures and reduced margins. The model

illustrates there are few potential new entrants; that supplier issues exist, especially in regards to licensed clinical personnel; that hospitals are in a weak negotiating position with the buyers of the services; that there is a growing trend of substitutes for these services; and that the industry as a whole is extremely competitive. The sum total of all of these factors is an industry where long-term profitability is in potential jeopardy. Research as to ways to help improve the profitability of this industry would therefore be both timely and appropriate.

#### Hospital Marketing Planning

Because of the changes which have occurred within the past decade, marketing has become increasingly more important as a component of the planning process for this industry. Hazel-Ford (1992) found that executive managers of health agencies who had education and experience with marketing were far more successful with marketing and planning activities. The conclusion of the study was that this should be a key component in the education of health administrators. As health markets change, the administrators of the health organizations need to improve their marketing efforts to maintain and increase their market share. This has created the need for health organizations to develop

detailed marketing plans, including a comprehensive analysis of the competition.

A study by Petromilli and Michalczyk (1999) stated hospitals should employ marketing techniques and planning just as product oriented businesses do. The authors found that devoting effort to marketing planning was critical for long-term success of health organizations. They rejected the idea of increasing the budget for marketing and advertising expenditures as the solution stating that the health facility should instead concentrate on planning efforts. The study concluded that there is a need for hospitals to shape the perceptions of their patients and other stakeholders about the services offered.

The marketing plans should not exist as isolated documents, but need to be included as a critical component of the overall strategic plan. Research on the factors a hospital should consider prior to mergers and acquisitions identified marketing as an important element, stating the need to employ creative marketing strategies in order to dissuade negativity and uncertainty in the communities of the new joint venture (Walsh et al., 2002). It has also been noted that hospitals need to link marketing with long-term profitability in order to focus on plans that also take into account the actions of competitors (O'Malley, 2002).

## Hospital Management Information Systems Planning

Another key component of today's hospital industry is the role of information systems, decision support systems in particular, to give hospital executives and managers the ability to forecast and plan based upon their primary business needs. Entirely new approaches to data collection, analysis and dissemination are necessary to support the decisions of management, and an analysis of hospital planning would not be complete without this component (Edwards & Harrison, 1999). There is also an increased need for hospitals to have updated health management information systems in order to be in compliance with the Health Insurance Portability and Accountability Act (HIPAA) regulations. The Act had been passed in 1996, and mandated that the United States Department of Health and Human Services develop specific administrative rules and standards for the confidentiality and privacy of health information (Calloway & Venegas, 2002). These regulations went into effect for most health providers on April 14, 2003.

Due of the increasingly complex medical environment, research has been conducted which focuses on the information systems subcomponent of the overall strategic plan. Austin (1990) has identified the use of information systems as being a critical success factor to providing cost-efficient quality

care. An efficient information technology infrastructure was seen as necessary for the healthcare organization to be successful with the development and implementation of the strategic plan. Austin surveyed a group of expert strategic health care marketers in order to identify the key information needs, finding that this should be part of the ongoing plans for the health corporations. Other work has shown that health organizations have a strong need to "manage data, assess quality, monitor program integrity, and pursue research... technology is a valued tool in administering these business needs" (Systems Work Group, 1997, p. 2).

In order for the organization to continue to compete in the changing health environment, it is necessary that they also have information systems designed to give management the ability to recognize and prioritize the primary business needs. Tan and Sheps (1998) wrote of the importance of developing strategic information system planning in order to develop computer-based applications to execute the business plan. Using current and future technology, as tools to facilitate the planning and strategic decision-making process, proactive health systems will have a unique advantage over their competition. They felt at least thirty-five percent of the strategic plan should be devoted to information system plans. A study of the strategic business plans of United States hospitals has shown that only

five to ten percent of plans were devoted to management information systems (Dunbar & Schmidt, 1991).

The Institute of Medicine has recognized that current health management information systems are not adequate for the data acquisition and information dissemination needs will be required for future success in the industry. The recognition of this inadequacy was also one of the primary purposes of the HIPAA regulation. These regulations outline the necessary steps for patient consent regarding the dissemination and disclosure of medical information and significant obligations that health providers must now adhere to in order to be HIPAA compliant (Sarrille & Spencer, 2003). The American Hospital Association estimated that HIPAA compliance will cost the hospital industry as much as \$ 22.5 billion during the initial five years of the regulations (Coate & MacDonald, 2002). Despite the considerable costs, it is expected that in the long-run the use of the information system enhancements needed to bring about compliance will translate into net cost savings due to more efficiency in billing and better quality patient care as a result of better information (Moynihan, 2003).

They recognize that information systems will require better data, and this needs to be tied directly to the issues of quality patient care (Institute of Medicine, 1999). The idea of quality as a key component ties back to work done by Deming. A

variety of different strategic planning measurement tools have been derived from work developed for total quality management and continuous quality improvement processes. Since these tools have already been proven to increase productivity and contain costs, their application to the planning process is the next logical step (Savitz et al., 2000).

Wong et al. (2000) also referenced the linkage between information technologies and planning, citing the need for technological system development to meet the clinical needs of hospitals rather than just financial and administrative needs. It has been noted, however, that even when the clinical data exists, achieving the proper analytical capacity needed in order to use this for proper decision-making is oftentimes not achieved, due largely to the lack of training of personnel as to how to use these tools and resources (Lee & Menon, 2000). Accounting for training as well as business tools should be clearly defined in the strategic plan to optimize results.

The trend towards using information technology resources with the strategic planning and forecasting process has been recognized in part because of the synergies that can be achieved through the linking of applications on an ongoing basis, so the plan will not be a static document with an integral ongoing performance measure. With the development of a plan tied to either a health decision support system or a hospital executive

information system, the hospital can utilize technological innovations to support collaborate efforts throughout the facility (Tan & Sheps, 1998).

Many traditional approaches to strategic planning utilize qualitative rather than quantitative techniques for their methodologies. Successful hospital planning, in particular in relation to information technology projects, has been documented using qualitative project templates which create detailed plans that can be utilized as both a forecasting tool and as ongoing documentation (Hayes, 2000).

#### Chapter Summary

The hospital industry in the United States is one of vast complexity, with major differences in types of ownership as well as regional differences based on whether the facility is located in an urban or rural setting. During the past decade there have been significant changes within this industry, most resulting from changes in reimbursement by both government and third party payers. In order to remain financially viable entities, hospitals have to make strategic decisions regarding cost containment, horizontal integration and vertical integration. Many of these were done in anticipation of achieving economies of scale, although the literature is inconclusive as to whether these savings have actually been



achieved. The culmination of all of these factors show there is an apparent need for strategic planning on the part of hospital administrators in order to access the needs and properly deploy resources within this environment.

Strategic planning is a subject that has been examined in detail during the past century by a number of key theorists, including Taylor, Drucker and Porter. Up until the past quarter century the majority of this research has focused upon manufacturing environments, however more recent studies have examined this topic in regards to service industries and the hospital industry in particular. A study conducted by Layton (1991) supported the position that strategic planning activities would lead to better financial performance of hospitals. An external analysis using Porter's Five Forces Model (1980) illustrates the critical factors facing this industry in today's environment, many of which were not present at the time the original study was conducted. It would, therefore, be helpful to replicate this research in today's hospital environment in order to ascertain if the original hypothesis is still valid. Changes in the industry, as supported by the literature, also point to the need to further examine the planning elements in relation to the marketing planning and information system planning conducted by hospitals.

## CHAPTER III.

### METHODOLOGY

#### Chapter Overview

The stated purpose of this study is to determine if a relationship exists between strategic planning and profitability for hospitals. Interrelated sub-hypotheses will focus upon aspects of the strategic plan related to marketing, management information systems, and the emphasis on Medicare as a primary payer. This chapter outlines the specific methodology used. This outline includes the rationale for the research, the research questions, hypotheses and variables. The chapter will then include a discussion of the rationale for the specific research instrument, the population to be surveyed, and the use of a pilot test. This chapter will conclude with a discussion of the data collection and statistical techniques to be employed in the study.

#### Rationale for the Research

One of the most effective means of gathering empirical data regarding the strategies being applied in the hospitals today is to directly ask the chief executive officers of the hospitals. This was the approach used by Layton (1991) during the initial

research, and it is a modified version of that research instrument that is being proposed for this study. Porter (1980) also advocated the surveying of chief executive officers as a means of determining the effectiveness of a strategic plan. The use of the questionnaire provides data that can then be quantitatively analyzed in order to ascertain whether the various hypotheses can be supported.

### Research Questions

The purpose of this study is to test one primary and three secondary research questions. The primary question is to determine if there is an impact on the profitability of hospitals where strategic or operational planning activities are being conducted by senior management. This was the first hypothesis tested by Layton (1991). As a continuation of this research, it is necessary to again validate this hypothesis. The new research will be conducted using a similar methodology, to see if the hypothesis is still valid at a different time and in a different venue.

The second research question is to determine if there is an impact on the profitability of hospitals using strategic and operational planning that also includes detailed marketing plans, including competitive marketing strategies. This was one of the recommendations for further research outlined by Layton.

Changes within the hospital industry during the time since that research was conducted, as well as research on the importance of marketing for hospitals justify the inclusion of this subcomponent as part of the research (Petromilli and Michalczyk, 1999).

The third research question is to determine if there is an impact on profitability of hospitals that have strategic and operational planning activities that include health management information systems as a component of their comprehensive business plan. This element has been identified as a necessary component for hospitals in order to remain competitive (Tan, 1995), as well as to comply with new Federal mandates such as HIPAA requirements.

The final research question is to determine if there is an impact on profitability for hospitals that have implemented a strategy of increasing the percentage of their payer mix pertaining to reimbursement from the Medicare program. It has been suggested that Medicare has been growing as a preferred payment source for hospitals (Young et al., 2002), and it is important to test whether that is actually a valid statement.

## Hypotheses

H<sub>1</sub>. Profitability, measured as a function of the return on investment, is significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and utilize a comprehensive business plan, than hospitals whose executive managers do not perform effective planning or do not utilize a comprehensive business plan.

H<sub>0</sub>. Profitability, measured as a function of the return on investment, is not significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and utilize a comprehensive business plan, than hospitals whose executive managers do not perform effective planning or do not utilize a comprehensive business plan.

H<sub>2</sub>. Profitability, measured as a function of the return on investment, is significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and address the issue of detailed marketing planning with competitive strategies in their comprehensive business plan, than hospitals whose executive

managers perform effective structured operational, or structured strategic planning, and do not address the issue of detailed marketing planning with competitive strategies in their comprehensive business plan.

$H_0$ . Profitability, measured as a function of the return on investment, is not significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and address the issue of detailed marketing planning with competitive strategies in their comprehensive business plan, than hospitals whose executive managers perform effective structured operational, or structured strategic planning, and do not address the issue of detailed marketing planning with competitive strategies in their comprehensive business plan.

$H_3$ . Profitability, measured as a function of the return on investment, is significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and address health management information systems as a critical component of their comprehensive business plan, than hospitals whose executive managers perform effective structured operational, or structured strategic planning, and do not address health management

information systems as a critical component of their comprehensive business plan.

$H_0$ . Profitability, measured as a function of the return on investment, is not significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and address health management information systems as a critical component of their comprehensive business plan, than hospitals whose executive managers perform effective structured operational, or structured strategic planning, and do not address health management information systems as a critical component of their comprehensive business plan.

$H_4$ . Profitability, measured as a function of the return on investment, is significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and focus upon increasing the percentage of Medicare patients in their overall payer mix.

$H_0$ . Profitability, measured as a function of the return on investment, is not significantly greater for hospitals whose executive managers perform effective structured operational, or structured strategic planning, and focus upon increasing the percentage of Medicare patients in their overall payer mix.

## Methodology

The research instrument chosen is a questionnaire. The specific instrument is a modified version of the instrument used by Layton, which was original to that study. Layton pre-tested the original research instrument for validity and internal consistency, and Layton's final research instrument was statistically tested for reliability. The revised instrument proposed for this research is presented in the Appendix, and takes into account the organizational changes in the industry as well as the growing need for both detailed marketing planning and information system development. The specific modifications to Layton's research instrument are detailed as follows:

### Part I: Profile

- A new question has been added to expand upon the question regarding the type of hospital, now also asking about specific categories of services that the hospital provides.
- A new question has been added asking for the average patient census.
- A new question has been added asking if the hospital has Critical Access Hospital designation.



## Part II Facility Planning Activities

- The planning definitions have been added to the question about the planning level, rather than having them as a separate attachment as was done in Layton's survey.
- Layton's survey asked about eighteen specific items being components of the business plan in order to determine sub-hypotheses variables. Changes to this section were required because of the different sub-hypotheses in this study. Nine items from Layton's survey have been retained, four have been modified, five have been eliminated, and five new items have been added.
- A question has been added to determine what percentage of the business plan is devoted to several key categories.
- A question has been added to determine which payer mixes are currently being focused upon in the business plan of the hospital.

## Part III Financial Information

- The financial information section has been restructured to capture the financial data for both the individual hospital as well as their group if the facility is affiliated with one.

The questions in the survey were renumbered from those in Layton's instrument to reflect the changes detailed above.

### Variables Defined

The dependent variable of this research project is that of profitability, which is measured as a function of the return on investment defined as net income divided by total assets. This was the dependent variable used in the research by Layton (1991) that is being replicated in the study. It was also the dependent variable in many of the prior studies regarding the use of strategic planning, including those by Thune and House (1970), Herold (1972), Malik and Karger (1975), Wood and LaForge (1979) and Bracker and Pearson (1986).

The first hypothesis uses the type of planning as the independent variable. This hypothesis is identical to the first hypothesis of the original study, and uses the four definitions from the research by Bracker and Pearson (1986). The response from the hospital is mutually exclusive, in that only one of the four definitions is chosen. This independent variable is then utilized for each of the three sub-hypotheses, cross referencing the responses to the other independent variables in instances where either structured operational planning or structured strategic planning are being utilized. The second hypothesis makes this comparison to the independent variable of marketing as a component of the strategic plan. The third hypothesis makes this comparison to the independent variable of management

information systems as a component of the strategic plan. The fourth hypothesis makes this comparison to the independent variable use of a strategy of increasing the percentage of Medicare patients in the payer mix.

#### Instrument Rationale

The research instrument used in the original research by Layton (1991) was original to the research study. The researcher attempted to reduce bias through the use of terminology that was designed to be unambiguous. The definitions from Bracker and Pearson (1986) were used to define the different types of planning. The research instrument was then pre-tested for validity. As a result of the pre-testing further revisions were made to the instrument, including redefinition of the variables being utilized, in order to enhance both clarity and accuracy. Changes were also made in the instrument to narrow the scope of the research, as the researcher had originally planned a project that was deemed to be too expansive. Each of the variables in the final research instrument was tested for reliability, measuring the degree of internal consistency between the different measures used to define each variable. Given that the research instrument was shown to have both reliability and validity it was therefore a good starting point for the replication of the research.

### Population

The original research was conducted in the State of Florida, which was selected because that was where the researcher resided. In order to facilitate the collection of data, the geographic location chosen for this study was the four northern New England States: Maine, Massachusetts, New Hampshire, and Vermont. This represented the state that the current researcher resided in and the three states bordering it. There are a total of 201 acute care hospitals within these four states, which provided for a sufficient number of responses for data analysis. The use of the entire population of acute care hospitals within the selected region, rather than a sampling from them, also reduced the possibility of bias from sample selection errors.

### Pilot Test

Whereas the original research instrument was shown to have both reliability and validity, it was anticipated that the continued use of the instrument would have the same result, however it was still necessary to confirm this assumption. Furthermore, because there had been some minor modifications to the research instrument, with the inclusion of new questions to measure the independent variables of the new hypotheses, it was

necessary that a pilot test be conducted. A pilot study was planned to result in a sample of thirty hospital chief executive officers randomly selected from a state outside of the geographic region of the study. The pilot test population was drawn from a different geographic area to prevent the population for the final research from being diminished in size and to also eliminate possible selection bias that could occur if some facilities were eliminated from the greater population of the final study because of their inclusion in the pilot test. The state chosen for the pilot test was selected in order to be demographically similar to that of the final survey population, to ensure that the sample was representative of the final survey sample. Publicly available United States census data from the year 2000 national census was used to measure this demographic similarity.

The pilot test was planned to then be statistical analyzed using the SPSS Version 11.0 Software Package. The questions pertaining to the specific variables were to then be tested to ensure that the each particular construct was consistent in measuring each of the primary variables for the study. Regression analysis was to be utilized to determine that both the dependent variable and the first independent variable maintained validity comparable to that in the previously validated in Layton's study. Each of the three other

independent variables was then tested using regression analysis to create a correlation matrix and determine the overall fit of the model (Hair et al., 1998). The means, medians and frequency distribution for each variable in the pilot tests were also examined in order to create additional measures to later be compared for consistency to the statistics from the final study. The use of a pilot test was also planned to help elucidate any problems with the survey administration or subject confusion with questions. Based upon the analysis of the pilot test results, final modifications were then made to the instrument as warranted.

#### Data Collection

Once the pilot test was been validated, with any necessary modifications are made to the research instrument, the final survey was to then be sent to all acute care hospitals within this geographic region. The chief executive officer was to be contacted by telephone if the survey was not returned on a timely basis. In the cover letter of the survey, the researcher identified himself as a student from the Wayne H. Wayne Huizenga School of Business and Entrepreneurship of Nova Southeastern University, who was working on a doctoral dissertation about planning in hospitals. It was explain that the research would consist of a short questionnaire regarding the facility's

planning activities. The purpose of the research was stated as being for data gathering and not to make specific recommendations to the facility. It was emphasized that the information and responses obtained that will be kept confidential and that the analysis and results would not identify any specific facility by name.

The survey section pertaining to the financial information was designed to be straightforward and easy for the person taking the questionnaire to complete. The modifications made to the survey instrument were to facilitate analysis at both the facility and group level where applicable. Whereas different agencies operated on different fiscal years, the information was captured for the most current fiscal year end. If this information was unavailable at the time that the survey was filled out the researcher contacted the appropriate person at the facility to complete this data collection.

#### Statistical Techniques

Following the collection of data, the information was to be tabulated and statistically analyzed. Each hypothesis and null hypothesis was then to be tested for significant differences to the sample mean, with a variance of 5% or more being used as the level of significance. Data was also analyzed to see if there were any significant difference in results based on whether the

provider was affiliated to a group. The primary statistical technique utilized was the parametric statistic t-test, which measured the significance of the differences between the sample means. The internal consistency of the variables was also assessed using the Chronbach's alpha measure with 0.7 as the lower limit.

The statistical analysis was be conducted using the SPSS Version 11.0 software package. The use of the SPSS program allowed for accurate calculation of the statistics. The software was designed to calculate the arithmetic means and determine if there were significant differences between the variables involved, including the paired variables for the sub-hypotheses that required the linking of two or more independent variables.

#### Chapter Summary

This study was to determine if a relationship existed between structured strategic planning and profitability for hospitals. It was designed to explore whether there was an impact on profitability where either structured operational or structured strategic planning was taking place and the planning included elements related to marketing, management information systems, or payer mix strategies related to Medicare reimbursement. Profitability was to be the dependent variable



and the type of planning was the primary independent variable. Other independent variables related to the three identified sub-hypotheses.

The research instrument used was designed as a questionnaire modified from the instrument originally used in the research by Layton (1991). That instrument had been statistically tested for validity and reliability. Additional questions and modifications were made to the survey in order to accommodate the new hypotheses, which necessitated conducting a pilot study to ensure that the research instrument continued to remain valid.

The research instrument was to then be sent to the chief executive officers of all acute care hospitals within the northern New England states of Massachusetts, Maine, New Hampshire and Vermont. The data collected was planned to then be quantitatively analyzed using the SPSS Version 11.0 statistical software package. Each hypothesis and null hypothesis was to then be tested for significant differences to the sample mean, using the parametric statistic t-test.

## CHAPTER IV

### DATA ANALYSIS

#### Chapter Overview

The analysis will begin with an examination of the pilot test. It will start with an explanation of the criteria used for the geographic region selected for the pilot test, the methodology used for this test, an analysis of the results, and recommendations for modifications to the research instrument will then follow.

The details regarding the data collection for the final research instrument will then follow. Analysis of the data collected will begin with the validity testing for each of the variables in the study. After that will be the statistical analysis testing each of the four hypotheses. The chapter will then conclude with a summary of the analysis.

#### Pilot Test Geographic Region Selection

The initial step for conducting the pilot test was to ascertain which geographic area in which to conduct this study. The state, or region of a state, chosen for the pilot test needed to have a demographic similarity to that of the final survey population in order to ensure that the sample would be

representative of the final survey sample. It also needed to have a sufficient number of hospitals to ensure that a sample of 30 completed questionnaires from hospital chief executive officers could be obtained. Publicly available United States census data from the year 2000 national census was used as the secondary research data source to measure this demographic similarity.

Four initial measures were selected to determine demographic similarity. These included three statistical measures pertaining to the population's income: Median Household Income, Median Family Income, and Per Capita Income. The related measure of Median Home Value was also chosen. The data for these measures was then obtained from the United States Census Bureau Internet site (United States Census, 2003). Median statistical measures rather than mean statistics were selected because that was the measure of central tendency released by the Census Bureau for three of the four selected measures. Household Income had been reported as both median and mean, however the mean statistics were only broken down by sub-categories that did not encompass the entire population.

The Information for the four states are presented in the Table 1, followed by the range from highest to lowest for the region, the absolute mean weighting the four states equally, and a weighted mean based upon the population of each state.

#	Statistic	MA	ME	NH	VT	Total	Data Range		Mean Scores	
							Lowest	Highest	Absolute Mean	Weighted Mean
1	Median Household Income	50,502	37,240	49,467	40,856	178,065	37,240	50,502	44,516	47,961
2	Median Family Income	61,664	45,179	57,575	48,625	213,043	45,179	61,664	53,261	58,072
3	Per Capita Income	25,952	19,533	23,844	20,625	89,954	19,533	25,952	22,489	24,470
4	Median Home Value	185,700	98,700	57,575	111,500	453,475	57,575	185,700	113,369	152,493

Data Source: United States Census Bureau, Year 2000 Census.

Prior analysis of Medicaid Statistics provided by the United States Department of Health and Human Services has shown that for the United States there has historically significant regional variation in hospital services between northern, central and southern states. This is due to a combination of several factors, including income variances and medical conditions variances due to the dissimilar climates of the different geographic regions (United States Department of Health and Human Services, 1999). It was therefore decided that the best demographic match for the four northeastern states of the final survey population would be found in another northern state. It was initially surmised that another northeastern state might mirror these demographic criteria, and the data was obtained for both New York and Pennsylvania. As depicted in Table 2, all four measures for both states fall within the

specified data range, however only two of the measures fall within the narrower range between the two calculated means for New York. None of these measures met this narrower criteria for Pennsylvania.

	Statistic	New York			Pennsylvania			
		Statistic	In Data Range	Between Means	Statistic	In Data Range	Between Means	
1	Median Household Income	43,393	Yes	No	40,106	Yes	No	
2	Median Family Income	51,691	Yes	No	49,184	Yes	No	
3	Per Capita Income	23,389	Yes	Yes	20,880	Yes	No	
4	Median Home Value	148,700	Yes	Yes	97,000	Yes	No	

Data Source: United States Census Bureau, Year 2000 Census

Two other northern states were then selected for review. Those states consisted of the west coast state of Oregon and the mid-western state of Michigan. As shown in Table 3, these two states also fell within the overall data range, but failed to meet the narrower range for all measures. The state of Michigan met the criteria for all except one measure, so was considered a possible candidate for the pilot study. It was then decided that further analysis should be conducted using a series of secondary measures prior to choosing that state for the pilot test.

	Statistic	Oregon			Michigan		
		Statistic	In Data Range	Between Means	Statistic	In Data Range	Between Means
1	Median Household Income	40,916	Yes	No	44,667	Yes	Yes
2	Median Family Income	48,680	Yes	No	53,457	Yes	Yes
3	Per Capita Income	20,940	Yes	No	22,168	Yes	No
4	Median Home Value	152,100	Yes	Yes	115,600	Yes	Yes

Data Source: United States Census Bureau, Year 2000 Census

Two secondary measures were chosen for further analysis to better gauge the demographic comparability of the populations being studied. These were the percentage of population that was comprised of racial minorities (non-white) and the percentage of the population holding college degrees. Given that the study is related to hospitals and the hospital industry, two occupational and industrial measures that had been collected as part of the national census were also chosen. The first of these was the percent of the population employed in service occupations. The second of these was the percent of the population employed in the educational, health and social services fields. The data for these measures for the four states in the final survey population are presented in Table 4:

#	Statistic	MA	ME	NH	VT	Total	Data Range	
							Lowest	Highest
1	Race: Minority (non-white)	15.5	3.1	4.0	3.2	25.8	3.1	15.5
2	College Degree %	40.4	30.1	37.4	37.1	145.0	30.1	40.4
3	Occupation - Service %	14.1	15.3	13.0	14.6	57.0	13.0	15.3
4	Industry - Education, Health, Social Service %	23.7	23.2	20.0	24.1	91.0	20.0	24.1

Data Source: United States Census Bureau, Year 2000 Census

Analysis of the four secondary measures for the previously selected states as shown in Table 5 revealed that Michigan was not a good demographic match, with none of the secondary measures falling within the range of the final survey population. Table 5 also shows that none of the other three states previously reviewed met the criteria for all secondary measures.

#	Statistic	New York		Pennsylvania		Oregon		Michigan	
		Statistic	In Data Range	Statistic	In Data Range	Statistic	In Data Range	Statistic	In Data Range
5	Race: Minority (non-white) %	32.1	No	15.6	No	13.4	Yes	19.8	No
6	College Degree %	34.6	Yes	28.3	No	31.7	Yes	28.8	No
7	Occupation - Service %	16.6	No	14.8	No	15.3	Yes	14.8	No
8	Industry - Education, Health, Social Service %	24.3	No	21.9	No	19.3	No	19.9	No

Data Source: United States Census Bureau, Year 2000 Census

The decision was made to continue the search for a state that would better meet the demographic criteria. The data was obtained for the state of Minnesota and is reflected in Table 6. The demographic comparison was matched for all measures. A review of hospital statistics for the state of Minnesota revealed that there were a total of 138 licensed acute care hospitals, which appeared to be a sufficient number from which to obtain a total of 30 completed surveys.

	Statistic	Statistic	In Data Range	Between Means			Statistic	In Data Range
1	Median Household Income	47,111	Yes	Yes		5	Race: Minority (non-white) %	9.2 Yes
2	Median Family Income	56,874	Yes	Yes		6	College Degree %	35.1 Yes
3	Per Capita Income	23,198	Yes	Yes		7	Occupation - Service %	13.7 Yes
4	Median Home Value	122,400	Yes	Yes		8	Industry - Education, Health, Social Service %	20.9 Yes

Data Source: United States Census Bureau, Year 2000 Census

### Pilot Test Methodology

In order to distribute the survey to the Minnesota hospitals it was necessary to first compile an electronic mailing list with the addresses and names of the President or Chief Executive Officer for each Minnesota hospital. Both the Minnesota Hospital Association and the Minnesota Department of Health were contacted in obtain the information. Each was able to provide an electronic file with a portion of the information,



which were then combined for the complete mailing list. A total of 75 hospitals were selected from this compiled listing to send the survey to. This assumed that there would be a response rate of 40%, to result in the necessary number of completed surveys. The Pilot Test Research Instrument (Appendix A) was mailed out, along with a cover letter from the researcher (Appendix B) and a self-addressed stamped envelope for the return of the survey. The anticipated response was initially shown to be overly optimistic, with a total of 23 surveys being returned and 1 survey coming back as undeliverable within a three-week period from the time of the initial mailing, for a response rate of 31%.

In order to obtain the required number of surveys another thirty hospitals were selected from the remaining list of 63 Minnesota hospitals and a second mailing was sent. This resulted in 13 surveys being returned and 1 survey coming back as undeliverable. During this same time period 6 more surveys from the initial mailing were also received, for a grand total of 42 surveys, resulting in an overall response rate of 41%. A total of 8 surveys turned out to be unusable because of incomplete financial information, for a final total of 34 surveys available for use with the pilot test, meeting the threshold of 30. The pilot test results are presented as Appendix C.

### Pilot Test Analysis

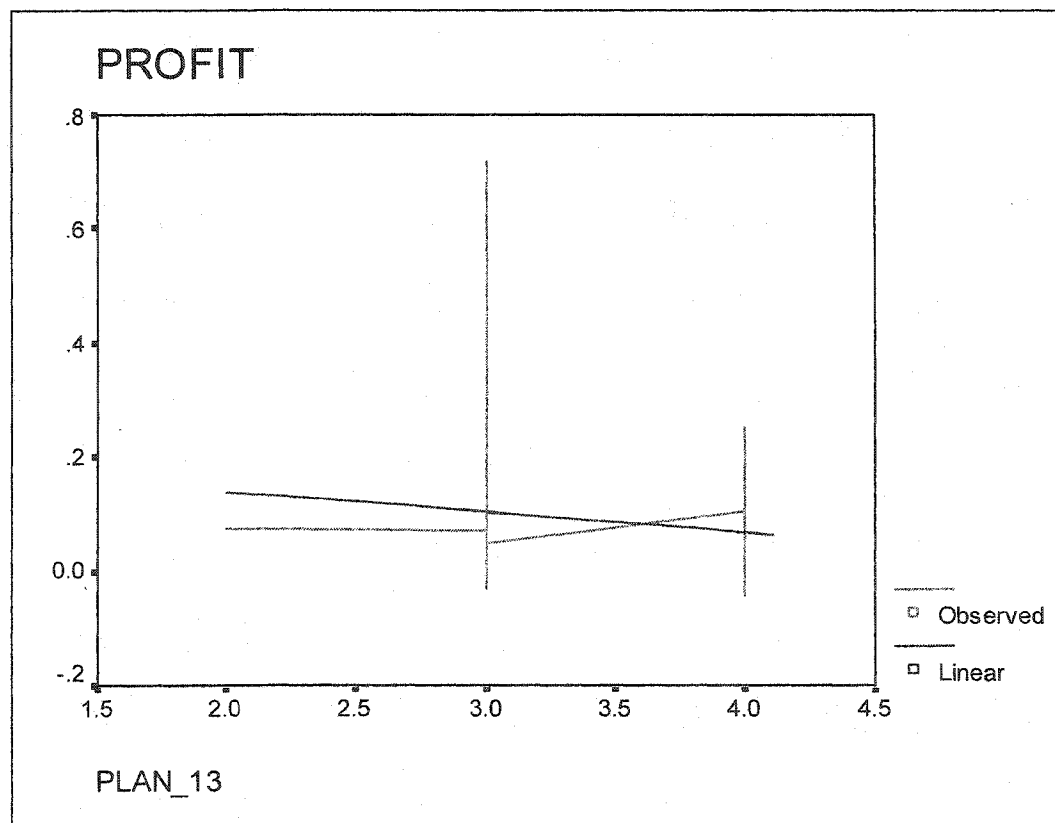
The pilot test data was electronically entered into a database using the SPSS Version 11.0 Software Package. The questions pertaining to the specific variables were then tested to ensure that the each particular construct was consistent in measuring each of the primary variables for the study. The specific questions referenced throughout this section can be found on the Pilot Test Research Instrument presented as Appendix A.

The responses to questions 20A and 20C were the primary components used for the calculation of the dependent variable and each needed to be independently tested in order to ensure internal consistency. Component 20A was tested to the related component of 20B, yielding a Pearson Correlation value of .343, which is deemed to be statistically significant at the 0.05 level in a two-tailed test. Component 20C was tested to the related component 20D, yielding a very high Pearson Correlation value of .847, which is deemed to be statistically significant at the 0.01 level in a two-tailed test. Given that both components are shown to have internal consistency they can be deemed to be reliable and usable for the calculation of the dependent variable.

Regression analysis was utilized to determine if both the dependent variable and the first independent variable maintained

validity comparable to that which had been previously validated in Layton's study. Figure 2 is an SPSS regression analysis of the dependent and first independent variable. It shows that there appears to be a gradual negative linear relationship. Further analysis of the relationship between the dependent and independent variables was conducted using Pearson Correlation, which is a statistical measure used to indicate the magnitude of the linear relationship. The Pearson Correlation for this relationship calculates to  $-.149$ , which appears to be consistent with the slope of Figure 2.

Figure 2: Pilot Test Linear Relationship between Profitability and Plan Type (Question 13)



Reference to a Pearson Correlation table shows that at thirty degrees-of-freedom, corresponding to the sample size of the pilot test, a two-tailed test at a level of significance of .05 would require a value of a .349, which the pilot test does not meet. A negative correlation is also inconsistent with the research conducted by Layton, which found that profitability increased based upon the more rigorous type of planning that was undertaken. One possible explanation for this pilot study finding is that there were an inadequate number of observations for each of the four categories used with the independent variable, most notably in the two non-structured planning categories. The goal for the final study is to include a greater number of observations, which is anticipated to yield a more statistically significant number of responses in each category.

The three other independent variables in the study were each tested for correlations to determine the internal consistency of each variable. The independent variable that is related to the second hypothesis was measured through components 14G, 14H and 15D. Component 14H showed a Pearson Correlation of .684, which is significant at a 0.01 level for a two-tailed test. Measures 14G and 15D however showed a Pearson Correlation of only .192 and .187 respectively, which is not statistically significant. This would suggest that component

14G should be retained as the determinant of this variable in the final analysis. Components 14G and 15D were to be collected as part of the final study, and the correlation was to again be checked, however based upon the pilot test results it was anticipated that these components would not be used as measures for the independent variable of the second hypothesis.

The independent variable related to the third hypothesis was measured through components 14Q, 14R, 14S and 15C. Components 14R and 14S showed a Pearson Correlation of .697 and .685 respectively, which is significant at a 0.01 level for a two-tailed test. Component 14Q showed a Pearson Correlation of only .266, which was not statistically significant. Component 15C showed a Pearson Correlation of only .327, which was not statistically significant. This would suggest that components 14R and 14S should be retained as determinants of this variable in the final analysis. Components 14Q and 15C were collected as part of the final study, and the correlation was checked, however based upon the pilot test results it was anticipated that these components would not be used as measures for the independent variable of the third hypothesis.

The independent variable related to the fourth hypothesis was measured through components 16A, 16B, and 16C. The Pearson Correlation did not find any significance for these three components, with values of .247, -.069, and .130 respectively.

However, it is possible that the responses for this particular series of questions were under-reported, as there appeared to be some confusion by some recipients as to how many responses to this series of questions were being sought. The responses to parts A, B, and C of Question 16 were not meant to be mutually exclusive; in that any or all could have been chosen depending upon the specific planning activities of the hospital. Due to a lack of instruction for this question, many respondents appeared to think that only one response was to be marked off. This was corrected with a modification to the research instrument, which was anticipated to hopefully yield a more statistically significant results. An option of "Medicare Utilization" was also be added to question 14 to create another possible component for the independent variable in the fourth hypothesis.

#### Research Instrument Modifications

In addition to validity testing, the use of a pilot test also helped to elucidate some minor problems with the survey instrument. Based upon the analysis of the pilot test results, and comments made by the respondents on the survey instruments, the following modifications were made to the final research instrument:

- A. The service choices listed in Question 5 included the word 'Hospital' in reference to 'Rehab', 'Skilled Nursing' and 'Assisted Living' options. This wording created confusion, with several respondents using the 'Other (specify)' option for these three service choices. The term 'Hospital' was dropped from these three options in the final survey in order to alleviate this problem.
- B. The option F choice in Question 14 of 'Human resource development' was confusing to some, and this choice was changed to 'Human resources' in the final survey.
- C. The option of "Medicare Utilization" was added as choice T in Question 14 in order to capture one additional measure to use as part of the fourth independent variable in the study.
- D. Question 16 asked: "What business strategies does the plan address regarding Medicare payers?" followed by four selections. The phrase '(select all that apply)' was added after the question, as some respondents were unsure of how many responses to mark.
- E. A fifth response was added to Question 17 regarding the development of the business plan, as a number of respondents filled in selection: " D. Other (specify)" with "Consultant". Option D now reads "Consultant", and "Other (specify)" became option E.

F. The question asking for Group financial data proved to be both cumbersome and confusing to respondents, with a lack of uniformity and consistency in the responses. The collection of this data was therefore dropped from the final survey instrument, with the financial data collected only for the hospital itself, as was done in Layton's original research instrument.

The pilot test instrument resulted in a response rate of 41%, with a usable number of surveys at a response rate of 33%. The final research instrument was to be mailed to the 201 acute care hospitals in the four-state region of the study. The researcher set a target goal of obtaining a final sample of 100 usable studies, which would require a response rate of approximately 50%. Additional data collection methods were utilized with the final instrument to increase the overall response rate. These included follow-up telephone calls to those who did not respond to the initial mailing as well as to respondents who submitted incomplete financial data. Follow-up mailings were also planned to be sent as necessary.

The physical layout of the pilot test consisted of two letter-sized pages printed on both sides and stapled together. Other formats, including the use of a single legal-sized page, were examined however those appeared to be difficult to read so



the same format used in the pilot test was retained with the final research instrument. The cover letter was modified to include a specific date that the researcher wanted the survey returned by, which had not been listed in the pilot test cover letter.

### Data Collection

The State Licensing Bureau and the private hospital association were contacted for each of the four states within the final survey region in order to obtain an accurate mailing list for each hospital including the name and title of the Chief Executive Officer for each facility. When the initial concept paper for this dissertation had been submitted there were a total of 208 acute care hospitals within the four state survey region but that number has now been reduced to 201 due to a combination of hospital mergers and closings.

Surveys were mailed to each of the hospitals, which resulted in 62 surveys being returned for a total of 30.8%. Each of the remaining 139 hospitals were then contacted through a combination of follow-up telephone calls, electronic mail and re-mailing of surveys, which resulted in an additional 19 surveys being returned for a total of 81 or 40.3%. Only 60 of these surveys had complete financial information and the other 21 were telephoned from which 16 were able to supply the missing

data, for a grand total of 76 usable surveys or 37.8%. The raw data from the 76 surveys is presented in Appendix E.

The final sample of 76 surveys is less than the original goal of 100 surveys, however the response rate remains high enough to be statistically significant as being representative of the population surveyed. This total number of surveys is also higher than the number collected in the original survey conducted by Layton (1991) who had a grand total of 67 surveys in the final sample. Table 7 shows that the total number of responses for each state in the survey. Each state had a consistently high response rate, ranging from 29.4% to 52.8%.

State	Number of Hospitals	Completed Surveys	Response Rate %
Maine	36	19	52.8%
Massachusetts	122	40	32.8%
New Hampshire	26	12	46.2%
Vermont	17	5	29.4%
Total	201	76	37.8%

### Validity Testing

The pilot test data was entered into an electronic database using the SPSS Version 11.0 Software Package. Each question pertaining to the specific variables was then tested to ensure that the each particular construct was consistent in measuring

each of the primary variables for the study, as had also been conducted in the pilot test. The specific questions referenced throughout this section can be found on the Final Research Instrument presented as Appendix C.

The responses to questions 20A and 20C were the primary components used for the calculation of the dependent variable and each needed to be independently tested in order to ensure internal consistency. Component 20A was tested to the related component of 20B, yielding a Pearson Correlation value of .593, which is deemed to be statistically significant at the 0.01 level in a two-tailed test. Component 20C was tested to the related component 20D, yielding a very high Pearson Correlation value of .963 which is deemed to be statistically significant at the 0.01 level in a two-tailed test. Given that both components are shown to have internal consistency, they can be deemed to be reliable and usable for the calculation of the dependent variable.

The independent variables were then tested for correlations to determine the internal consistency of each variable. The independent variable that is related to the second hypothesis was measured through the marketing (14G), market share (14H) and marketing percent (15D) components. The Pearson Correlation matrix for these three measures is depicted in Table 8 and shows that the internal consistency for this variable has improved

from the result of this analysis in the pilot test. Based upon these results it appeared that three components could be retained as measures for the independent variable of the second hypothesis.

		MARKETNG	MKTSHARE	MKT_PCT
MARKETNG	Pearson Correlation	1	.328**	.257*
	Sig. (2-tailed)	.	.005	.036
	N	72	72	67
MKTSHARE	Pearson Correlation	.328**	1	.293*
	Sig. (2-tailed)	.005	.	.016
	N	72	72	67
MKT_PCT	Pearson Correlation	.257*	.293*	1
	Sig. (2-tailed)	.036	.016	.
	N	67	67	67

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The independent variable related to the third hypothesis was measured through the MIS development (14Q), MIS operations (14R), MIS evaluation (14S) and MIS Percentage (15C) components. The Pearson Correlation matrix for these three measures is depicted in Table 9 on the following page. The table showed that there had been an improvement regarding this variable over this same analysis from the pilot test. Based upon these results it was determined that all three components could be retained as measures for the independent variable of the third hypothesis.

		MIS_DEVL	MIS_OPS	MIS_EVAL	MIS_PCT
MIS_PCT	Pearson Correlation	.511**	.295*	.508**	1
	Sig. (2-tailed)	.000	.015	.000	
	N	65	67	67	67
MIS_DEVL	Pearson Correlation	1	.483**	.479**	.511**
	Sig. (2-tailed)		.000	.000	.000
	N	70	70	70	65
MIS_EVAL	Pearson Correlation	.479**	.510**	1	.508**
	Sig. (2-tailed)	.000	.000		.000
	N	70	72	72	67
MIS_OPS	Pearson Correlation	.483**	1	.510**	.295*
	Sig. (2-tailed)	.000		.000	.015
	N	70	72	72	67

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The independent variable related to the fourth hypothesis was measured in the pilot test through the increased Medicare (16A), same level Medicare (16B), and decreased Medicare (16C) components. Because none of these were shown to be statistically significant in the pilot test a new measure pertaining to Medicare utilization was added to question 14 to create another possible component for this independent variable. The Pearson Correlation matrix for these three measures is depicted in Table 10 on the following page and shows that the only significant correlation found is that between the new measure (14T) and increased Medicare. The measure related to maintaining the same level of Medicare did show a significant correlation and there were no facilities that indicated that

they had planned for a decrease in the level of Medicare. Based upon these results only those two were retained as measures for the independent variable of the fourth hypothesis.

		MEDICARE	INCR_MCR	SAME_MCR	DECR_MCR
MEDICARE	Pearson Correlation	1	.401**	.156	+
	Sig. (2-tailed)	.	.000	.190	
	N	72	72	72	72
INCR_MCR	Pearson Correlation	.401**	1	-.030	+
	Sig. (2-tailed)	.000	.	.805	
	N	72	72	72	72
DECR_MCR	Pearson Correlation	+	+	+	+
	Sig. (2-tailed)	.	.	.	.
	N	72	72	72	72
SAME_MCR	Pearson Correlation	.156	-.030	1	+
	Sig. (2-tailed)	.190	.805	.	
	N	72	72	72	72

\*\* Correlation is significant at the 0.01 level (2-tailed).

+ Cannot be computed because at least one of the variables is constant.

### Hypothesis Testing

#### Hypothesis 1

In testing the first hypothesis, an examination of the means for the profitability value of each plan type shows a consistently increasing degree of profitability based upon the more rigorous type of planning being utilized as shown in Table 11 on the following page.

The hospitals under the first plan type use no structured planning at all are shown to be unprofitable with a mean of

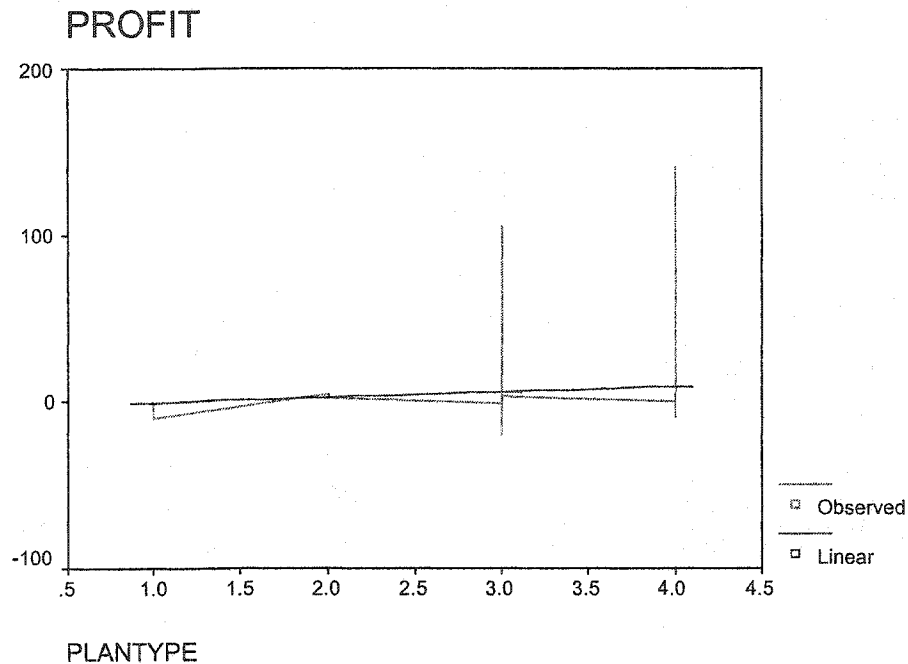
-4.75%. The second plan type represents unwritten plans and reflects a profitability mean of 3.73%. The third plan type represents structured operational planning for the current fiscal period and shows this group of hospital to have a mean profitability score of 6.84%. The fourth plan type represents structured strategic planning using written long-term plans of three years or more and shows a profitability mean of 8.88%. Review of the means suggests that there appears to be a positive relationship between the type of planning used and profitability in support of the first hypothesis.

PLANTYPE	Mean	N	Std. Deviation
1	-4.7500	2	6.91550
2	3.7250	2	1.66170
3	6.8426	27	22.94115
4	8.8793	45	25.08130
Total	7.6614	76	23.61846

Regression analysis was then utilized to determine the significance of the dependent variable compared to the first independent variable of plan types which range from the first plan type representing no planning to the fourth plan type representing long-term structured strategic planning. Figure 3 on the following page is an SPSS regression analysis of the dependent and first independent variable, broken down by the

four different plan types. It shows that there appears to be a gradual positive linear relationship.

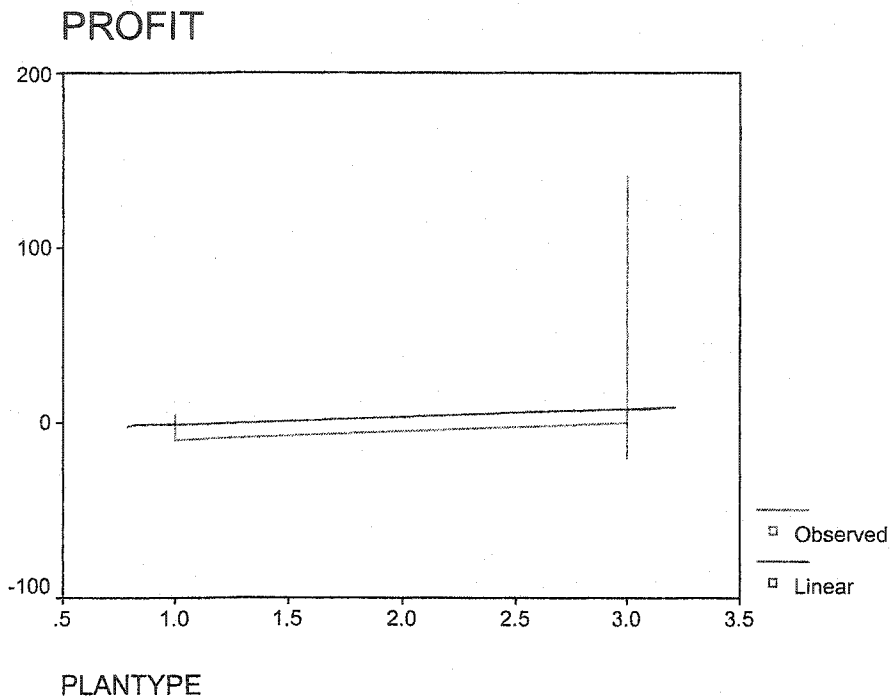
Figure 3: Linear Relationship between Profitability and All Plan Types



The hypothesis as stated combines the four plan types into two separate categories of unwritten plans, which comprise the first two plan types, and written, which comprises the third and fourth plan types. Figure 4 on the following page depicts the linear relationship contrasting these two category groupings and shows a line that has a comparative slope as that of Figure 3.



Figure 4: Linear Relationship Between Written and Unwritten Plan Types



Further analysis of the relationship between the dependent and independent variables was conducted using Pearson Correlation, which is a statistical measure used to indicate the magnitude of the linear relationship. The Person Correlation for this relationship calculates to .093, which appears to be consistent with the slope of Charts 2 and 3. The data shows a t-statistic of .802 which fails to meet the statistical significance of a two-tailed t-test at a .05 significance level which would be 1.99 at seventy-five degrees of freedom. The null hypothesis for Hypothesis 1 can therefore not be rejected.

Further analysis was conducted using different categories of demographic data in order to determine if the relationship between plan type and profitability would show any significance when comparing different categories of hospitals. Correlations with profitability were checked for both the written plan and non-written plan subgroups against several demographic categories including for-profit status, public vs. private ownership, if the facility were a stand-alone single entity or part of a group, the number of licensed beds, the average patient census, the number of full-time equivalent employees and if the hospital had the Medicare Critical Access Hospital designation. None of these analyses resulted in identifying any statistically significant differences between the two different plan type groupings.

#### Hypothesis 2

Regression analysis was utilized to measure the significance of the dependent variable compared to the second independent variable for facilities that utilized written plans. A t-score of 2.00 or greater would be needed to meet the statistical significance of a two-tailed t-test at a .05 significance level at sixty degrees of freedom. Table 12 on the following page shows that this value was met for only the marketing percent measure (15D) at 3.097.

Coefficients		Unstandardized Coefficients		Standardized Coefficients		Sig.
Model		B	Std. Error	Beta		
1	(Constant)	2.596	8.265		.314	.755
	MARKETNG	-.542	7.548	-.009	-.072	.943
	MKTSHARE	-6.864	8.373	-.103	-.820	.415
	MKT_PCT	.755	.244	.387	3.097	.003

a Dependent Variable: PROFIT

A further check of the measures was then conducted using Person's Correlation to test each of the three measures of the independent variable against the dependent variable. The measure for marketing plans (14G) reflects a correlation of .071 and the measure for market share (14H) reflects a correlation of -.047. Neither of these is shown to have a statistically significant correlation to profitability. The measure for marketing plan percentage (15D) reflects a correlation of 3.54, which is deemed to be statistically significant at the 0.01 level in a two-tailed test. Because only the marketing plan percentage measure is shown to have a statistically significant correlation to profitability that measure alone will be used for the analysis and the conclusions will reflect that the marketing component is defined as this measure. Since this measure is shown to be statistically significant the null hypothesis for Hypothesis 2 can be rejected.

Further analysis was conducted using the marketing percentage measure, including a means analysis that is presented

in Table 13. This table shows the profitability mean grouped by the percentage of the written plan dedicated to the marketing, including analysis of the competition. The table shows that the profitability mean for all 67 facilities with written plans that reported this component is approximately 7.9%. The table also shows that the facilities that dedicate up to the written plans to marketing have profitability means ranging from -1.26% to 8.00%, whereas the facilities dedicating 35% or more of the written plans to marketing have profitability means ranging from 28.04 to 105.17%.

MKT_PCT	Profit Mean	N	Std. Deviation
.0	4.4683	6	10.41958
4.0	-1.2600	1	
5.0	8.0050	8	19.12263
10.0	2.8388	26	11.76054
15.0	4.8925	4	2.29331
20.0	2.0309	11	3.80762
25.0	-.4150	2	.67175
30.0	4.7900	1	
35.0	105.1700	1	
40.0	28.0433	3	43.76119
50.0	32.7775	4	73.02402
Total	7.9057	67	24.95059

Another relevant statistical comparison is to further segment the above grouping. The written plan grouping is comprised of facilities that conduct short-term structured operational planning and facilities that conduct long-term structured strategic planning. It is helpful to see if there is

a measurable difference in profitability between those two groupings, as it would illustrate the degree of optimal planning that should be undertaken. Table 14 shows the results of analyzing each of these two groups. The strategic planning profitability average is higher than that for operational planning at 8.52% compared to 6.92%. Pearson Correlation also shows that strategic planning is statistically significant when compared to the dependent variable of profit, while operational planning does not show this relationship.

Category	Operational Plan	Strategic Plan
Sample Size (N)	26	41
Average Profit	6.92	8.52
Pearson Correlation	0.314	0.431***

\*\*\*Significant at the 0.01 level in a 2-tailed test.

The breakdown of this marketing percentage for structured strategic planning is presented as Table 15 on the following page, which shows that similar to Table 13 that devoting a higher percentage of the strategic plan to marketing results in higher profitability. With the exception of a single facility at 5%, the only two groupings with very high profitability means are those that devote 40% to 50% of the strategic plan to this component.

MKT PCT	Mean	N	Std. Deviation
.0	.5900	2	.83439
4.0	-1.2600	1	.
5.0	54.9200	1	.
10.0	.9176	17	7.73917
15.0	4.8925	4	2.29331
20.0	2.9829	7	3.06604
25.0	-.4150	2	.67175
30.0	4.7900	1	.
40.0	28.0433	3	43.76119
50.0	50.2133	3	78.57933
Total	8.5273	41	26.15692

Dependent Variable: Profit

### Hypothesis 3

Regression analysis was utilized to determine the significance of the dependent variable compared to the third independent variable for facilities that utilized written plans. A t-score of 2.00 or greater would be needed to meet the statistical significance of a two-tailed t-test at a .05 significance level at sixty degrees of freedom. Table 16 shows that this is not met for any of the measures used.

Coefficients		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
Model							
1	(Constant)	13.738	7.495			1.833	.072
	MIS PCT	-8.433E-02	.508	-.026		-.166	.869
	MIS DEVL	-.399	10.277	-.006		-.039	.969
	MIS OPS	-1.650	7.845	-.033		-.210	.834
	MIS EVAL	-7.823	8.321	-.155		-.940	.351

a Dependent Variable: PROFIT

A further check of the measures was then conducted using Person's Correlation to test each of the four measures of the independent variable against the dependent variable. The measure for MIS development (14Q) shows a correlation of  $-.124$ ; the measure for MIS operations (14R) shows a correlation of  $-.135$ ; the measure for MIS evaluation (14S) shows a correlation of  $-.200$ ; and the measure for MIS plan percentage (15C) shows a correlation of  $-.117$ . None of these four measures were shown to have a statistically significant correlation to profitability. The null hypothesis for Hypothesis 3 can therefore not be rejected.

#### Hypothesis 4

Regression analysis was utilized to determine measure the significance of the dependent variable compared to the fourth independent variable for facilities that utilized written plans. A t-score of 2.00 or greater would be needed to meet the statistical significance of a two-tailed t-test at a .05 significance level at sixty degrees of freedom. Table 17 on the following page shows that this is not met for either of the measures used.

As a further check of the measures utilized, the Person's Correlation test was then conducted in order to test each of the two measures of the independent variable against the dependent

variable. The Pearson Correlation for the Medicare measure (14T) was  $-.112$  and the measure for increased Medicare (16A) was  $-.071$ . Neither of these is shown to be statistically significant correlations to the dependent variable of profitability. The null hypothesis for Hypothesis 4 can therefore not be rejected.

Coefficients		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	12.281	4.612		2.663	.010
	MEDICARE	.188	6.411	.004	.029	.977
	INCR_MCR	-5.909	6.502	-.118	-.909	.367

a Dependent Variable: PROFIT

### Chapter Summary

The analysis phase began with the selection of a comparative state to use for the pilot test. An extensive geographic selection process utilizing data from the United State Census Bureau examined and then rejected selecting New York, Pennsylvania, Oregon and Michigan. The state of Minnesota was eventually selected as having comparative demographics as the final survey population. A pilot test was administered that resulted in a statistically significant number of responses. Analysis of the data identified which measures could



be used for each variable as well as modifications to the research instrument.

The modified research instrument was then sent to the survey population, resulting in a total of 76 useable surveys for a statistically significant response rate of 37.8%. Validity tested was conducted to identify which measures should be utilized for each variable. Each of the four hypotheses was then tested. While preliminary analysis appeared to support the first hypothesis, the mathematical results were not strong enough to support rejecting the null hypothesis. The second hypothesis was the only one where the null hypothesis could be statistically rejected. Further analysis of the database was conducted in relation to this hypothesis in order to draw more specific conclusions and recommendations. The third and fourth hypotheses were not supported in that the null hypothesis for each could not be rejected.

## CHAPTER V.

## SUMMARY AND CONCLUSIONS

Chapter Overview

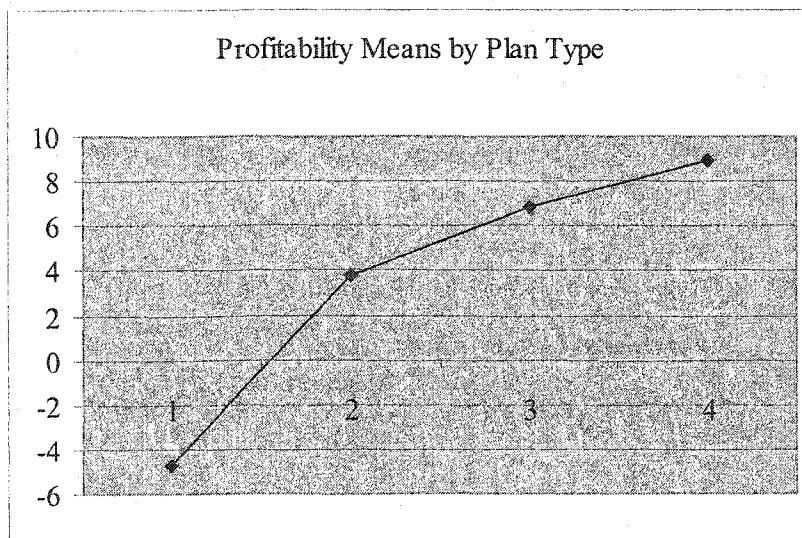
This chapter will begin with a discussion of the findings that were presented in Chapter IV with an explanation of the result for each of the four hypotheses. This discussion will include a comparison of these results to previous studies and possible explanations where there are inconsistencies. Implications from these findings for practitioners will then follow. Next will be a description of the limitations of the study. It will conclude with recommendations for future research followed by a chapter summary.

Discussion of Findings

The first hypothesis was designed to measure whether having a written strategic plan leads to higher profitability. The study replicated work conducted by Layton (1991), which showed that more rigorous planning by hospitals resulted in higher profitability. This conclusion was also consistent with research conducted by Spiegel (1991). Preliminary analysis of the present study tended to support this finding, as depicted in Figure 5 on the following page, which reflects that the

profitability mean increased as the a more rigorous plan type was utilized. Regression analysis identified a gradual positive slope for the relationship between plan type and profitability; however, it was not proven to be statistically significant enough to reject the null hypothesis. The conclusion is that while Hypothesis 1 cannot be supported by this research, there is evidence based upon the analysis of the profitability means to suggest that the relationship may exist and that further research on this subject may be warranted.

Figure 5: Profitability Means by Plan Type (Table 11 Data)



One possible explanation as to why a more conclusive result was not found is that this research found that there were a small number of respondents that indicated that they did not utilize a written plan. In Layton's research, a total of 22.3% of the

hospitals indicated that they used non-written planning, whereas the present research found that only 5.3% of the hospitals had non-written plans. Furthermore, half of those respondents indicated that while the non-written status was the present situation it would not continue for very much longer as long-term strategic planning initiatives would be undertaken within the next fiscal year. A conclusion that can be reached from this is that the vast majority of hospitals now recognize the importance of structured planning.

The second hypothesis was designed to measure whether the inclusion of detailed marketing planning, including competitive strategies, in the business plan resulted in higher profitability. Analysis of the results showed that a strong linear relationship does exist between marketing planning that includes competitive analysis and overall profitability. The support of the second hypothesis is consistent with previous research by Hazel-Ford (1992), Petromilli and Michalczyk (1999) and O'Malley (2002).

The measure used to reject the null hypothesis focused upon the percentage of the overall plan that was related to marketing and competitive analysis. Continued analysis of this result showed that among the grouping of all facilities who conducted written plans, the highest profitability existed among the facilities that devoted between 35% and 50% of the overall

structured business plan to the area of marketing and competitive analysis. Further bisecting this grouping into those who conducted shorter-term operational planning and those who conducted longer-term strategic planning found that the longer-term planning had the stronger relationship to profitability, and that this was strongest among the facilities that devoted between 40% and 50% of the strategic plan to this area.

The third hypothesis was designed to measure if the inclusion of detailed management information system planning in the business plan resulted in higher profitability. The analysis of the results did not find any statistically significant finding in this area for either the combined variable or any of the four individual measures used and so the null hypothesis could not be rejected. Prior research had focused upon the importance of management information systems for hospitals and research by Austin (1990) and Moynihan (2003) had linked this to specific financial measures but not to profitability. This result is not inconsistent with prior research, as it does not appear that this specific primary research had been conducted before. The finding that the hypothesis could not be supported suggests that while management information systems have been recognized by previous research as being critical to the overall success of the hospital (Tan &

Sheps, 1998) the specific impact on profitability may be indirect rather than direct. This is also an area where rapid changes in technology could make detailed inclusion of management information system initiatives in a three-to-five-year strategic plan impractical.

The fourth hypothesis was designed to measure if the inclusion of policy decisions towards increasing the percentage of Medicare patients as part of the structured business plan resulted in higher profitability. The analysis of the results did not find any statistically significant finding in this area for any of the measures used and so the null hypothesis could not be rejected. While a total of 55% of the hospitals surveyed indicated that Medicare Utilization was a sub-component of their plan, and 34% indicated that these strategies included increasing the percentage of Medicare patients, there is presently no direct link to the profitability of the facilities. One explanation of this result could be timing, because change in payer mixes takes time to implement and show financial results. It could also be that hospitals have not yet made a key effort to focus on this payer source. The CEO of a large hospital system provided an example of this on his survey. He stated that the hospital will start focusing upon Medicare more in their next planning cycle as the baby boom population ages

into that category, but that it is not considered to be a factor in the present planning cycle.

#### Limitations of the Study

Every attempt was made to obtain full and complete surveys from the entire population of the chosen geographic region, and while a statistically significant sample was obtained, there always exists the possibility that some degree of random sampling error could have occurred. While there was a great degree of variation among the demographic and financial characteristics of the facilities that responded to the survey, there exists the possibility that some degree of non-response error might have still occurred. While it is also assumed that all of the responses given were accurate, there exists the possibility that some level of response bias might have taken place in that the respondents could have answered the questions in a less than accurate manner.

It is possible that a larger sample might have found more facilities that do not use written structured plan, as that grouping was a considerably smaller subset in this research than in the original study being replicated.

This research was limited to a specific geographical region and there exists the possibility that some of the findings might

be due to regional variations and not consistent for generalizing results in order to make national inferences.

#### Implications for Practitioners

Hospital chief executive officers, administrators, and boards will find the results of the second hypothesis from this study to be helpful when making decisions about structured planning. While the study was inconclusive in determining the overall value to profitability of conducting structured planning, it did find that when structured planning is undertaken there should be a substantial amount of the plan dedicated to the area of marketing and competitive analysis. Having a clear understanding of the competition and where the organization is positioned in relation to them has been a cornerstone of the writings of Porter (1979) and will continue to be as hospital corporations become more complex.

The finding that marketing and competitive analysis should comprise between 35% and 50% of the structured plan is important. It shows the priority and emphasis to communication and awareness of the external environment of the business (Porter, 1980). The finding that higher profitability results when this marketing analysis is part of longer-term structured strategic planning rather than only shorter-term structured operational planning can serve as the financial justification



behind the dedication of resources for this more robust type of planning.

#### Recommendations for Future Research

A number of future research possibilities flow from this dissertation, the primary area being to further explore the importance of the role of marketing planning as a component of the overall structured plan. The marketing component including analysis of the competition needs to be explored in greater depth so that practitioners can best decide how to allocate resources towards the planning process.

In developing new variables for study of this area will be the development of measures that break down the processes of competitive analysis and other marketing planning into specific categories. It is important to know what the competition is doing and effectively position to most effectively market themselves to stakeholders, and to be able to maximize resources while doing so. Hospital executives would garner considerable benefit from this type of analysis, building upon the foundation established in this study.

Other research could be conducted in relation to the first hypothesis in this study, however given the decreasing number of facilities with non-written plans the comparisons would probably

be most relevant if contrasting structured operational plans as opposed to structured strategic plans. The assumption would be that written plans will be in place for hospitals and the focus of the research would then shift to whether these plans are of short-term or long-term duration.

While the study of hospital management information system planning has been identified as an area of importance, this particular study did not find a conclusive link to profitability. Other measures, including non-financial measures of efficiency, might be better benchmarks to use for future analyses on that specific component. Future research should also focus upon the allocation of resources to this operational component.

Given that the hospital industry is expected to continue to have intense competition and financial uncertainty (American Hospital Association, 2003) it is important to have a good understanding of individual sources of hospital reimbursement and to optimize the patient payer mix. Analyses such as the one conducted here with the fourth hypothesis will become increasingly important. The focus on the Medicare patient is expected to intensify beginning in the year 2011 as the demographic group defined as the baby boom generation start meet the age qualifications for Medicare. It is therefore necessary that research studies be conducted in this area, in order to

best advise practitioners of what strategic approach to undertake.

### Chapter Summary

The first hypothesis of this study was to determine first if there was a relationship between structured planning and profitability for hospitals. Three additional hypotheses then focused upon the specific component areas of the plan pertaining to marketing, management information systems and the increasing the percentage of Medicare patients. The first hypothesis could not be proven statistically, although there is evidence to support that a positive relationship does exist. That finding would be consistent with prior studies.

Of the other three hypotheses the only one that was supported was that pertaining to marketing. Hospitals with written plans who dedicate between 35% and 50% of the structured plan to marketing and competitive analysis are shown to have higher profitability, and this finding is even more significant with structured strategic planning. This is important for practitioners to know for optimizing their planning activities.

Possible limitations of this study pertained to the geographic area and scope of the overall study. The subset of hospitals who had non-written plans was small, which could have impacted the final results of the study, however this fact

illustrated the fact that the overwhelming number of hospitals now engage in structured planning activities. This should be taken into account with future research, in that the focus should shift from contrasting written and unwritten plans to contrasting operational and strategic plans.

Other recommendations for future research are to look closer at the marketing and competitive analysis factors in relation to the hospital industry in order to make more detailed recommendations as to what those parts of the structured plans should be comprised of. Research should also begin to focus on the Medicare patient mix as that will become increasingly important as the baby boom population begins to qualify for that health entitlement.

APPENDIX APILOT TEST RESEARCH INSTRUMENT

Please complete the following questionnaire to be used for a doctoral dissertation regarding hospital strategic planning activities and return it in the attached envelope. Individual responses to this survey will be kept confidential. If you have any further questions or require any clarifications regarding any items being asked in this survey please contact the researcher, Jonathan G. McCosh, at 603-271-4341. Thank you.

Part I. Hospital Profile

Hospital Name \_\_\_\_\_ Phone \_\_\_\_\_

Person Surveyed \_\_\_\_\_ Title \_\_\_\_\_

1. How many years has the hospital been in operation? \_\_\_\_\_
2. Is the hospital \_\_\_\_\_ For Profit \_\_\_\_\_ Not for Profit
3. Is the hospital \_\_\_\_\_ Public \_\_\_\_\_ Private
4. Is the hospital \_\_\_\_\_ A single entity \_\_\_\_\_ Part of a group
5. What type of services does the organization provide? (check all applicable)
 

_____ Hospital	_____ Skilled Nursing Hospital
_____ Therapy/Rehab Hospital	_____ Home Health Agency
_____ Physician Group	_____ Assisted Living Hospital
_____ Medical Laboratory	_____ Other (specify) _____
6. How many licensed beds does the hospital have, not counting bassinets? \_\_\_\_\_
7. What is the average patient census for the hospital? \_\_\_\_\_
8. How would you describe this hospital? \_\_\_\_\_ Community \_\_\_\_\_ Specialty
9. Has the facility been designated a Critical Access Hospital? \_\_\_\_\_ Yes \_\_\_\_\_ No

10. How many full time equivalent employees (FTE) do you have? \_\_\_\_\_

Part II. Hospital Planning Activities

11. Is your plan \_\_\_\_\_ Written \_\_\_\_\_ Unwritten

12. What is the duration of the plan?

\_\_\_\_\_ One year or less

\_\_\_\_\_ More than one year and less than three

\_\_\_\_\_ Three years or more

13. Which of the following best describes the kind of plan your hospital has?

\_\_\_\_\_ Unstructured: No measurable structured planning. Hospital functions to do the best job on a day-to-day basis.

\_\_\_\_\_ Intuitive Plan: Informal plans developed and implemented based on the intuition and experience of the administrator/CEO. They are not written, are no longer than one year duration and rely on the hospital's present environment.

\_\_\_\_\_ Structured Operational Plan: Written short-range operational budgets and plans of action for the current fiscal period.

\_\_\_\_\_ Structured Strategic Plan: Formalized, written, long range plans covering the process of determining environmental and other outside influences, internal influences, past, present and future performance and objectives, organizational strengths and weaknesses and tactical plans. Plans are typically three years or longer in duration.

(If either Unstructured or Intuitive skip to Part III)

14. Does the plan specifically address:

A. Past performance \_\_\_\_\_ Yes \_\_\_\_\_ No

B. New business development \_\_\_\_\_ Yes \_\_\_\_\_ No

C. New employee development \_\_\_\_\_ Yes \_\_\_\_\_ No

D. New patient development \_\_\_\_\_ Yes \_\_\_\_\_ No

- |  |       |     |       |    |
|--|-------|-----|-------|----|
| E. Customer service/satisfaction             | _____ | Yes | _____ | No |
| F. Human resource development                | _____ | Yes | _____ | No |
| G. Marketing plans                           | _____ | Yes | _____ | No |
| H. Market share                              | _____ | Yes | _____ | No |
| I. Analysis of the competition               | _____ | Yes | _____ | No |
| J. Competitive strategies                    | _____ | Yes | _____ | No |
| K. Legislative/political issues              | _____ | Yes | _____ | No |
| L. Accounts receivable                       | _____ | Yes | _____ | No |
| M. Plans of action                           | _____ | Yes | _____ | No |
| N. Budgets                                   | _____ | Yes | _____ | No |
| O. Revenue sources                           | _____ | Yes | _____ | No |
| P. Organizational strengths and weaknesses   | _____ | Yes | _____ | No |
| Q. Management information system development | _____ | Yes | _____ | No |
| R. Management information system operations  | _____ | Yes | _____ | No |
| S. Management information system evaluation  | _____ | Yes | _____ | No |

15. List the approximate percentage of your plan devoted to each of the following categories:

- |  |       |   |
|--|-------|---|
| A. Financial                                     | _____ | % |
| B. Operations                                    | _____ | % |
| C. Management Information Systems                | _____ | % |
| D. Marketing (including analysis of competition) | _____ | % |
| E. All other areas                               | _____ | % |
| Total  | 100   | % |

16. What business strategies does the plan address regarding Medicare payers?

- |    |       |  |
|----|-------|--|
| A. | _____ | Planned increases in the percentage of Medicare patients |
| B. | _____ | Maintaining the current percentage of Medicare patients  |
| C. | _____ | Planned decreases in the percentage of Medicare patients |
| D. | _____ | Not addressed in the business plan.                      |

17. Who was principally responsible for developing your business plan?
- A. \_\_\_\_\_ CEO and internal staff
- B. \_\_\_\_\_ External accounting firm
- C. \_\_\_\_\_ External law firm
- D. \_\_\_\_\_ Other (specify) \_\_\_\_\_
18. How often is the business plan compared with the hospital's progress?
- A. \_\_\_\_\_ Monthly
- B. \_\_\_\_\_ Quarterly
- C. \_\_\_\_\_ Semi-annually
- D. \_\_\_\_\_ Annually
- E. \_\_\_\_\_ Other (specify) \_\_\_\_\_
19. How often is the business plan revised? \_\_\_\_\_

**Part III. Financial Information** Either attach a copy of the hospital and group's most recent annual balance sheet and income statement or answer the following:

20. For the most recent fiscal year what was the:

	Hospital	Group (if applicable)
A. Net Income	_____	_____
B. Total Annual Revenue	_____	_____
C. Total Assets	_____	_____
D. Total Current Assets	_____	_____
E. Total Current Liabilities	_____	_____



APPENDIX BSURVEY LETTER

<Date>

<Administrator Name>

<Administrator Title>

<Hospital Name>

<Hospital Street Address>

<Hospital City, State, Zip Code>

Dear <Mr./Ms./Dr.> <Administrator Name>

I am a student and doctoral candidate from the Wayne Huizenga School of Business and Entrepreneurship of Nova Southeastern University, and am working on a doctoral dissertation about planning activities in hospitals. I would appreciate it if you could complete the attached research instrument, a short questionnaire regarding your facility's planning activities, and return it in the self-addressed stamped envelope provided.

The purpose of the research is for data gathering and not to make specific recommendations to the facility. The information obtained that will be kept confidential and the analysis will not identify any specific facility by name. If you have any questions regarding this survey I can be reached at either 603-271-4341 or you could contact me via e-mail at [jonmccosh@yahoo.com](mailto:jonmccosh@yahoo.com).

Sincerely,

Jonathan G. McCosh  
59 Onway Lake Road  
Raymond, NH 03077

## APPENDIX C

## PILOT TEST DATA

#	1	2	3	4	5A	5B	5C	5D	5E	5F	5G	5H	6	7
1	7	0	1	1	1	0	1	1	0	1	0	0	43	10
2	53	0	0	1	1	1	0	1	1	0	0	0	99	26
3	52	0	1	1	1	0	0	0	0	0	0	0	66	28
4	62	0	0	1	1	0	1	1	1	0	0	1	49	15
5	51	0	0	1	1	0	1	1	0	1	0	0	54	15
6	42	0	0	1	1	0	1	1	0	1	0	0	129	65
7	43	0	1	1	1	0	0	0	0	0	0	0	99	23
8	48	0	1	1	1	0	0	0	0	0	0	0	127	50
9	122	0	0	1	1	0	1	1	0	1	1	0	100	35
10	125	0	1	0	1	1	1	0	0	1	0	0	267	160
11	50	0	0	1	1	0	1	1	0	1	0	0	511	378
12	150	0	0	0	1	0	0	0	0	0	0	0	401	169
13	106	0	0	1	0	0	0	0	0	0	0	1	60	27
14		0	1	1	1	1	0	1	0	0	0	1	38	
15	50	0	0	1	1	0	0	0	0	0	0	0	49	11
16	38	0	1	0	1	0	0	0	1	0	0	0	39	12
17	63	0	1	1	1	0	0	1	1	1	0	1	42	20
18	48	0	0	1	1	0	1	1	0	0	0	0	72	36
19	63	0	0	1	1	1	0	1	1	0	1	0	30	8
20		0	0	1	1	1	1	1	0	1	1	0	25	7
21	45	0	1	0	1	0	0	1	1	0	0	0	28	7
22	50	0	0	0	1	0	0	0	1	1	0	0	35	6
23	101	0	1	1	1	0	0	1	1	1	0	0	29	6
24	63	0	1	1	1	0	1	0	0	0	0	0	25	4
25	53	0	1	1	1	0	0	0	1	1	0	0	49	16
26	77	0	0	1	1	0	0	1	0	1	0	0	26	9
27	53	0	1	1	1	0	0	0	1	1	0	0	28	6
28	80	0	0	1	1	0	1	1	1	1	0	1	49	22
29	117	0	1	0	1	1	1	1	0	0	0	0	910	315
30		0	0	0	1	1	0	1	0	0	0	0	70	40
31	125	0	0	0	1	0	1	1	0	0	0	1	62	18
32	67	0	0	1	1	0	1	0	1	0	1	0	40	10
33	50	0	1	1	1	1	1	1	1	0	0	0	24	13
34	66	0	1	1	1	1	1	1	1	1	0	0	136	52

#	8	9	10	11	12	13	14A	14B	14C	14D	14E	14F	14G	14H
1	1	0	130	1	1	3	1	1	0	1	1	0	1	1
2	1	0	360	0	2	3	1	1	1	1	1	1	1	1
3	1	0	204	1	3	3	1	1	1	1	1	1	1	1
4	1	0	345	1	2	3	1	1	1	1	1	1	1	1
5	1	0	250	1	3	4	1	1	1	1	1	1	1	1
6	1	0	810	1	2	4	0	1	1	1	1	1	0	1
7	1	0	240	1	2	4	1	1	1	1	0	0	1	1
8	1	0	537	1	3	4	1	1	1	1	1	1	1	1
9	1	0	450	1	3	4	0	1	1	1	1	1	1	1
10	1	0	1528	1	2	3	1	1	1	1	1	1	1	1
11	1	0	4000	1	3	4	1	1	0	1	1	0	1	1
12	0	0	1200	1	3	4	1	1	1	1	1	1	1	1
13	0	0	537	0	3	4	0	1	1	1	1	1	1	1
14	1	0	115	0	3	4	1	1	1	1	1	1	1	1
15	1	1	112	1	3	4	1	1	1	1	1	1	1	1
16	1	0	160	1	3	3	0	1	1	1	1	1	1	1
17	1	0	400	1	3	4	1	1	1	1	1	1	1	1
18	1	0	960	1	2	3	1	1	1	1	1	1	0	0
19	1	1	110	1	2	4	1	1	1		1	1	1	1
20	1	1	65	1	2	4	1	1	1	1	1	1	1	1
21	1	1	70	1	3	4	1	1	1	1	1	1	0	1
22	1	1	185	1	2	3	0	1	1	0	0	1	0	0
23	1	0	310	1	3	4	1	1	1	1	1	1	1	1
24	1	1		1	2	3	0	1	1	0	1	1	1	1
25	1	0	300	1	2	3	0	1	1	1	1	1	1	1
26	1	1	114	1	2	4	1	1	1	1	1	1	1	1
27	1	0	124	0	2	2								
28	1	0	275	1	3	4	0	1	1	1	1	1	1	1
29	1	0	3837	1	3	4	1	1	1	1	1	1	1	1
30	1	0	425	1	2	4	1	1	1	1	1	1	1	1
31	1	0	357	1	3	4	0	1	1	1	1	1	1	1
32	1	1	300	1	2	3	0	1	1	1	1	1	1	1
33	1	1	325	1	2	3	1	1	1	1	1	1	1	1
34	1	0	615	1	2	4	1	1	1	1	1	1	1	1

#	14I	14J	14K	14L	14M	14N	14O	14P	14Q	14R	14S	15A	15B	15C
1	0	1	0	0	1	1	1	1	0	0	0	20	40	5
2	1	1	1	1	1	1	1	1	1	1	1	70	20	5
3	1	1	1	1	1	1	1	1	1	1	1	20	40	10
4	1	1	1	0	1	1	1	1	1	0	0	10	10	5
5	1	1	0	1	1	1	1	0	1	0	0	50	40	5
6	1	1	0	0	1	1	0	1	1	0	0	20	30	20
7	0	1	0	0	0	1	0	1	1	0	0	0	0	0
8	1	1	1	1	1	1	1	1	1	1	1	25	25	10
9	1	1	0	1	1	1	1	1	1	0	0	15	50	5
10	1	1	1	1	1	1	0	1	0	1	1	20	10	10
11	1	1	0	0	1	0	1	1	1	0	1	25	25	0
12	1	1	0	0	1	1	1	1	1	1	1	10	70	5
13	0	1	1	0	0	0	1	0	1	1	1	15	70	10
14	1	1	0	0	1	0	0	1	0	0	0	15	25	10
15	0	1	1	1	1	1	1	1	1	1	1	25	25	10
16	1	1	1	1	1	1	1	1	1	1	0	25	30	5
17	1	1	1	1	1	1	1	1	1	1	1	20	50	5
18	0	1	0	0	1	1	1	1	1	1	1	30	30	30
19	1	1	1	1	1	1	1	1	1	1	1	50	25	15
20	1	1	1	1	1	1	1	1	1	0	1	30	40	5
21	1	1	1	0	1	0	1	1	0	0	0	20	60	0
22	0	1	1	1	1	0	1	1	1	1	1	50	25	25
23	1	1	1	0	1	1	1	1	1	1	1	10	40	10
24	0	0	0	0	1	0	0	1	1	0	0	10	50	10
25	1	1	0	0	1	1	1	1	0	0	0	25	50	0
26	1	1	1	0	1	1	1	1	1	1	1	50	35	5
27														
28	1	1	0	0	1	1	1	1	1	1	1	25	25	10
29	0	1	1	1	1	1	1	1	1	0	0	20	50	10
30	1	1	0	0	1	0	1	1	1	0	0	10	50	10
31	1	0	1	1	1	1	1	1	1	1	0	20	50	10
32	1	1	0	0	1	1	1	1	1	0	0	30	30	10
33	0	1	0	1	1	1	1	1	1	1	1	30	50	5
34	0	0	1	0	1	0	0	0	1	1	0	15	30	10

#	15D	15E	16A	16B	16C	16D	17	18	19	20A	20B
1	10	25	0	1	0	0	1	3	1	1,537	15,626
2	5	0	1	0	0	0	4	12	2	-1,001	31,801
3	15	15	0	0	1	0	1	1	1	18,052	27,064
4	50	25	1	0	0	0	1	1	1	276	32,270
5	5	0	0	0	0	1	1	12	1	1,600	40,000
6	5	25	0	0	0	1	1	3	1	3,400	88,000
7	60	40	0	0	0	1	2	3	1	500	26,900
8	25	15	1	0	0	0	1	12	1	592	31,509
9	5	25	0	0	0	1	2	3	1	5,230	50,750
10	60	0	0	0	0	1	1	3	1	40,417	172,185
11	25	25	0	0	0	1	1	3	3	13,000	371,000
12	10	5	0	0	0	1	1	1	1	7,500	160,000
13	5	0	0	0	0	1	1	1	1	4,843	70,136
14	10	40	0	0	0	1	1	12	2	-593	12,500
15	10	30	0	0	0	1	1	3	1	1,938	12,182
16	10	30	0	0	0	1	1	3	1	1,032	31,577
17	5	20	1	1	1	0	1	1	1	274	34,863
18	10	0	0	0	0	1	1	1	1	3,439	108,782
19	10	0	1	0	0	0	1	1	1	396	9,915
20	5	20	1	0	0	0	1	3	1	180	6,540
21	20	0	0	0	0	1	4	12	2	932	12,010
22	0	0	0	1	0	0	1	12	1	475	13,000
23	20	20	0	1	0	0	1	3	3	1,049	14,187
24	10	20	0	0	0	1	1	3	1	211	7,003
25	25	0	0	0	0	1	1	3	1	607	36,871
26	10	0	0	0	0	1	1	1	1	470	6,000
27										678	9,787
28	25	15	0	1	0	0	1	3	1	1,260	35,150
29	10	10	1	0	0	0	4	12	1	-1,365	394,956
30	20	10	1	0	0	0	4	3	0	7,000	67,000
31	10	10	0	0	0	1	1	3	1	1,947	42,226
32	30	0	0	0	0	1	1	1	1	1,000	32,000
33	5	10	1	0	0	0	1	3	1	2,053	30,227
34	10	35	0	0	0	1	1	6	1	2,961	67,898

#	20C	20D	20E	Profit %
1	21,530	6,879	2,017	7.10%
2	32,988	9,103	3,820	-3.00%
3	25,047	8,962	1,710	72.10%
4	41,159	11,751	4,129	0.70%
5	15,000	10,000	2,700	10.70%
6	62,000	21,000	8,000	5.50%
7	36,500	7,100	2,900	1.40%
8	45,509	13,320	7,582	1.30%
9	61,500	10,500	7,500	8.50%
10	123,036	51,790	17,812	32.90%
11	324,000	69,000	46,000	4.00%
12	92,000	75,000	12,000	8.20%
13	77,301	37,186	9,489	6.30%
14	14,035	3,391	1,366	-4.20%
15	7,644	4,987	1,136	25.40%
16	37,967	12,959	3,032	2.70%
17	39,914	9,257	4,420	0.70%
18	50,705	21,536	13,625	6.80%
19	12,481	3,495	5,977	3.20%
20	4,800	1,700	805	3.80%
21	7,199	1,530	1,393	13.00%
22	17,900	2,100	2,800	2.70%
23	16,031	5,960	1,293	6.50%
24	5,325	2,265	426	4.00%
25	42,976	4,711	2,285	1.40%
26	7,000	1,450	670	6.70%
27	8,981	2,013	1,149	7.60%
28	16,604	6,352	3,226	7.60%
29	197,576	76,033	57,299	-0.70%
30	46,700	21,698	4,690	15.00%
31	17,063	6,191	5,590	11.40%
32	18,000	8,000	3,500	5.60%
33	42,372	12,364	5,200	4.90%
34	108,493	21,016	11,212	2.70%

APPENDIX DRESEARCH INSTRUMENT

Please complete the following questionnaire to be used for a doctoral dissertation regarding hospital strategic planning activities and return it in the attached envelope by 11/21/03. Individual responses to this survey will be kept confidential. If you have any further questions or require any clarifications regarding what is being asked for in this survey please contact the researcher, Jonathan G. McCosh, at 603-271-4341. Thank you.

Part I. Hospital Profile

Hospital Name \_\_\_\_\_ Phone \_\_\_\_\_

Person Surveyed \_\_\_\_\_ Title \_\_\_\_\_

1. How many years has the hospital been in operation? \_\_\_\_\_
2. Is the hospital \_\_\_\_\_ For Profit \_\_\_\_\_ Not for Profit
3. Is the hospital \_\_\_\_\_ Public \_\_\_\_\_ Private
4. Is the hospital \_\_\_\_\_ A single entity \_\_\_\_\_ Part of a group
5. What type of services does the organization provide? (check all applicable)
 

_____ Hospital	_____ Skilled Nursing
_____ Therapy/Rehab	_____ Home Health Agency
_____ Physician Group	_____ Assisted Living
_____ Medical Laboratory	_____ Other (specify) _____
6. How many licensed beds does the hospital have, not counting bassinets? \_\_\_\_\_
7. What is the average patient census for the hospital? \_\_\_\_\_
8. How would you describe this hospital? \_\_\_\_\_ Community \_\_\_\_\_ Specialty
9. Has the facility been designated a Critical Access Hospital? \_\_\_\_\_ Yes \_\_\_\_\_ No
10. How many full time equivalent employees (FTE) do you have? \_\_\_\_\_

Part II. Hospital Planning Activities

11. Is your plan \_\_\_\_\_ Written \_\_\_\_\_ Unwritten
12. What is the duration of the plan?  
 \_\_\_\_\_ One year or less  
 \_\_\_\_\_ More than one year and less than three  
 \_\_\_\_\_ Three years or more
13. Which of the following best describes the kind of plan your hospital has?  
 \_\_\_\_\_ Unstructured: No measurable structured planning. Hospital functions to do the best job on a day-to-day basis.  
 \_\_\_\_\_ Intuitive Plan: Informal plans developed and implemented based on the intuition and experience of the administrator/CEO. They are not written, are no longer than one year duration and rely on the hospital's present environment.  
 \_\_\_\_\_ Structured Operational Plan: Written short-range operational budgets and plans of action for the current fiscal period.  
 \_\_\_\_\_ Structured Strategic Plan: Formalized, written, long range plans covering the process of determining environmental and other outside influences, internal influences, past, present and future performance and objectives, organizational strengths and weaknesses and tactical plans. Plans are typically three years or longer in duration.
- (If either Unstructured or Intuitive skip to Part III)
14. Does the plan specifically address:
- |                                  |           |          |
|----------------------------------|-----------|----------|
| A. Past performance              | _____ Yes | _____ No |
| B. New business development      | _____ Yes | _____ No |
| C. New employee development      | _____ Yes | _____ No |
| D. New patient development       | _____ Yes | _____ No |
| E. Customer service/satisfaction | _____ Yes | _____ No |
| F. Human resources               | _____ Yes | _____ No |



- |  |           |          |
|--|-----------|----------|
| G. Marketing plans                           | _____ Yes | _____ No |
| H. Market share                              | _____ Yes | _____ No |
| I. Analysis of the competition               | _____ Yes | _____ No |
| J. Competitive strategies                    | _____ Yes | _____ No |
| K. Legislative/political issues              | _____ Yes | _____ No |
| L. Accounts receivable                       | _____ Yes | _____ No |
| M. Plans of action                           | _____ Yes | _____ No |
| N. Budgets                                   | _____ Yes | _____ No |
| O. Revenue sources                           | _____ Yes | _____ No |
| P. Organizational strengths and weaknesses   | _____ Yes | _____ No |
| Q. Management information system development | _____ Yes | _____ No |
| R. Management information system operations  | _____ Yes | _____ No |
| S. Management information system evaluation  | _____ Yes | _____ No |
| T. Medicare Utilization                      | _____ Yes | _____ No |

15. List the approximate percentage of your plan devoted to each of the following categories:

- |  |         |
|--|---------|
| A. Financial                                     | _____ % |
| B. Operations                                    | _____ % |
| C. Management Information Systems                | _____ % |
| D. Marketing (including analysis of competition) | _____ % |
| E. All other areas                               | _____ % |
| Total  | 100 %   |

16. What business strategies does the plan address regarding Medicare payers?  
(Select all that apply)

- A. \_\_\_\_\_ Planned increases in the percentage of Medicare patients
- B. \_\_\_\_\_ Maintaining the current percentage of Medicare patients
- C. \_\_\_\_\_ Planned decreases in the percentage of Medicare patients
- D. \_\_\_\_\_ Not addressed in the business plan.

17. Who was principally responsible for developing your business plan?

- E. \_\_\_\_\_ CEO and internal staff

- F. \_\_\_\_\_ External accounting firm
- G. \_\_\_\_\_ External law firm
- H. \_\_\_\_\_ Consultant
- I. \_\_\_\_\_ Other (specify) \_\_\_\_\_

18. How often is the business plan compared with the hospital's progress?

- A. \_\_\_\_\_ Monthly
- B. \_\_\_\_\_ Quarterly
- C. \_\_\_\_\_ Semi-annually
- D. \_\_\_\_\_ Annually
- E. \_\_\_\_\_ Other (specify) \_\_\_\_\_

19. How often is the business plan revised? \_\_\_\_\_

**Part III. Financial Information** Either attach a copy of the hospital and group's most recent annual balance sheet and income statement or answer the following:

20. For the most recent fiscal year what was the Hospital's

- A. Net Income \_\_\_\_\_
- B. Total Annual Revenue \_\_\_\_\_
- C. Total Assets \_\_\_\_\_
- D. Total Current Assets \_\_\_\_\_
- E. Total Current Liabilities \_\_\_\_\_

APPENDIX E:  
RESEARCH DATA

#	1	2	3	4	5A	5B	5C	5D	5E	5F	5G	5H	6	7
1		0	1	1	1	0	0	1	1	0	0	0	123	85
2	72	0	0	0	1	1	1	1	0	1	0	0	113	40
3	100	0	0	0	1	1	1	1	1	0	0	1	137	70
4	53	0	0	0	1	1	1	1	1	0	0	0	241	190
5		0	0	1	1	1	0	1	0	0	0	0	70	30
6	111	0	0	1	1	1	0	1	0	0	0	0	169	79
7		0	0	0	1	1	0	1	1	0	0	0	108	72
8	97	0	0	1	1	1	1	1	0	0	0	0	178	66
9	85	0	0	1	1	1	1	1	0	0	0	0	112	42
10	95	0	0	0	1	1	0	0	1	0	1	0		
11	112	0	1	1	1	1	1	1	1	0	0	0	180	
12	110	0	0	0	1	1	0	1	0	1	0	0	182	160
13	100	0	0	1	1	1	1	1	1	0	0	0	121	
14	110	0	0	0	1	1	1	1	1	0	0	1	233	110
15	70	0	0	1	1	1	1	1	1	0	1	0	32	7
16	105	0	0	1	1	1	1	1	0	1	0	1	100	69
17	51	0	1	1	1	1	1	1	1	1	0	0	49	26
18	107	0	0	1	1	1	1	1	0	0	1	0	188	87
19	21	1	0	1	1	1	1	0	1	1	0	0	60	45
20	41	0	1	0	1	1	1	1	0	1	0	0	28	15
21	90	0	1	1	1	1	0	0	1	0	0	1	100	85
22	77	0	0	0	1	1	1	1	0	0	0	0	25	13
23	30	0	0	0	1	1	1	1	1	1	0	0	48	27
24	30	0	0	1	1	0	1	1	1	0	0	0	49	24
25	113	0	0	0	1	1	1	1	0	0	0	0	79	49
26	75	0	0	1	1	1	1	1	1	0	1	0	49	25
27	12	0	1	0	1	0	0	0	0	0	0	0	100	94
28	47	0	0	0	1	1	1	1	0	0	0	0	64	34
29	28	0	0	0	1	1	1	1	0	0	0	0	109	62
30	75	0	0	0	1	1	1	1	0	0	0	0	49	27
31	100	0	0	1	1	1	1	1	0	0	0	0	35	14
32	80	0	0	0	1	0	0	0	0	0	0	0	60	20
33	90	0	0	0	1	0	1	1	0	0	0	0	726	632
34	95	0	1	0	1	1	1	1	1	1	1	0	15	7
35	50	0	0	1	1	1	1	1	1	1	0	0	25	14
36	130	0	0	0	1	1	1	1	1	1	0	0	300	249

#	1	2	3	4	5A	5B	5C	5D	5E	5F	5G	5H	6	7
37	5	0	0	0	0	0	0	0	0	0	0	1	26	16
38	113	0	0	0	1	1	1	1	1	1	1	0	212	
36	130	0	0	0	1	1	1	1	1	1	1	0	200	167
40	90	0	0	1	1	1	1	1	0	1	0	0	180	85
41	105	0	0	0	1	1	1	1	1	1	1	0	304	167
42	98	0	0	1	1	1	1	1	1	1	1	0	92	38
43	71	0	0	0	1	1	0	1	0	0	0	0	41	36
44	75	0	0	0	1	1	0	1	1	0	1	0	48	34
45	62	0	0	0	1	1	1	1	1	1	1	0	40	27
46	100	0	1	1	1	0	0	0	0	1	0	0	150	80
47		0	0	1	1	1	0	1	1	1	1	0	79	
48	71	0	0	1	1	0	1	0	1	0	0	0	52	20
49	100	0	0	0	1	1	1	1	1	1	1	0	100	80
50	50	0	1	0	1	0	0	0	1	0	0	1	88	150
51	50	1	0	0	1	0	0	0	0	0	0	0	116	96
52	100	0	0	0	1	0	1	0	0	1	0	0	268	200
53	200	0	1	1	1	1	1	1	1	1	0	0	350	85
54	50	0	1	0	1	1	0	1	1	1	1	0	392	352
55	40	0	0	1	1	1	0	1	0	0	0	0	36	15
56	84	0	0	1	1	0	0	0	0	0	0	0	58	65
57	85	0	1	0	1	1	1	1	1	1	1	0	99	55
58	120	0	0	0	1	1	1	1	0	1	0	0	600	545
59	30	0	0	0	1	1	1	1	0	0	0	0	296	255
60	100	0	0	0	1	1	1	1	1	1	0	1	222	155
61	80	0	0	1	1	1	1	1	0	1	1	0	21	9
62	112	0	0	1	1	1	0	1	1	1	1	0	189	136
63	94	0	0	0	1	1	0	1	0	1	0	0	31	18
64	131	0	0	0	1	1	1	1	1	1	1	0	337	266
65	38	0	0	0	1	1	1	1	1	1	1	0	324	260
66	113	1	0	0	1	1	1	1	0	0	0	0	351	230
67	110	0	0	0	1	1	0	1	0	1	0	0	125	185
68	100	0	0	0	1	1	1	1	1	1	0	1	119	84
69	117	0	0	0	1	0	1	1	0	1	0	1	200	175
70		0	1	0	1	1	0	1	1	1	1	0	16	7
71	90	0	0	1	1	1	0	1	0	0	0	0		
72	90	0	0	0	1	1	1	1	1	1	0	0	25	200
73	169	0	0	0	1	0	0	0	0	0	0	0	149	54
74		0	0	1	1	1	1	1	0	0	0	1	70	34
75	51	0	1	0	1	1	0	1	1	0	0		260	260
76		0	1	1	1	1	1	1	0	0	0	1	65	32

#	8	9	10	11	12	13	14A	14B	14C	14D	14E	14F	14G	14H
1	1	0	850	1	2	4	1	1	1	1	1	1	1	1
2	1	0	456	1	3	4	1	1	1	1	1	1	0	1
3	1	0	900	1	1	3	0	1	1	1	1	1	1	1
4	1	0	1100	1	1	4	0	1	1	1	1	1	0	1
5	1	0	415	1	2	4	1	1	1	1	1	1	1	1
6	1	0	681	1	3	3	1	1	1	1	0	1	0	1
7	1	0	415	1	3	4	1	1	1	1	1	1	1	1
8	1	0	915	1	3	4	1	1	1	1	1	1	1	1
9	1	0	530	1	3	3	0	1	1	1	1	1	1	0
10	1	0		1	3	3	0	1	1	1	0	1	1	1
11	1		1750	1	3	4	1	1	1	1	1	1	1	1
12	1	0	960	1	2	4	0	1	1	1	1	0	0	0
13	1	0	420	1	2	3	1	1	0	1	1	0	1	1
14	1	0	1500	1	3	4	1	1	1	1	1	1	1	1
15	1	1	260	1	3	4	0	1	1	1	1	1	1	1
16	1	0	550	1	3	4	1	1	1	1	1	1	1	1
17	1	0	310	1	3	4	1	1	0	1	1	0	1	1
18	1	0	850	1	3	4	1	1	1	1	1	1	1	1
19	0	0	150	1	1	3	1	1	1	1	1	1	1	1
20	1	0	172	0	1	2								
21	0	0	270	1	3	4	0	1	0	0	1	0	0	0
22	1	1	155	1	2	4	1	1	1	1	1	1	1	1
23	1	0	310	1	2	4	1	1	1	1	1	1	1	1
24	1	0	325	1	3	3	1	1	1	1	1	0	0	0
25	1	0	373	1	2	3	1	1	1	1	1	1	1	1
26	1	0	462	1	2	4	0	1	0	1	1	0	0	1
27	0	0	470	1	1	3	0	1	1	1	1	1	1	1
28	1	0	414	1	2	4	0	1	1	1	1	1	1	1
29	1	0	600	1	2	4	1	1	0	1	1	1	1	1
30	1	0	423	1	3	3	1	1	0	1	1	1	1	0
31	1	0		1	2	2								
32	0	0	250	1	2	3	1	1	1	1	1	1	1	0
33	0	0	10000	1	3	4	1	1	1	1	1	1	1	1
34	1	1	160	1	2	3	0	1	1	1	1	1	1	0
35	1	1	270	1	3	4	1	1	0	1	1	0	1	1
36	1	0	1560	1	3	4	0	1	1	1	1	1	1	1

#	8	9	10	11	12	13	14A	14B	14C	14D	14E	14F	14G	14H
37	0	0	19	0	1	1								
38	1	1	850	1	2	4	0	1	1	1	1	1	1	1
36	1	0	1045	1	3	4	0	1	1	1	1	1	1	1
40	1	0	2400	1	3	4	1	1	1	1	1	1	1	1
41	1	0		1	2	3	0	0	0	0	1	0	1	1
42	1	0	287	1	1	4	1	1	1	1	1	1	1	1
43	1	0	172	1	2	3	1	1	0	1	0	0	1	1
44	1	0	230	1	3	3	1	1	0	1	0	0	0	1
45	1	0	500	1	2	3	1	1	1	1	1	1	1	1
46	1	0	1100	1	3	4	1	1	1	1	1	1	1	1
47	1	0	595	1	1	3	1	1	1	1	1	1	1	0
48	1	0	400	1	2	4	1	1	1	1	1	1	1	1
49	1	0	1338	1	2	3	1	1	1	1	1	1	1	1
50	0	0	410	1	3	3	1	1	1	1	1	1	0	0
51	0	0	150	1	1	3	1	1	1	1	1	1	1	1
52	1	0	980	1	3	4	1	1	1	1	1	1	1	1
53	0	0	2900	1		1								
54	1	0	2500	1	1	3	1	1	1	1	1	1	0	1
55	1	0	220	1	2	3	1	1	1	1	1	1	1	1
56	0	0	101	1	3	4	1	1	1	1	1	1	1	0
57	1	0	1000	1	2	4	1	1	1	1	1	1	1	1
58	1	0	4850	1	2	4	0	1	1	1	1	1	0	1
59	0	0	1000	1	2	3	1	1	1	1	1	1	1	0
60	1	0		1	3	4	1	1	0	0	1	1	1	1
61	1	1	271	1	3	4	1	1	1	1	1	1	1	1
62	1	0	1040	1	2	4	1	1	1	1	1	1	1	1
63	1	0	250	1	3	4	1	1	1	1	1	1	1	1
64	1	0	2724	1	3	4	1	1	1	1	1	1	0	1
65	1	0	2510	1	3	4	1	1	1	1	1	1	0	1
66	1	0		1	3	4	1	1	0	1	1	1	1	1
67	1	0	640	1	2	4	0	1	1	1	1	0	0	0
68	1	0		1	3	4	1	1	0	0	1	1	1	1
69	1	0	2500	1	2	3	0	1	0	1	1	0	1	1
70	1	1	100	1	2	4	1	1	1	1	1	1	0	0
71	1	0		1	3	3	1	1	0	1	1	1	1	1
72	1	0	900	1	1	3	1	1	1	1	1	1	1	1
73	0	0	299	1	2	4	0	1	0	1	1	1	1	1
74	1	0	530	1	2	4	1	1	1	1	1	1	1	1
75	0	0	302	1	3	3	1	1	1	1	1	1	0	0
76	1	0	380	1	2	4	1	1	1	1	1	1	1	1

#	14I	14J	14K	14L	14M	14N	14O	14P	14Q	14R	14S	14T	15A	15B
1	1	1	0	0	1	1	1	1	1	0	0	1	50	20
2	1	1	1	0	1	0	0	1	0	0	0	0	20	60
3	1	1	1	0	1	1	1	1	1	0	0	0	25	10
4	1	1	1	1	1	1	1	1	1	1	1	1	30	30
5	1	1	1	0	1	1	1	1	1	0	1	0	20	20
6	0	1	0	0	1	1	1	1	1	1	0	0	20	35
7	1	1	1	1	1	1	1	1	1	0	0	1	40	35
8	1	1	0	1	1	1	1	1	1	1	1	1	10	40
9	1	0	0	0	0	0	0	1	1	1	0	0	15	15
10	0	0	1	1	1	1	1	1	1	1	1	1	35	50
11	1	1	1	1	1	1	1	1	1	1	1	1	25	25
12	0	0	0	0	0	0	0	0	0	0	0	0		
13	1	1	0	0	1	1	1	1	0	0	0	1	60	30
14	1	1	1	0	1	1	1	1	1	0	0	0	20	20
15	0	1	0	0	1	1	1	1	1	1	1	1	10	50
16	1	1	1	1	1	1	1	1	1	1	1	1	30	30
17	1	1	0	0	1	0	1	1	1	0	0	1	30	10
18	0	1	1	0	1	1	1	0	1	1	1	0	25	10
19	1	1	1	0	1	1	0	1	1	1	1	1	5	70
20														
21	0	0	0	0	0	0	0	0	0	1	0	1	0	85
22	1	1	1	1	1	1	1	1	1	1	1	1	50	30
23	1	1	0	0	1	1	1	1	1	1	0	0	40	25
24	0	1	1	1	1	1	1	1	1	1	1	0	50	45
25	1	1	1	1	1	1	0	1	1	0	0	1	40	30
26	0	0	0	0	1	1	0	1	1	0	0	0	15	80
27	0	1	1	1	1	1	1	1		1	1	1	20	30
28	1	1	0	0	1	0	0	1	0	0	0	0		
29	1	1	1	1	1	1	1	1	1	0	0	1	20	20
30	0	1	1	1	1	1	1	1	0	1	0	0	20	25
31														
32	0	0	0	0	1	1	0	1	1	1	1	0	40	20
33	1	1	1	1	1	1	1	1	1	1	1	1	35	35
34	1	1	0	0	1	0	0	1	1	1	0	0	20	50
35	0	0	0	0	0	1	0	0	1	0	0	0	20	20
36	1	1	1	1		1	1	1	1	0	1	1		35

#	14I	14J	14K	14L	14M	14N	14O	14P	14Q	14R	14S	14T	15A	15B
37														
38	1	1	1	1	1	1	1	1	1	1	0	1	20	40
36	1	1	1	1		1	1	1	1	0	1	1		35
40	1	1	1	0	0	1	1	1	1	0	1	1	35	15
41	0	0	0	0	1	0	0	0	1	0	0	0	15	35
42	0	1	1	0	1	1	1	1	1	1	0	1	15	50
43	1	0	0	0	1	1	1	1	0	0	0	1	40	30
44	1	1	0	0	1	0	1	1	0	0	0	1	20	20
45	1	1	0	0	1	1	1	1	1	1	1	0	25	25
46	1	1	1	1	1	1	1	1	1	1	0	1	10	50
47	0	1	1	1	1	1	1	1	1	1	1	1		
48	0	0	0	0	1	1	0	0	1	1	1	0	20	20
49	1	1	1	0	1	1	1	0	1	0	0	0	40	40
50	0	0	1	0	1	0	0	1	1	1	0	0	5	10
51	1	1	0	1	1	1	1	1	0	0	0	1	50	15
52	1	1	0	1	1	1	1	1	1	1	1	1	20	25
53														
54	0	0	1	1	1	1	1	1	1	1	1	0	15	45
55	1	1	1	1	1	0	1	1	1	1	1	1	20	50
56	0	0	0	1	1	1	1	1	1	1	1	0	10	10
57	1	1	1	0	1	1	1	0	1	1	1	1	15	40
58	1	1	0	0	1	0	0	0	1	0	0	1	30	10
59	0	1	0	0	1	1	1	1	1	1	1	1	25	60
60	1	1	1	0	1	1	1	1	0	0	0	1	25	25
61	1	1	1	0	1	0	1	1	0	0	0	1	20	0
62	1	1		1	1	1	1	1	1	1	1	1	60	10
63	1	1	1	0	1	1	1	1	1	1	1	0	30	30
64	1	1	0	0	1	0	1	1	0	0	0	1	10	75
65	1	1	0	0	1	0	1	1	0	0	0	1	10	75
66	1	0	0	0	1	0	1	1	1	1	0	1	15	45
67	0	0	0	0	0	0	0	0	0	0	0	0		
68	1	1	1	0	1	1	1	1	0	0	0	1	25	25
69	1	1	1	1	1	1	1	0	1	1	0	0	30	30
70	0	1	1	1	1	1	1	1	1	0	0	1	30	35
71	0	0	0	1	1	1	1	1		1	0	0	25	50
72	1	1	0	0	1	1	1	1	0	0	0	0	20	50
73	1	1	1	1	1	1	1	1	1	1	1	0	20	25
74	1	1	1	1	1	1	1	1	1	1	1	1	20	10
75	0	1	1	1	1	1	1	1	1	1	1	1	20	60
76	0	1	1	0	0	1	1	1	1	0	1	1		



#	15C	15D	15E	16A	16B	16C	16D	17	18	19	20A	20B
1	0	10	20	1	0	0	0	1	3	1	200	65,000
2	1	5	14	0	0	0	1	1	12	3	46,520	84,032
3	5	5	55	1	0	0	0	1	1		(528)	85,701
4	10	25	25	0	0	0	1	1	12	12	35	120,000
5	20	20	20	0	0	0	1	1	1	12	2,500	41,100
6	15	10	20	0	1	0	0	1	6	12	1,231	73,342
7	5	10	10	1	0	0	0	1	1	12	4,500	45,000
8	10	40	0	0	1	0	0	1	3	3	6,151	97,696
9	15	20	35	0	0	0	1	4	6	36	1,579	
10	10	5	0	1	0	0	0	1	1	3	2,175	22,657
11	15	15	20	1	0	0	0	1	12		3,416	126,738
12				0	0	0	1	1	3	12	2,969	92,066
13	0	10	0	1	1	0	0	1	3		(1,428)	40,000
14	5	20	35	0	0	0	1	1	12	12	2,700	128,000
15	10	10	20	0	0	0	1	4	1	8	240	28,500
16	20	20	0	1	0	0	0	1	1	12	(346)	39,636
17	10	50	0	0	0	0	1	1	12		26,298	27,613
18	20	20	15	0	1	0	0	1	3	12	1,527	14,748
19	5	10	10	0	0	0	1	1	1	12	(827)	13,450
20								1	3	12	743	17,835
21	10	0	5	0	0	0	1	1	12		0	
22	10	10	1	0	0	0	0	1	1	12	317	988
23	15	15	5	0	0	0	1	1	6	12	1,577	31,852
24	5	0	0	0	0	0	1	1	1	12	(600)	27,000
25	15	5	10	0	1	0	0	1	3	12	(1,141)	41,648
26	1	4	0	0	0	0	1	5	3	36	(926)	45,200
27	10	10	30	0	1	0	0	1	3	12	617	33,957
28				0	0	0	1	1	6		2,587	50,528
29	10	10	40	0	1	0	0	1	1	24	329	1,484
30	10	5	40	0	1	0	0	1	1	12	195	66,411
31											688	36,152
32	20	20	0	0	0	0	1	5	3	12	1,000	19,000
33	10	15	5	1	0	0	0	1	1	12	43,600	1,268,000
34	10	10	10	0	0	0	1	1	3	12	13,563	16,838
35	20	40	0	1	0	0	0	1	3	60	405	23,767
36	35	10	20	1	0	0	0	1	3	12	(2,249)	104,068

#	15C	15D	15E	16A	16B	16C	16D	17	18	19	20A	20B
37											2	600
38	10	10	20	1	0	0	0	1	3	12	500	81,000
36	35	10	20	1	0	0	0	1	3	12	(1,499)	69,378
40	15	20	15	1	0	0	0	1	6	18	3,349	156,577
41	5	5	40	0	0	0	1	1	1	12	6,133	209,337
42	15	10	10	1	0	0	0	1	12	12	84	
43	0	20	10	0	0	0	1	1	1	12	193	15,795
44	0	50	10	1	1	0	0	4	3	60	(2,165)	21,292
45	25	10	15	1	1	0	0	1	3	12	862	29,798
46	20	10	10	0	0	0	1	1	12	12	367	76,056
47				0	0	0	1	1	3	6	3,267	79,133
48	20	20	20	0	0	0	1	1	3	12	1,300	40,000
49	5	5	10	0	0	0	1	1	3	12	6,166	164,829
50	5	0	80	0	0	0	1	1	12	36	20,000	10,000
51	0	35	0	1	0	0	0	1	1	1	12,517	34,315
52	10	10	35	0	0	0	1	1	5	12	(3,000)	120,000
53											(11,000)	360,000
54	10	0	30	1	0	0	0	1	12	12	1,000	
55	10	20	0	1	0	0	0	4	12	12	(1,200)	24,000
56	10	10	60	0	0	0	1	1	6	12	0	11,000
57	20	15	10	0	0	0	1	5	12	12	4,339	100,823
58	5	10	45	0	0	0	1	1	3	36	23,387	538,408
59	5	10	0	0	0	0	1	1	1	12	(955)	99,942
60	0	50	0	0	1	0	0	1	3	12	6,654	174,142
61	0	30	50	1	0	0	0	5	1	36	1,333	9,376
62	10	10	10	1	0	0	0	1	3	6	850	114,000
63	10	10	20	0	0	0	1	1	3	36	(1,675)	21,245
64	5	10	0	1	1	0	0	1	12	12	3,644	630,198
65	5	10	0	1	1	0	0	1	12	12	3,231	558,854
66	5	25	10	0	0	0	1	1	3	12	(3,120)	97,144
67				0	0	0	1	1	3	12	1,980	61,378
68	0	50	0	0	1	0	0	1	3	12	2,428	59,052
69	5	5	30	0	0	0	1	1	1	12	7,200	210,000
70	5	0	30	1	0	0	0	1	12	12	160	10,093
71	5	10	10	0	0	0	1	1	1	12	10,200	105,000
72	0	10	20	0	0	0	1	1	3	12	6,000	130,000
73	15	40	0	0	0	0	1	1	1	12	22,099	25,249
74	10	20	40	1	0	0	0	1	3	6	1,700	52,000
75	20	0	20	0	1	0	0	1	1	12	528	
76				1	0	0	0	1	1	12	180	

#	20C	20D	20E	Profit %
1	23,039			0.87%
2	84,711	16,876	5,411	54.92%
3	71,402	44,193	10,771	-0.74%
4	61,600	37,300	39,100	0.06%
5	54,000	11,600	4,000	4.63%
6	90,388	27,436	16,457	1.36%
7	16,300	6,300	4,700	27.61%
8	148,174	29,536	19,290	4.15%
9	50,712			3.11%
10	68,450	28,349	3,931	3.18%
11	142,625	40,435	15,736	2.40%
12	14,910			19.91%
13	78,000	18,000	10,400	-1.83%
14	66,000	24,000	5,600	4.09%
15	39,170	14,919	4,589	0.61%
16	16,232			-2.13%
17	18,660	9,882	9,608	140.93%
18	133,678	49,365	17,675	1.14%
19	13,340			-6.20%
20	15,153	6,805	2,830	4.90%
21	35,200			0.00%
22	9,200	3,900	1,500	3.45%
23	23,318	7,506	6,579	6.76%
24	12,900			-4.65%
25	33,000	9,000	11,000	-3.46%
26	73,300	11,300	7,300	-1.26%
27	27,089	11,056	8,355	2.28%
28	28,174	1,032	8,723	9.18%
29	66,000	18,000	5,000	0.50%
30	39,842	9,135	4,173	0.49%
31	26,969	7,914	4,058	2.55%
32	25,000			4.00%
33	1,251,000	380,000	232,000	3.49%
34	26,716	5,164	1,794	50.77%
35	28,406	5,298	2,785	1.43%
36	26,830			-8.38%

#	20C	20D	20E	Profit %
37	1,458	298	522	0.14%
38	60,000	120,000	10,000	0.83%
36	24,147			-6.21%
40	164,993	110,619	31,410	2.03%
41	209,661	50,126	26,345	2.93%
42	43,286	9,992	5,464	0.19%
43	18,460	5,454	2,812	1.05%
44	11,087	4,337	5,872	-19.53%
45	32,405	9,101	10,300	2.66%
46	57,584		7,068	0.64%
47	69,717	27,212	9,588	4.69%
48	17,000	8,900	4,800	7.65%
49	264,781	53,189	20,315	2.33%
50	80,085			24.97%
51	11,902	4,930	7,795	105.17%
52	83,000	32,000	27,000	-3.61%
53	114,157			-9.64%
54	60,500			1.65%
55	17,900	6,900	2,200	-6.70%
56	16,000	14,500	3,500	0.00%
57	62,726	26,589	8,083	6.92%
58	535,328	167,315	87,121	4.37%
59	58,345	21,169	14,882	-1.64%
60	204,632	42,015	29,576	3.25%
61	27,804	4,164	3,798	4.79%
62	131,400	75,000	23,300	0.65%
63	22,892	5,375	5,435	-7.32%
64	523,639	158,303	137,766	0.70%
65	464,359	140,381	122,169	0.70%
66	348,633			-0.89%
67	9,940			19.92%
68	37,604	14,705	10,351	6.46%
69	164,000	56,000	30,500	4.39%
70	13,554	2,939	1,986	1.18%
71	183,936	137,196	19,981	5.55%
72	114,000	28,000	34,000	5.26%
73	28,135	3,612	5,020	78.55%
74	49,000	22,000	6,400	3.47%
75	14,407			3.66%
76	19,100			0.94%

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