Impact of Accreditation Level in Hospital System on Quality of Care and Financial Performance

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Abstract

This paper explores how hospital accreditation programs impact hospital performance at a system level. This study utilized systems theory and institutional theory to develop the theoretical framework that explains the relationships between the hospital system's accreditation level, quality performance, and financial performance. Data from American hospitals were obtained from the Centers for Medicare and Medicaid Services (CMS), the American Hospital Association (AHA), the U.S. Department of Agriculture (USDA), and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) to examine the hypotheses. The research incorporated 296 hospital systems after converting information from individual hospitals. The study identified a positive correlation between the system's accreditation level and financial performance. Instead of a linear relationship, the empirical results also suggest a U-shaped relationship between the system's accreditation level and quality performance. The study revealed a partial mediation effect of the system's financial performance between the system's accreditation level and quality performance.

Keywords: Hospital System; Accreditation Program; Quality of Care; Institutional Theory; Systems Theory

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Table of Contents

Abstract i

Acknowledgment ii

LIST OF TABLES v

LIST OF FIGURES vi

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: LITERATURE REVIEW 4

Healthcare Systems versus Hospital Systems 4

Quality of Care 7

Influencing factors of healthcare quality 8

Impacts of quality of care 10

Hospital Accreditation 11

Accreditation 11

Hospital accreditation program 12

Hospital accreditation incentives 14

Impacts of hospital accreditation 15

Hospital System Incentives and Influences 17

CHAPTER 3: CONCEPTUAL FRAMEWORK 22

Institutional Theory Review 22

Institutional theory and hospital accreditation 24

Systems Theory and SIPOKS Method Review 26

Accreditation in a Hospital System and Financial Performance 29

Accreditation in a Hospital System and Quality of Care 32

the Mediating Role of System Financial Performance 35
CHAPTER 4: DATA AND METHODOLOGY 37
Data Collection 37
Variable Measures 42
Preliminary Check 43
Hypotheses Testing and Results 49
CHAPTER 5: DISCUSSION 55
Analysis of the Findings 55
Accreditation and Financial Performance in a Hospital System 58
Accreditation and Quality Performance in a Hospital System 59
Financial Performance as the Mediator 61
Additional Findings 62
Managerial Implications 63
Limitations and Future Research 64
CHAPTER 6: CONCLUSION 67
REFERENCES 68
APPENDICES 79
Appendix A: Measures Included in Calculating Overall Hospital Rating 79
Appendix B: Histograms With Normal Curve Overlay of Individual Hospital Dependent Variables 80
Appendix C: Histograms With Normal Curve Overlay of Hospital System Dependent Variables 82

LIST OF TABLES

Table 1 Characteristics of Major Healthcare System Models 5

Table 2 Descriptive Statistics of Hospitals 44

Table 3 Accreditation Status on Hospital Quality and Financial Performances 45

Table 4 Hospital System Membership on Hospital Quality and Financial Performances 46

Table 5 Characteristics of Hospital Systems 48

Table 6 Correlation Matrix for Variables in the Model 48

Table 7 Accreditation Level on System Net Patient Revenue 49

Table 8 Accreditation Level on System Quality Performance 50

Table 9 Curve Fit of %Accreditation and AVGRATING (linear and quadratic) 51

Table 10 Accreditation Level on System Quality Performance Revised 52

Table 11 Mediating Effect of System Financial Performance 54

LIST OF FIGURES

Figure 1 A Hospital System Relationship Diagram..... 6

Figure 2 The Proposed Conceptual Framework 22

Figure 3 Healthcare Systems Relationship Model..... 28

Figure 4 Healthcare Systems in the Hospital System Relationship Model 33

Figure 5 Flow Map of Data Collection and Processing Procedure..... 37

Figure 6 Scatterplot and Fit Plots of %Accreditation with AVGRATING 51

CHAPTER 1: INTRODUCTION

The healthcare industry has witnessed a rapid evolution and transformations during the past decades and has become one of the largest industries in most countries. Globally, countries have generated and applied diverse healthcare financing models to cover more residences and to deal with financial strains ranging from total national payments to out-of-pocket (Glied, 2008). Besides establishing financing systems, countries have also developed standards to monitor the performance of healthcare providers (e.g., the Affordable Care Act (ACA) implemented in the United States in 2010). For both central governments and individual hospitals, the quality of care has become the focal topic in measurement, management, and improvement scenarios (World Health Organization, n.d.). Discussions regarding the quality of care have also dominated research in recent years. Some research has discussed and developed measuring structures and instruments for quality of care (Campbell et al., 2000; Isaac et al., 2010). Studies have investigated factors determining the quality of care at the customer, organizational, and market levels (Becker et al., 2015; Elliott et al., 2010; Lehrman et al., 2010). Empirical research evidence shows a positive linkage between quality of care and hospital financial performance (Harkey & Vraciu, 1992; Richter & Muhlestein, 2017).

In order to promote and award good quality care, accreditation organizations such as the Joint Commission (TJC), have emerged worldwide to provide hospitals with accredited verification. Governments, communities, and hospitals have been keen on promoting hospital accreditation programs (Lewis & Hinchcliff, 2023). Despite the prevalence of hospital accreditation, there are mixed results about the effectiveness of hospital accreditation in empirical studies (Greenfield et al., 2019; Higashi et al., 2013; Schmaltz et al., 2011).

Driven by the complex environment in the healthcare industry, global hospitals—especially American hospitals—have generated various patterns of collaborative relationships and have been pursuing a trend toward a loose-coupled network relationship (Jin & Nembhard, 2022). The hospital system exhibits diverse patterns: regional or international, religious or non-religious, government-owned or non-governmental, specific-institution affiliated or inter-hospital cooperative. Extant research has employed several theories to explain the hospital system's emergence and possible benefits, including resource dependency theory, institutional theory, and transaction cost theory (Bazzoli et al., 1999; Guo & Acar, 2005; Zuckerman & D'aunno, 1990). However, in spite of the prevailing pattern of hospital collaborations, empirical studies have divergent results on the effects of hospital networks (Henke et al., 2018; Jin & Nembhard, 2022).

Even though prior research has thoroughly investigated initiatives and consequences of hospital accreditation and the hospital system, little research has analyzed the relationship between the accreditation status of hospital system members and the system's holistic quality of care and financial performance. In addition, there is little agreement on the impact of the hospital system and accreditation since empirical investigations have revealed mixed results against theories, which calls for further studies to probe the relationships (Araujo et al., 2020; Jin & Nembhard, 2022; Lam et al., 2018). Last but not least, research has generally focused on hospital system relationships per se, or only distinguishes between various types of systems, i.e., it fails to evaluate hospital system features (e.g., the proportion of hospitals located in urban areas) in detail. Therefore, intensive exploration of hospital system features would assist in enhancing the understanding of hospital system relationships and influence. In order to fill the research gaps, this research focuses on hospital accreditation on a system level and aims to answer a main

question: How does the accreditation level among members of a hospital system affect the hospital system performance on a system level?

The remainder of this paper is organized as follows. Section 2 is a literature review of the theoretical and empirical research on incentives, structures, and impacts of the hospital system, quality of care, and hospital accreditation. Section 3 presents a conceptual framework utilizing both institutional theory and systems theory, and followed by the three hypotheses that are tested in this research. In Section 4, the framework is tested with a merged cross-sectional data set. In section 5, the research results are discussed followed by the conclusions in Section 6.

CHAPTER 2: LITERATURE REVIEW

Healthcare Systems versus Hospital Systems

The World Health Organization (WHO) defines healthcare systems as "all organizations, people, and actions whose primary intent is to promote, restore or maintain health" (World Health Organization, 2007, p. 2). In many cases, a healthcare system represents a national healthcare system (Anderson et al., 2003; World Health Organization, 2007). Driven by different purposes, cultural biases, and state structures, countries have constructed various healthcare systems in an attempt to service patients and citizens better. Based on differences in financing resources, healthcare systems can be classified into four models: (1) the Beveridge model, (2) the Bismarck model, (3) the national health insurance model, and (4) the out-of-pocket model. Table 1 summarizes each model's key characteristics and the countries where the model is typically implemented (Glied, 2008). Beyond the four national models, patients can also choose private health insurance to cover extra expenses that are not covered by public insurance. In practice, many countries do not stick with only one hospital system model but implement mixed models. The United States maintains a complex healthcare system, operating Medicare, Medicaid, and the Children's Health Insurance Program (CHIP), with more than half of its citizens also enrolled in private health insurance. This raises the question about cost and efficiency (United States Census, 2020). However, research by both the Organization for Economic Co-operation and Development (OECD) and others indicates that American health services are less efficient and have higher healthcare spending than other OECD countries (Anderson et al., 2003). Therefore, it is essential to determine appropriate governance structures and healthcare management practices to provide better health services.

Table 1 *Characteristics of Major Healthcare System Models*

	Beveridge Model	National health insurance	Bismarck model	Out-of-pocket
Birthplace	The United Kingdom	Canada	Germany	\
Payer	Government	Government	Multi-payer	No insurance
Provider	Public hospitals	Private hospitals	Private hospitals	Private hospitals
Cover	Universal	Universal	Universal	Non-universal
Typical examples	The United Kingdom, Spain, New Zealand, Cuba	Canada, Taiwan, South Korea	Germany, France, the Netherlands, Belgium, Japan, Switzerland	rural areas in Africa, China, India, South America

In contrast with the definition of healthcare system, there is a need to clarify the concept of "hospital system" since it is a widely employed concept in the healthcare field that is critical to this thesis. A hospital system is a group of connected or affiliated hospitals, clinics, and other medical facilities that work together to provide a wide range of healthcare services (Bazzoli et al., 1999). The concept of "hospital system" has been used interchangeably with "healthcare system" in the literature, the latter being much broader in nature and often of national scope. Apart from nationwide healthcare systems, health providers also seek cooperation to enhance quality and adhere to government legislation; this generates multi-organizational systems and networks. This phenomenon has been motivated by the fact that some hospitals prefer establishing strategic alliances to enhance collaboration, which can evolve into mergers or acquisitions that are encouraged by governments or by economic initiatives (Willem & Coopman, 2016). In other cases, health providers form networks where relationships are looser, less formal, and more flexible. Generally, a leading hospital establishes a hospital system. New hospitals pay a pre-set membership fee to the network operator to join the network and to communicate about resources and knowledge with other members; these membership contracts are usually renewed each year. The American Hospital Association (AHA) focuses on the

networking relationship and defines a hospital system as "either a multihospital system which involves two or more hospitals, or a single diversified hospital system which involves one hospital and three or more pre- or post-acute health care organizations" (American Hospital Association, 2022). Bazzoli et al. (1999) combine differentiation, integration, and centralization from transaction cost theory and organizational theory to develop a taxonomy of hospital systems and hospital networks, in which a hospital system is maintained by asset ownership while a health network refers to hospitals forming strategic alliances (Alexander et al., 2003).

Driven by divergent organizational structures and purposes, collaborative relationships between health organizations have become fuzzy, diverse, and overlapping (Bazzoli et al., 1999). The research reported here aims to shed additional light into this phenomenon by focusing mainly on the cooperation relationship among hospitals and how hospital accreditation plays a role in a hospital system. Thus, a hospital system consists of a core hospital and affiliated hospitals collaborating through ownership, a strategic alliance, or a contractual affiliation. Figure 1 shows a simplified hospital system and the associated stakeholder relationships.

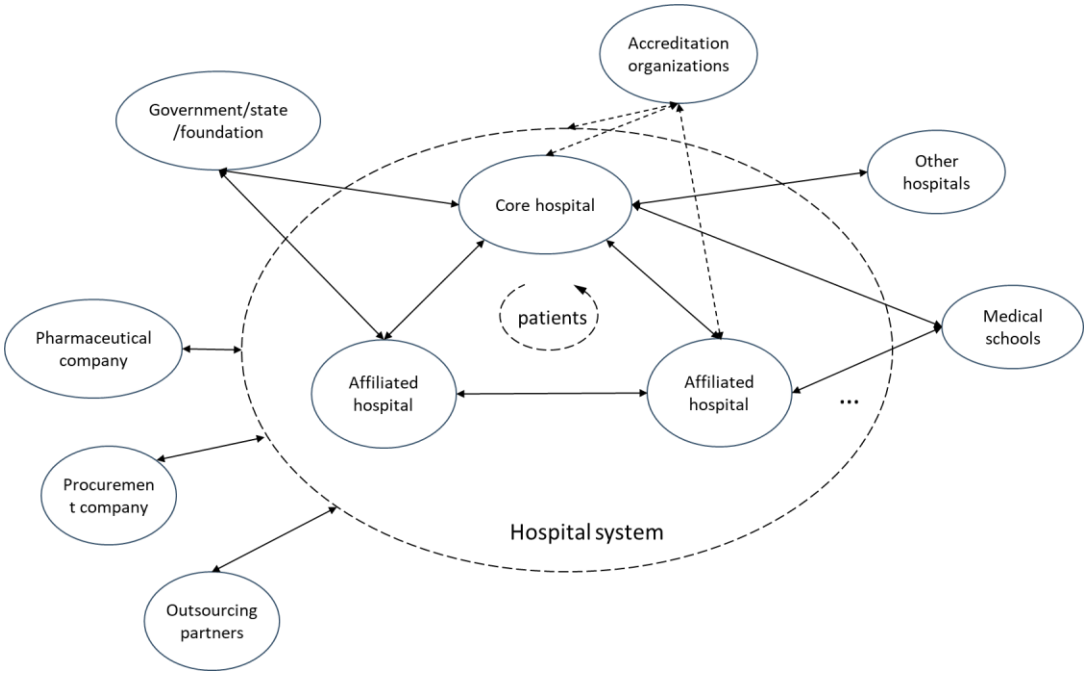


Figure 1 *A Hospital System Relationship Diagram*

Quality of Care

The importance of quality is widely recognized across various industries, and firms and organizations need to prioritize quality to achieve desirable outcomes and meet the expectations of their customers, stakeholders, and regulators (Sousa & Voss, 2002). Quality of care, or healthcare quality, is an important issue among patients, health providers, and government regulations. However, it is challenging to define and measure the quality of care due to its intangibility and subjectivity (Mosadeghrad, 2014). Campbell et al. (2000) view the quality of care as a multifaceted concept that combines three dimensions: access, process, and the outcome of health services patients receive. WHO has a similar definition but emphasizes safety, effectiveness, and people-centeredness (World Health Organization, n.d.). Countries have developed various quality measurement systems and reporting criteria to assess and monitor health providers' performance. Examples include the NHS National Performance Framework in England and the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey in America. The academic community has extensively explored seven segments of healthcare quality: access, safety, timeliness, efficiency, effectiveness, patient-centeredness, and equity (Campbell et al., 2000).

In recent research, academics have often grouped quality of care into two categories to investigate the effects and influences of quality of care: clinical quality, which measures the clinical process and outcome, such as heart failure rate, and experiential quality, which reflects patients' evaluations of health service they receive (Schneider, 2010; Silvera, 2017). Clinical quality focuses on the effectiveness and safety of care provided to patients, while experiential quality focuses on the patient's experience with the hospitals and the quality of communication

between hospitals and patients. Clinical quality and experiential quality are not mutually exclusive and both important when evaluating the quality of hospitals (Doyle et al., 2013).

Influencing factors of healthcare quality

Quality of care is influenced by a wide range of factors, including personal, social, organizational, and systemic factors, and addressing these factors is essential to improve healthcare quality. At the individual level, the personal attributes of hospitals can exert a significant influence on the quality of care. Empirical evidence suggests that hospitals who possess a higher level of knowledge and skills, exhibit more positive attitudes, demonstrate more effective communication skills, display greater empathy, and experience higher job satisfaction are more likely to deliver superior quality of care (Dayan et al., 2022; Mosadeghrad, 2014). Patient-related factors have also been found to have a significant impact on quality of care (Al-Jabri et al., 2021; Alaloul et al., 2019; Elliott et al., 2010). Research has investigated how certain sociodemographic characteristics of patient groups affect the quality of care they receive. For instance, Elliott et al. (2010) utilized empirical data in the U.S. to explore the relationship, and the result indicated that age, education level, and American Indian ethnicity were positively associated with patient satisfaction. Other patient-related factors that can affect quality of care include health beliefs, attitudes, behaviors, socioeconomic status, and health literacy (Al-Jabri et al., 2021; Muñoz-Torres et al., 2020). In addition, the relationship between patients and physicians can also affect patient satisfaction (Dayan et al., 2022).

Several factors at the organizational level have also been tested, including organizational structure, safety culture, quality management practices, and information technology. In terms of hospital characteristics, hospitals with smaller sizes, public ownership, and rural locations tend to demonstrate superior quality performance (Lehrman et al., 2010; McFarland et al., 2017).

Organizational publicness, which refers to the extent to which an organization is transparent and accountable to the public, has been found to have a significant impact on quality of care. Goldstein & Naor (2005) utilized the organizational publicness theory to elucidate the ambiguous organizational attributes of healthcare institutions (Nutt & Backoff, 1993). They integrated ownership, goal establishment, funding, and control to construct a continuum structure. Furthermore, their investigation discovered a substantial correlation between organizational publicness, quality management, and quality performance. From the managerial perspective, organizational safety culture was found to be significantly associated with quality of care (Lee et al., 2018; Stock et al., 2007). Managerial activities such as strategy and culture-centered activities, the strategy-setting role of governing boards, as well as the collaboration quality between boards and management, have a positive association with quality of care (Büchner et al., 2014; Parand et al., 2014). The healthcare industry has widely adopted health information technology (HIT) in recent years to improve information processing and reduce health delivery time. The literature has identified the effectiveness of HIT implementation in enhancing the quality of care (Gardner et al., 2015; Williams et al., 2016).

As the healthcare industry has developed, hospitals have started to transfer and implement management tools that have long been used in traditional manufacturing industries (e.g., total quality management and lean management). Total quality management (TQM) practices were found to have a significant effect on healthcare quality (Abukhader & Onbaşıoğlu, 2021; Miller et al., 2009). For instance, Sabella et al. (2014) collected survey data in Palestinian hospitals and concluded that people management, process management, and information & analysis were positively related to quality performance (Sabella et al., 2014). Lean management can also have a positive impact on the quality of care in hospitals. Dobrzykowski et al. examined

how lean management could be applied in the healthcare industry and confirmed that a lean orientation positively correlated with patient safety (Dobrzykowski et al., 2016).

At the market level, various investigations have explored the characteristics of a nation, such as population and poverty, region, regulations, Medicaid and Medicare programs, leading to divergent conclusions about the effect of these variables on the quality of care (Becker et al., 2015; Mazurenko et al., 2017; Mcfarland et al., 2015).

Impacts of quality of care

As the focal topic in the health industry, quality of care significantly influences the internal processes and financial outcomes of hospitals. Strategic management and improvement of quality of care will lead to increased patient safety, customer loyalty, efficiency, and financial performance.

The improvement of quality of care provides a direct benefit, which is the assurance of patient safety through the reduction of medical errors and adverse events. (Aniza et al., 2008; Sura & Shah, 2010). Besides, quality management initiatives have the potential to enhance safety culture within hospitals (Abuosi et al., 2022).

In addition, quality of care has a significant impact on customer loyalty (Dayan et al., 2022; Lonial & Raju, 2015). Patient satisfaction has been proven to be a main determinant of patient loyalty (Zhou et al., 2017). Clinical quality has a positive effect on patient loyalty, both directly and indirectly through experiential quality (Caruana, 2002). Patients who receive and perceive better healthcare services are more likely to come back to the same place again and recommend the place to others (Dayan et al., 2022). Consistent patient visits to the same hospital can provide physicians with access to treatment records, leading to improved treatment outcomes

and increased efficiency (Mohiuddin, 2019). Therefore, enhanced patient loyalty can contribute to the overall improvement of healthcare quality in return.

Furthermore, quality of care has a positive relationship with financial performance. Quality management initiatives can lead to improved patient outcomes, which can result in cost savings for hospitals. For example, reducing medical errors and adverse events can reduce the length of hospital stays and readmissions, resulting in lower costs (Chakraborty, 2020). Besides, improving quality of care can enhance a hospital's reputation and competitiveness, ultimately leading to financial success (Aniza et al., 2008). For instance, in a longitudinal study, Richter & Muhlestein (2017) found that there was a positive relationship between patient satisfaction and hospital profitability.

Hospital Accreditation

Accreditation

Accreditation is the conformity assessment in line with accepted standards of assessed bodies; the standards are established and applied by independent, third-party accreditation groups (Eaton, 2015). Through a voluntary or mandated accrediting process, an organization which meets the standards receives a certificate of accreditation from the accreditation organization. The process typically involves a review of the organization's policies, procedures, and practices, as well as an assessment of its outcomes and results (Alyahya et al., 2018). The specific steps involved in the accreditation process can vary depending on the type of organization or institution being evaluated, as well as the accrediting body responsible for the review. Some common elements of the process may include: (1) self-assessment, (2) on-site evaluation, (3) peer review, and (4) report and decision (Alyahya et al., 2018; Benmoussa et al., 2019).

Accreditation are widely used in various sectors, including manufacturing, food, higher education, and healthcare (Cerqueira, 2006). ISO9000 and ISO14000 standards of the International Organization for Standardization (ISO) are the accreditation bodies' most commonly used standards (Sedevich-Fons, 2013). From national to professional accreditation, the accrediting process monitors, guides, and enhances accredited organizations and people's performance across industries (Harvey, 2004). Accreditation programs have been proven effective in some sectors (Carman & Fredericks, 2013; Sorrentino, 2019). For instance, a review of accreditation in diagnostic medical sonography revealed improved quality due to accreditation (Sorrentino, 2019).

Although accreditation is popular, critiques and suspicion are evident. Various studies indicate that accreditation is only a symbolic tool and question whether accreditation is impartial and effective (Cerqueira, 2006). Fouilleux & Loconto (2017) analyzed the quality standard in the global organic agriculture field and revealed that there had been chaos and monopoly caused by the actions of governmental and non-governmental accreditors. In recent years, accreditation has also been criticized for its costly, secretive, burdensome, and intrusive process in the U.S. higher education industry (Brown et al., 2017).

Hospital accreditation program

In the healthcare industry, accreditation programs influence the evaluation of hospitals' performance, formulation of industry standards, and promotion of quality management initiatives (Oliveira & Matsuda, 2016). Similar to the accreditation definition, a hospital accreditation program can be defined as the systematic assessment of hospitals following certain quality and safety standards conducted by independent, third-party accreditation bodies (Araujo et al., 2020). Specific requirements of hospital accreditation can vary widely depending on the governmental

legislation in different countries. In many countries, hospitals must obtain accreditation to acquire payment from the government or foundations (Sprague, 2005). For instance, France has mandated hospital accreditation since 1996 (De Pouvourville, 1997). Some countries, such as Brazil, Germany, and the United States, do not mandate hospital accreditation programs (Sprague, 2005). Sedevich-Fons (2013) compared accreditation programs in the healthcare industry with ISO 9000 standards. They found that accreditation organizations, like The Joint Commission on Accreditation of Healthcare Organizations (TJC or JCAHO), only provided quality assurance through verification instead of involving the quality management system.

In the U.S., The Joint Commission is the most prominent accreditation organization, offering various accrediting programs (Schmaltz et al., 2011). In addition to The Joint Commission, several other organizations provide hospital accreditation in the United States, such as the Healthcare Facilities Accreditation Program, the Accreditation Commission for Health Care, and Det Norske Veritas Healthcare, among others (Bakal, 2003; Brueggmann et al., 2015). Various international accreditation organizations have been assessing and awarding accreditation certification to hospitals around the world, such as the Joint Commission and Accreditation Canada International (ACI) (Inomata et al., 2018; Schmaltz et al., 2011).

Despite abundant empirical studies, the literature lacks sufficient theoretical development to adequately explain the incentives and impacts of hospital accreditation (Lewis & Hinchcliff, 2023). Here are some theories that have been utilized in prior studies. First, institutional theory has been used to explain the adoption and implementation of hospital accreditation. Institutional theory can be employed to explain why hospitals seek accreditation and how accreditation can become a normative practice in the healthcare industry (Alyahya et al., 2018). Besides, organizational learning theory has been utilized in the research of hospital accreditation to

explore how hospitals can learn from the accreditation process and improve their performance over time (Yan & Kung, 2015; Zandian et al., 2018). Additionally, studies have also employed resource dependence theory to investigate the association between hospital accreditation and the implementation of diverse activities and initiatives (Kim & Thompson, 2012).

Hospital accreditation incentives

Hospital accreditation serves as a multifaceted instrument with various incentives and purposes. Firstly, hospital accreditation functions as a regulatory mechanism, ensuring that hospitals comply with established guidelines and regulations (Mansour et al., 2020). In many countries, hospitals are required to get accreditation in order to participate in government-funded healthcare programs. Accreditation is therefore necessary for hospitals to receive reimbursement for the services they provide (Sprague, 2005).

Secondly, hospital accreditation has been regarded as an instrument of accountability (Mumford et al., 2013). Hospital accreditation helps to ensure that hospitals are held accountable for meeting specific standards and requirements.

Thirdly, hospitals may view accreditation as an instrument for quality assurance or improvement (Al-alawy et al., 2021; Cerqueira, 2006). Accrediting organizations typically provide guidance, best practices, and management tools to hospitals, which can assist them in implementing quality management initiatives (Ng et al., 2013). Similarly, hospital accreditation standards often require hospitals to implement processes that improve organizational efficiency and effectiveness (Al-alawy et al., 2021). By doing so, hospitals can improve their operations and reduce costs.

Additionally, hospitals may seek accreditation due to marketing and financial incentives (Ng et al., 2013). Accreditation can enhance a hospital's reputation and popularity, as patients

and stakeholders may perceive accredited facilities as providing higher quality of care. Therefore, the achievement of accreditation can enhance the marketing efforts of hospitals, including those related to international medical tourism (Lewis & Hinchcliff, 2023; Woodhead, 2013).

Impacts of hospital accreditation

The existing literature has investigated several impacts of hospital accreditation programs, such as quality initiatives, safety culture, staff performance, quality of care, and financial performance, among others (Hussein et al., 2021; Lewis & Hinchcliff, 2023). Hospital accreditation programs are generally considered to trigger hospital quality management initiatives and organizational safety culture development. The majority of empirical results indicate a positive outcome. For instance, a South Korean hospital studied the effect of an accreditation program as an intervention in safety culture and quality management; a positive relationship was found for the safety culture, but no significant improvement in quality management occurred (Lee, 2016). However, Greenfield et al. (2019) detected a significant enhancement in human resource management and health quality among Australian hospitals after they joined the accreditation program; the improvement was especially evident in low-performing hospitals.

On the individual level, hospital accreditation can have both positive and negative impacts on staff (Hussein et al., 2021). On one hand, accreditation can provide staff with an educational and clinical learning environment infrastructure. (Gabriel et al., 2018). On the other hand, the increased workload and costs associated with accreditation can lead to increased staff hours and job stress levels, especially during the accrediting period. (Al-Faouri et al., 2019;

Higashi et al., 2013). As a result, most studies have found a negative relationship between hospital accreditation and staff job satisfaction (Hussein et al., 2021).

In addition, there has been a tendency towards probing the effect of accreditation programs on quality of care. Hussein et al. concluded that existing literature had detected a positive linkage between hospital accreditation and safety culture, clinical quality, and efficiency, but no significant relationship with experiential quality measures (Hussein et al., 2021). For instance, Chen et al. (2003) examined whether the Joint Commission program would affect the quality of care in terms of acute myocardial infarction and found better treatment and a reduction of the mortality rate. Other studies show an irrelevant or even hostile relationship. For instance, Lam et al. (2018) utilized archival data to compare hospitals accredited by the Joint Commission accreditation, state survey-base reviewed hospitals, and non-accredited hospitals. Only a few significant relationships between accreditation programs and experiential quality were identified. Likewise, Sack et al. (2011) failed to detect a significant correlation between accreditation programs and experiential quality by surveying patients in the U.S.. Only some quality of care constructs have been tested in extant research; they focus mainly on safety, efficiency, and effectiveness, and ignore other quality measures like access (Araujo et al., 2020; Lewis & Hinchcliff, 2023).

The impact of hospital accreditation on financial performance remains unclear due to limited studies (Lewis & Hinchcliff, 2023). While accreditation can enhance the implementation of better infrastructure and practices, the increased workload and costs may reduce efficiency. This raises the question of whether accreditation benefits hospital efficiency among health providers and researchers (Inomata et al., 2018; Lewis & Hinchcliff, 2023). In terms of hospital profitability, although some research has detected a significant increase, others have failed to

find a positive relationship between hospital accreditation and economic indicators (Hussein et al., 2021). It is worth noting that accreditation may entail certain risks for hospitals, as some mandatory accreditation programs may impose financial penalties and restrictions on hospitals that fail to meet the required standards (Mansour et al., 2020).

While the literature has demonstrated various benefits of hospital accreditation, it has also been criticized for several potential drawbacks. In addition to the increased workload and costs mentioned previously, some studies have suggested that accreditation programs may rely too heavily on the value judgments of surveyors and lead to the routinization of service processes (Jaafaripooyan, 2014; Kidd, 2023). Overall, the effectiveness of hospital accreditation has not been well-established in the literature. This raises questions about the effect of hospital accreditation in some studies. For instance, Lam et al. (2018) found only one significant indicator improvement out of 15 quality measures between TJC-accredited hospitals and state-surveyed (non-accredited) hospitals. Furthermore, Chen et al. (2003) revealed considerable variance among accredited hospitals, negating the sign of good performance by accreditation.

Hospital System Incentives and Influences

Various theories have been utilized to explain and explore hospital systems in the literature. For instance, Zuckerman & D'aunno (1990) adopted the resource dependency theory to explain the transformation in hospital alignment and contended that hospital system provided member hospitals with access to critical resources while also maintaining low cost and autonomy. Guo & Acar (2005) examined collaboration among non-profit organizations by combining resource dependency theory and institutional theory. Other theories have also been considered in the literature, such as transaction cost theory, organizational learning theory, stakeholder theory, and strategic choice theory (Willem & Coopman, 2016).

The drivers and motivations for hospitals to establish and join hospital systems can vary depending on the specific context and goals of the hospital. Here are some drivers and motivations that have been identified in the literature:

(1) Access to capital: Hospitals may join a hospital system to gain access to capital for investments in new technology, facilities, or services. By joining a hospital system, hospitals can benefit from economies of scale and shared resources, which can help reduce costs and improve financial performance (Choi & Dor, 2019; Jin & Nembhard, 2022).

(2) Access to expertise: Hospitals may join a hospital system to gain access to expertise in areas such as population health management, data analytics, or care coordination (Jin & Nembhard, 2021). By joining a hospital system, hospitals can benefit from shared resources and expertise, which can help improve clinical outcomes and reduce costs.

(3) Improved quality of care: Hospitals may seek to improve the quality of care they provide to patients by joining a hospital system. Affiliated hospitals can benefit from shared best practices, clinical guidelines, and quality improvement initiatives, which can help improve patient outcomes and satisfaction (Frush et al., 2017).

(4) Increased market share: Hospitals may join a hospital system to increase their market share and competitiveness. Affiliated hospitals can gain an advantage from increased referrals, improved brand recognition, and access to new patient populations, which can help increase revenue and profitability (Gombeski et al., 2014; Holmgren & Ford, 2018).

(5) Regulatory compliance: Hospitals may join a hospital system to comply with regulatory requirements, such as those related to the Affordable Care Act (ACA) or state certificate of need (CON) laws (Greaney & Richman, 2019; Jin & Nembhard, 2022). After joining a hospital system, hospitals can receive benefits from shared resources and expertise in

navigating complex regulatory environments, which can help reduce compliance costs and improve financial performance.

Prior research has explored several aspects of consequences that have emerged as the result of hospital systems; these include supply chain management, information technology implementation, quality of care, and financial performance.

Affiliation with a hospital system can provide hospitals with access to resources and expertise that can help improve their supply chain management processes, including the use of collaborative arrangements, lean methodology, and inventory control techniques (Jacobson et al., 2017; Shan et al., 2011). For example, Zepeda et al. (2016) found that system affiliation had a mitigating effect on hospital inventory management performance, particularly within the local hospital systems compared to regional or national hospital systems.

The widespread use of information technology in the healthcare industry has led to investigations of its influence. Standardization of electronic health record (EHR) systems, data security, and cost savings are some of the ways in which hospital systems can improve healthcare information technology (Drill, 2016; Li et al., 2008). For instance, Li et al. (2008) explored how multi-hospital systems impacted the adoption of electronic medical records (EMR) and found a positive correlation within small hospitals.

Additionally, hospital systems can have a significant impact on quality performance through the integration of information, standardization, and remote control, among other initiatives (Gao et al., 2022; Henke et al., 2018; Jacobson et al., 2017). For example, a case study of the Froedtert & MCW revealed the success of this hospital system in quality performance (Jacobson et al., 2017). Furthermore, a two-year longitudinal study by (Henke et al. (2018) investigated whether hospital system affiliation affected the quality of care; the study showed

that there was a better quality of care and a shorter stay time in affiliated hospitals than in independent hospitals.

Some papers also examine the actual financial performance changes that occur as a result of hospital systems. Overall, hospital systems can have a significant impact on financial performance (Jin & Nembhard, 2022; Rosko et al., 2020). Gombeski et al. (2014) investigated how hospitals in the United Kingdom benefited from the hospital system through co-branding through a survey of customers and found evidence that brand awareness could increase patients' willingness to choose affiliated hospitals. Jin & Nembhard (2022) focused on the loosely-coupled hospital network, and identified a positive association of same-specialty hospital affiliation with financial performance, but detected no correlation with clinical or experiential quality.

Based on the foregoing literature review, several research gaps can be identified. First, although accreditation programs in the healthcare industry are widely used, research still needs to demonstrate empirical evidence that accreditation programs have a positive effect on quality of care and financial performance.

Second, research on hospital systems tends to focus on the individual level and explores how affiliated hospitals are affected by the hospital system's relationships and the connection with the central hospital. Whether and how prominent members, such as accredited hospitals would affect the system's performance has not been investigated. The networking effect on the system level has also been neglected.

Third, most studies only examine the hospital system membership per se and explore the changes after an individual hospital becomes involved in a hospital system. However, what are

the characteristics of hospital systems that would impact the system performance of individual hospitals remains unknown.

CHAPTER 3: CONCEPTUAL FRAMEWORK

In this section, I review institutional theory and systems theory, linking the theories to hospital accreditation, the hospital system, and quality of care research. The theories are then used to theoretically explain the relationship between the accreditation program, the hospital system, quality of care, and financial performance. A proposed conceptual framework is presented that is based on the relevant empirical research literature. Finally, as depicted in Figure 2, three hypotheses are put forward and empirically investigated in the next section.

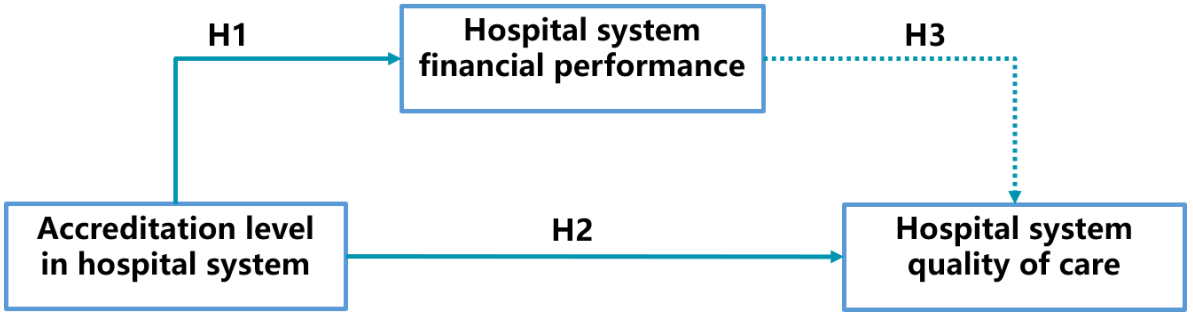


Figure 2 *The Proposed Conceptual Framework*

Institutional Theory Review

Institutional theory is a sociological theory that explains why organizations always show similarities in structural features of organizational forms in an institutional environment (DiMaggio & Powell, 1983). The institutionalization process involves the adoption of shared norms, values, and practices that are considered appropriate and desirable by the organization and its stakeholders. In the literature, the process is also referred to as an institutional convergence (DiMaggio & Powell, 1983; Potter, 2001). Except for maintaining competitive advantages in a competitive environment, acquiring legitimacy is also vital for an organization to

survive in a social system (Dowling & Pfeffer, 1975). Through the institutionalization process, organizations become recognized and accepted as legitimate by society (YÜNCÜ, 2020).

DiMaggio & Powell (1983) contended that organizations exhibit institutional convergence due to three forms of isomorphism pressure: coercive isomorphism, which comes from regulatory pressure; normative isomorphism, which is associated with professionalization; and mimetic isomorphism, which derives from uncertainty and competitive pressure. Institutional theory and the three isomorphism mechanisms have been widely employed in various research fields, including certifications, accreditations, networking, and the like (Lo & Yeung, 2008; Teixeira & Maccari, 2018; Yang & Nowell, 2021).

The institutionalization process has an ambivalent effect on organizations. On the one hand, institutionalization can lead to the establishment of a robust regulatory framework that promotes best practices and ensures compliance with standards and regulations (YÜNCÜ, 2020). Under the isomorphism pressures, institutionalization can also promote the adoption of new technologies and innovations, which can enhance organizational performance (Tesfamichael et al., 2022). On the other hand, institutionalization can be challenging and may require significant effort and resources to achieve (Tesfamichael et al., 2022). While attaining conformity with institutional structures provides an organization legitimacy, it also gives rise to rigidity and resistance to change; as a result, organizations will lose flexibility and motivation to further innovate, which can reduce efficiency and hinder improvement (YÜNCÜ, 2020). Academics identify symbolic performance to evaluate positive social evaluations resulting from isomorphism and compare it with substantive performance, which refers to accounting-based profits or overall market value enhancement (Heugens & Lander, 2009). Some studies have shown that institutionalization can enhance both symbolic and substantive performance

(Heugens & Lander, 2009; Sillince & Barker, 2012). Conversely, some argued that institutionalization may only improve symbolic performance, but not substantive performance (Yetano, 2013).

The rationale for utilizing institutional theory in the paper is twofold. Firstly, institutional theory establishes a framework to understand and explain organizations. Institutional theory and the three isomorphism mechanisms can help explain the adoption and prevalence of new institutional services and practices. Seeking accreditation and formulating hospital systems can be viewed as institutional initiatives, given the recent decades' prevalence and institutionalization of accreditation and networking (Alyahya et al., 2018; Willem & Coopman, 2016). In addition, hospitals are deemed institutions within the healthcare field as hospitals are highly regulated and constrained by government regulations, medical schools teaching relationships, professional associations, and accreditation organizations. In this context, isomorphism pressure would play a crucial role in hospital institutional processes. Therefore, this paper can employ institutional theory to explain the vast and growing presence of accreditation in hospital systems and explore the influences of accreditation within these systems.

Institutional theory and hospital accreditation

Institutional theory can relate to the accreditation process in two ways: since accreditation provides standard norms and regulations, attaining accreditation could be considered an institutionalization process in which hospitals pursue accreditation under the three isomorphism mechanisms.

First, health providers perceive coercive isomorphic pressure from the government and other dependent stakeholders. As mentioned before, many countries mandate or encourage hospital accreditation (Sprague, 2005). In America, hospitals acquire reimbursement

qualification through three methods: applying to the Centers for Medicare and Medicaid Services (CMS) for a qualification, getting accredited by the American Osteopathic Association (AOA) or the JCAHO (Sprague, 2005). Therefore, governments and foundations impose coercive pressure on hospitals directly or indirectly. Also, patients expect hospitals to get accredited since accreditation signals a commitment to provide good quality of care to patients (Jaafaripooyan, 2014). Hence, hospitals pursue accreditation to gain legitimacy among patients and enhance their reputation. In addition, after a hospital joins a hospital system, it will perceive coercive pressure from accredited members because it depends on its hospital system (Stover, 2005). Lastly, accreditation organizations like The Joint Commission provide international accreditation for hospitals worldwide (Tabrizi et al., 2011), thus providing legitimacy and reduce barriers when hospitals enter the international healthcare market, especially with the emergence of medical tourism in recent years (Woodhead, 2013). In short, hospitals seek accreditation under coercive isomorphism pressure to fulfill regulatory requirements and gain legitimacy.

Second, normative pressure brought by professionalization also pressures hospitals to get accredited. Medical schools, professional associations, and hospital systems afford a professional communication environment for physicians and nurses in a hospital (Alyahya et al., 2018). The standards and terminologies created by accreditation organizations are shared and diffused through communications. Therefore, hospitals will seek accreditation as a result of the normative pressure that is applied from professionalization and the required standardization for communication and collaboration.

Third, mimetic pressure occurs when early adopters acquire legitimacy and followers try to cope with ambiguity and uncertainty (DiMaggio & Powell, 1983). The accreditation process is generally fuzzy and laborious, leading to concern among hospital employees about the time and

effort that is required to get accreditation. Moreover, the competitive environment in the healthcare industry raises uncertainty for hospitals (Jin & Nembhard, 2021). As a result, hospitals are motivated to imitate precursors' initiatives and practices. For example, academics also treat accreditation agencies as influential organizations in exerting mimetic pressure on hospitals (Kondra & Hinings, 1998). Accreditation organizations establish quality standards and quality management initiatives for hospitals. Hospitals could receive quality disclosure and assurance guidance from accreditation organizations through the accrediting process. Although the accreditation program does not mandate hospitals to comply with the prescribed standards and infrastructures, hospitals still perceive mimetic pressure from accreditation organizations since they rely on accreditation to get reimbursement from governments and foundations. For instance, Stover (2005) confirms that hospitals with the American College of Surgeons Accreditation are more likely to adopt the Hospital-based Palliative Care Programs compared with non-accredited hospitals in empirical research.

Therefore, hospitals and hospitals systems operate under significant isomorphism pressures, especially in countries like U.S., where coercive, normative and mimetic isomorphic pressures are especially strong.

Systems Theory and SIPOKS Method Review

Systems theory is the interdisciplinary study of how systems operate, and the "system" here consists of several linked and interrelated parts (Ackoff, 1971). Systems theory views an entity as a whole instead of individual components. The components within a system can be either abstract or physical. Each part interacts with other parts directly or indirectly and constitutes a whole system existing in a specific environment. If a system has no interaction with the environment, it is a closed system; in all other cases, it is an open system (Ackoff, 1971).

Based on the framework and attributes of systems theory, a healthcare sector or organization is an open and dynamic system (McCovery & Matusitz, 2014; Petula, 2005). Systems theory has been utilized to analyze and explore the healthcare delivery and collaboration process (Katrakazas et al., 2020; McCovery & Matusitz, 2014; Petula, 2005).

A complex system can be exhibited as a hierarchal system, in which a common property emerges in the whole system instead of being subject to only part of the system. Hospital accreditation and quality measurement systems can be hierarchical systems (Chuang & Inder, 2009). Within the system, both control and communication maintain the dynamic equilibrium. In the healthcare system, control derives from government regulations and standards; hospitals and accreditation organizations improve the quality of care through communication.

The SIPOC method derives from total quality management and has been extensively employed in assessing and enhancing process management (C. Brown, 2019). SIPOC is an acronym that stands for Suppliers (providers of inputs into a process), Input (resources are put into and handled in a process), Process (flows which transfer input into output), Output (products or services that are produced through the process), and Customer (the receiver of the output). The SIPOC method is simple and practical, and has been widely utilized in the healthcare field (de Barros et al., 2021).

Chuang and Inder modified the SIPOC model and replaced “Customer” with “Key stakeholder” to create a SIPOKS process model to analyze a healthcare system (see Figure 3). In this system, suppliers provide input and process, and thereby create output that is useful for key stakeholders (Chuang & Inder, 2009, p. 4). Their model views accreditation, measurement and reporting, and the healthcare organization as an open system with three interacting components. In a hospital-level healthcare system, healthcare providers input healthcare infrastructures,

medical employees, medicines and technologies, healthcare information technology facilities, and quality management initiatives into healthcare processes where patients receive therapies and treatments. Data about healthcare service outcomes are collected and evaluated by the measurement and reporting organization. With the accreditation organization accrediting hospitals, hospitals must comply with accreditation standards when inputting resources and processing healthcare services. In the holistic system, accreditation impacts the hospital's quality performance through control with communication; meanwhile, the measurement and reporting system affects the input through communication without control. The two systems are proposed to interact through control and communication. There is considerable empirical research that has tested the impact of accreditation and reporting systems on quality of care, mostly showing a positive relationship (Araujo et al., 2020; Greenfield et al., 2019).

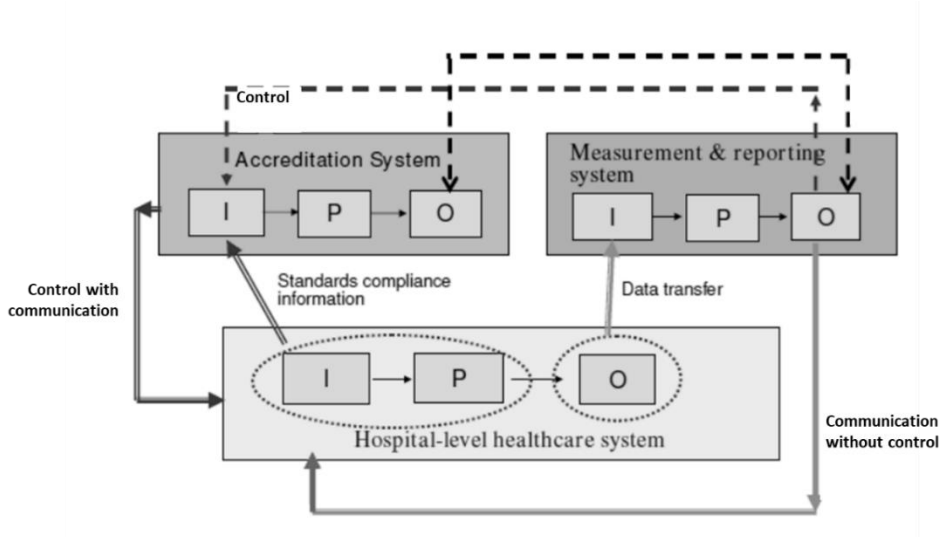


Figure 3 *Healthcare Systems Relationship Model*

Systems theory and the SIPOKS method are suitable as a conceptual basis for this paper. Systems theory links interrelated parties together in a complex system. In this paper, the goal is

to analyze the relationships between accreditation organizations and affiliated hospitals in a hospital system, so systems theory provides a method to understand how all the related parties in the system interact. With the processes identified in a system, the analysis is able to show where and how accreditation organizations play a part in affecting accredited hospitals.

Accreditation in a Hospital System and Financial Performance

The theories described above can help us to understand how the accreditation process affects a hospital system. First, financial performance is a key concern for both for-profit hospitals (FP) and not-for-profit hospitals (NFP). Hospitals rely on revenues to constantly update their healthcare technologies, attract experienced specialists, and fulfill stakeholders' expectations, especially under the value-based purchasing tendency (Bazzoli et al., 2008). FP hospitals are owned by investors, so they seek fiscal success to make a profit for their shareholders (Rundall et al., 2012). NFP hospitals are not allowed access to the equity market, and their funding comes mainly from operational revenues, investing revenues, and issued debts (Rosko et al., 2020). Therefore, although NFP hospitals do not need to generate profits to satisfy investors, limited funding resources make NFP hospitals concerned about financial performance as a way of maintaining and enhancing healthcare services. Healthcare expenditures have caused substantial financial losses for many countries, especially for the U.S., as explained in the American Hospital Association's report (The American Hospital Association, 2023). NFP hospitals are expected to maintain revenues in order to reduce government and stakeholder financial pressure. In some cases, NFP hospitals may participate in performance-based contracting, which ties funding to measured performance, thereby raising concerns about financial objectives (Ssengooba, 2010).

Research has proven that proper financial management is crucial and effective for hospitals to maintain financial viability (Singh, 2012). Financial management can help hospitals identify areas of inefficiency and implement strategies to improve their performance. For example, hospitals can use financial data to optimize their resource allocation, reduce waste, and improve patient outcomes (Shayesteh Moghanlou et al., 2020). Effective financial management can also help hospitals mitigate financial risks, such as fluctuations in reimbursement rates, changes in regulations, and unexpected expenses (Shepard et al., 2013). Potter identified an institutional convergence in pursuing financial efficiency for both FP and NFP hospitals due to regulatory pressure, which indicates that hospitals have attached importance to financial management (Potter, 2001).

Given the importance of financial performance and the efficacy of financial management, numerous studies have opted to utilize financial performance indicators in order to investigate the impact of healthcare initiatives (Hussein et al., 2021; Jin & Nembhard, 2022). For instance, in their research, Qi and Han focused on information technology and found that IT investment generally boosts revenue management performance (Qi & Han, 2020). Thus, financial performance could be a good indicator when investigating the effect of the accreditation level in a hospital system.

To gain accreditation, hospitals must institutionalize certain processes at an acceptable level (Alyahya et al., 2018). For affiliated members in a hospital system, accreditation provides legitimacy and symbolic performance enhancement. In a hospital, accreditation success can boost personnel morale and enhance employee performance in providing healthcare services.

Between hospital system members, accredited hospitals gain more legitimacy since hospitals with accreditation generally manifest good performance, increased compliance with

standards, and higher reliability (Jin & Nembhard, 2022). Non-accredited hospitals in the system may therefore perceive reduced risks when collaborating with accredited hospitals. When the accreditation level increases in a hospital system, affiliated members can collaborate with more trust and lower communication barriers. This leads to greater cooperation, greater system-governing reinforcement, better decisions, and improvements in financial performance improvement (Po et al., 2013).

Accreditation impacts not only the internal relationships between hospitals in the system; it also affects external stakeholders. With accreditation, affiliated hospitals are more likely to receive reimbursement from governments and foundations, and their system can also acquire more allowance programs from governments and states. Quality certification, which is a key part of the accreditation process, has become a distinguishing feature for organizations (Sedevich-Fons, 2013). An increase in accreditation levels also offers a hospital system legitimacy over pharmaceutical companies, procurement companies, and outsourcing partners. Thus, a hospital system can acquire more power and reduce its costs when bargaining with these partners.

As demonstrated in the literature review, accreditation programs can enhance hospitals' reputation by meeting social expectations. Thus, an increase in the system accreditation level enlarges the system's reputation and customer awareness through co-branding (Gombeski et al., 2014). This may lead to financial improvement.

Beyond the direct legitimacy brought by accreditation, accreditation has also been touted as a trigger of institutionalization for hospitals (Kondra & Hinings, 1998; Stover, 2005), and accreditation organizations often exert coercive pressure on hospitals to adopt new institutional practices. The increasing level of accreditation in a hospital system may have been partly caused by the coercive pressure brought by accreditation organizations, as they promote the

implementation of new institutional initiatives for hospital systems. Institutionalizing a hospital system may enhance its symbolic performance and further its actual financial performance.

Based on the foregoing, the following hypothesis is suggested:

Hypothesis 1: The accreditation level in a hospital system is positively associated with the system's financial performance.

Accreditation in a Hospital System and Quality of Care

In addition to financial performance, quality of care has been another focal issue in healthcare, and accreditation is thought to improve quality performance. The quality of service is fundamental for service providers since it indicates how well hospitals have met customers' expectations. Because hospitals/healthcare facilities are considered public services, and the quality of service that is provided is fundamentally important for patients, quality of care has become a crucial indicator in the healthcare field. Therefore, the paper also considers the quality of care when probing the influences of hospital accreditation.

Accordingly, this study investigates whether and how accreditation affects the quality of care in a hospital system. Chuang & Inder's system theory model (see Figure 4) demonstrates the relationships in healthcare systems in a sketch diagram (Chuang & Inder, 2009). The relationship between the accreditation system and the measure & reporting system is eliminated from the model as it is not the main focus of this paper. In a hospital system, except for connections between hospitals, accreditation system, and measure & reporting system, affiliated members would also communicate in their hospital system (see the red line in Figure 4). After combining institutional theory and systems theory, the paper identifies accreditation as a dual tool for

hospital systems. The paper develops two possible explanations to identify the impact on quality performance brought by the change of accreditation level in a hospital system.

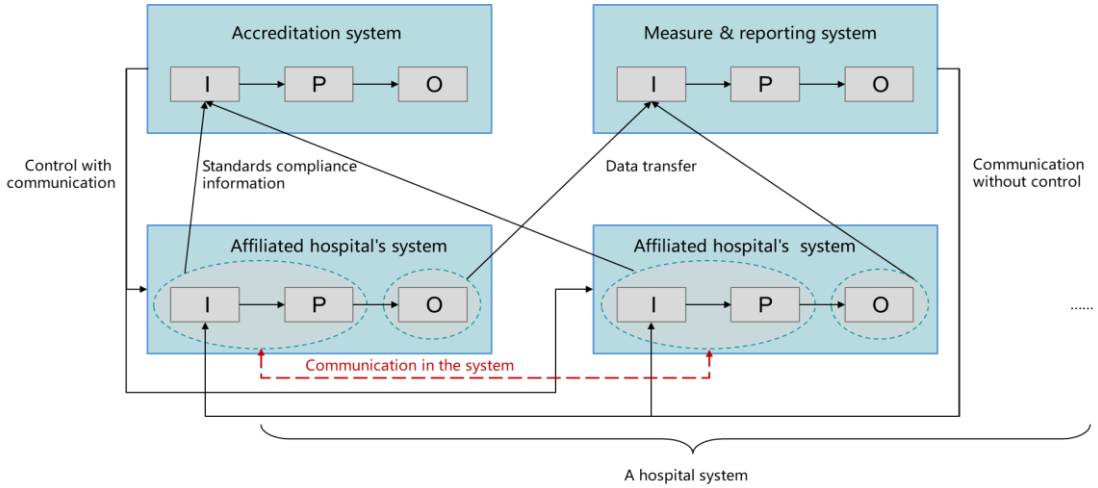


Figure 4 *Healthcare Systems in the Hospital System Relationship Model*

An accreditation program can be deemed a quality assurance instrument. Accreditation organizations establish and encourage quality management initiatives and standards (Sedevich-Fons, 2013). Through control and communication between accreditation organizations and accredited hospitals, accreditation organizations can affect the inputs and processes of hospitals (Chuang & Inder, 2009). The institutional pressure and quality management guidance of accreditation organizations should trigger hospital quality management initiatives and safety culture formation for accredited hospitals.

Implementing quality management initiatives at accredited hospitals also exerts mimetic isomorphic pressure on the non-accredited hospitals in the system. The communication between member hospitals would lead to the sharing of procedural standards that are established by the accreditation organization, which in turn would impose normative pressure on unaccredited members. Quality management initiatives could be diffused within a hospital system as managerial tool resources through system cooperation. Thus, affiliated hospitals in a hospital

system are motivated to learn and implement quality management initiatives. Likewise, driven by the accreditation organization, quality measurement and reporting tools within a hospital system would also be promoted and diffused. The enhancement of quality measurement would assist in better management of service provision (Sedevich-Fons, 2013). As the level of accreditation in a hospital system increases, institutional pressure and quality assurance capabilities both increase, leading to overall quality management enhancement. This promotes a system's holistic healthcare quality performance.

Accreditation can also serve as a symbolic or reputation tool for a hospital system and can provide legitimacy since it can be treated as an institutionalization process (Heugens & Lander, 2009; Stover, 2005). Accreditation success boosts employee morale for accredited members, and their employees would perform better in providing healthcare services, thereby enhancing the quality of care. The increase in accreditation level could also deepen system members' cooperation and enhance collaboration efficiency. Moreover, the enhancement of communication affects the input and process of affiliated hospitals (depicted in Figure 4). Communication among system members means healthcare infrastructure sharing, cross-hospital consultation, and healthcare information technology sharing. Therefore, an increase in the accreditation level would enhance the quality of care in a system.

Accreditation would meet social expectations and enhance reputation. Reputation enhancement increases patient preference and boosts patients' trust in accredited hospitals and affiliated systems. Furthermore, patients' trust would make them more cooperative with physicians and nurses, facilitating experiential quality and the effectiveness of the treatment. In other words, the increase in accreditation level in a hospital system enlarges patient trust and further enhances the quality of care.

While all of the foregoing effects are positive, accreditation is not without critics. For example, the accreditation process has been criticized for reducing efficiency (Alyahya et al., 2018). While institutionalization has the goal of increasing legitimacy, actually pursuing institutional initiatives is time-consuming and laborious (DiMaggio & Powell, 1983). In order to meet accreditation standards, hospital employees must expend much effort to identify, record, and modify quality-related issues in providing healthcare services. That can reduce quality performance in terms of efficiency measures. Prior studies have found that accreditation programs intensify job stress under auditing pressure which can negatively impact a hospital's quality of care (Al-Faouri et al., 2019). But it is also true that an increase in the accreditation level in a hospital system could mitigate employee stress by communicating accreditation information and experiences among accredited members. Moreover, affiliates can exchange better quality management tools to ensure efficiency. This could also lead to healthcare quality advances. The foregoing suggests the following hypothesis:

Hypothesis 2: The accreditation level in a hospital system is positively associated with the system's quality performance.

the Mediating Role of System Financial Performance

In addition to direct effects, this paper also explores the indirect effect in the model. A high level of an organization's financial performance is generally associated with quality enhancement because organizations would have an adequate budget to implement and execute quality management practices (Jiang et al., 2006). NFP hospitals are more motivated to invest in quality enhancement initiatives since they are not obligated to distribute excess funds to their shareholders, and they are more patient-centered (Rosko et al., 2020). On the system level, as stated in section 0, the accreditation level in a hospital system positively affects the system's

financial performance. With the enhancement of the system's financial performance, affiliated members can invest more in quality management initiatives and promote the system's quality performance.

In addition, better system financial performance boosts members' confidence and trust in collaboration. Affiliates' financial reserves could help them buffer financial difficulties during social and economic turmoil. The buffer could assist in preventing quality initiatives suspension and maintain the hospital system's membership. Consequently, affiliated members would be more motivated to put money and effort into maintaining the system relationship, which could boost collaboration and hence quality improvement.

Financial improvement will attract well-trained healthcare professionals to accredited hospitals. It also facilitates employees' performance in providing healthcare services to patients. Consequently, a system's quality performance should be enhanced by an increased accreditation level through financial improvement. This suggests the following hypothesis:

Hypothesis 3: The system's financial performance meditates the relationship between the accreditation level in a hospital system and the system's quality performance.

CHAPTER 4: DATA AND METHODOLOGY

Data Collection

This research collected and utilized a cross-sectional secondary data set of American hospitals. In order to include more comprehensive and up-to-date hospital information, the research selected the year 2020 to test the hypotheses (all data were collected in 2022). Several data sets were collected and merged to test the research questions. The general procedure of data collection and processing is summarized in Figure 5. The detailed process is described in the following pages.

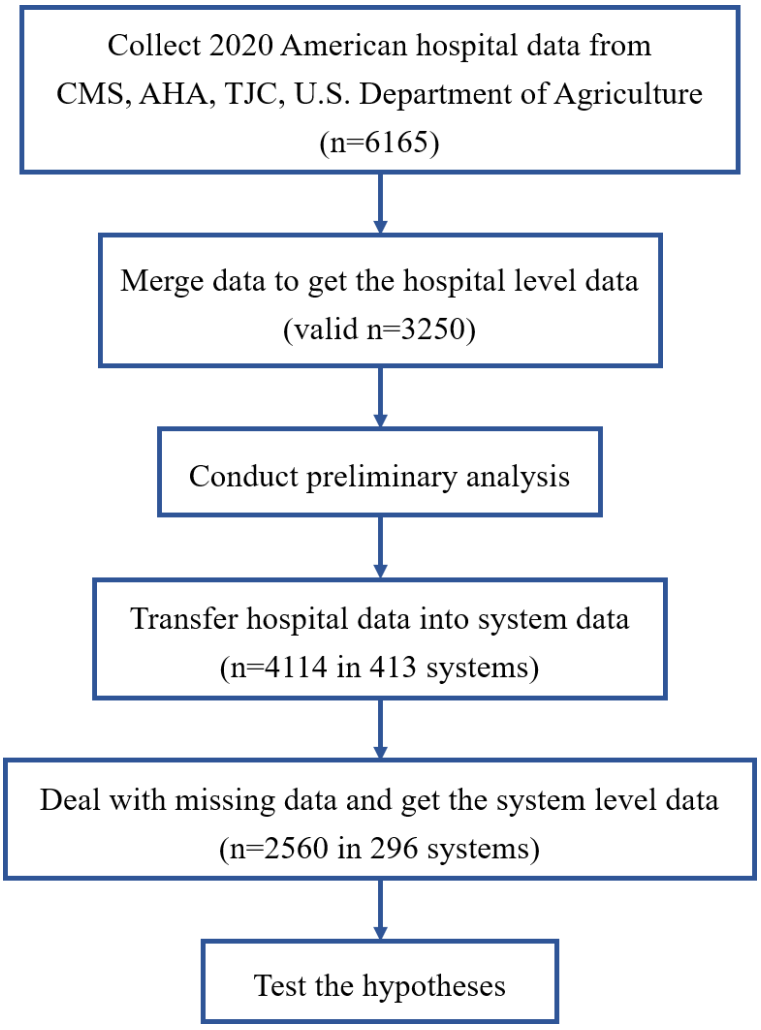


Figure 5 *Flow Map of Data Collection and Processing Procedure*

The Joint Commission (TJC) is the largest third-party accrediting organization in the United States. TJC conducts the Joint Commission on Accreditation of Health Care Organizations (JCAHO) program, providing an accrediting process for worldwide hospitals and awarding accreditation certifications to accredited hospitals that meet their standards (https://www.qualitycheck.org/data-download/accreditation-data-download/) (The Joint Commission, n.d.). Since hospitals in America can gain reimbursement qualifications after being accredited by TJC, many American hospitals seek accreditation from TJC (Sprague, 2005).

TJC accreditation has also been frequently studied in the healthcare literature (Bogh et al., 2015; Lutfiyya et al., 2009). Using structural analysis, Tabrizi et al. identified the JCAHO as one of the most comprehensive accreditation programs worldwide (Tabrizi et al., 2011). Therefore, this study gathered the "***accreditation status***" of American hospitals in 2020 from TJC. The study used it to represent the accreditation level in the research because it is the most frequently utilized and investigated accreditation program in America. The accreditation status generally renews every year by TJC after application by hospitals, and the accreditation status is binary: either accredited (***Accreditation*** = 1 if a hospital is accredited or accredited with a follow-up survey, and Accreditation = 0 if TJC gives denial as the accreditation decision to a hospital).

The Centers for Medicare & Medicaid Services (CMS), a federal health supervision agency, monitors the performance of American hospitals and provides public information. The CMS conducts the Hospital Compare (HCAHPS) and the Hospital Value-Based Purchasing (HVBP) Program to supervise hospital quality and efficiency performance; it examines hospitals' experiential quality, clinical quality, and overall rating (https://data.cms.gov/provider-data/topics/hospitals) (The Centers for Medicare & Medicaid Services, n.d.). The research

reported here took the ***Overall Hospital Rating*** (ranging from 1 to 5)—which is calculated based on CMS's clinical quality and experiential quality measure—as the quality-of-care measure (0 lists the detailed groups and items selected by the CMS in evaluating overall hospital ratings). The rationale for selecting the Overall Hospital Rating is that the difference would be hard to identify if the analysis compared individual measures of quality performance after taking averages on a system level. In addition, it is difficult to deal with missing data since there is some missing data for each quality-of-care measure. The CMS addresses the missing data problem by adjusting the weight of each measure group, which is more reasonable and convenient to employ in the research. It is worth noting that since the CMS collected some measures in the year 2020 and hospitals had been struggling with the COVID-19 pandemic, the overall hospital rating scores may be affected by the COVID-19 pandemic.

Research has focused on certain hospital characteristics in accreditation, including ownership, primary service, bed sizes, and teaching status (Araujo et al., 2020; Stock & McFadden, 2017). Based on prior research, several variables were chosen as control variables. The first control variable is ***ownership status***, representing who owns and operates the hospital (Nair et al., 2018; Stover, 2005). Different types of hospitals generally differ in performance due to variations in control, purpose setting, and funding (Goldstein & Naor, 2005). Hospitals that are government-owned, not-for-profit, or investor-owned, are transformed into three dummy variables: Government, Not-For-Profit, and Investor. The second control variable is ***hospital type***, which represents a hospital's principal disease focus, including general, critical access, psychiatric, children, and the like (Doyle et al., 2013). Hospitals that provide general medical and surgical services constitute the largest hospital group and are the most frequently investigated; general medical and surgical hospitals are different from other types of hospitals in

terms of the range of services they offer and the mix of patients they treat. This research examined general hospitals and created a dummy variable: General (General = 1 if a hospital is a general type, 0 otherwise). The study collected hospitals' general characteristics (address, hospital type, and ownership) and quality of care measures in 2020 from the CMS.

The American Hospital Association (AHA) is an American healthcare industry trade association that includes about 5,000 American healthcare providers. The AHA represents healthcare members and leads industry innovations. The AHA annually conducts surveys among American hospitals and has gathered basic and financial information since 1946 (https://www.ahadata.com/aha-annual-survey-database) (American Hospital Association, 2022). The AHA annual survey data has been extensively utilized in healthcare research (G. J. Bazzoli et al., 1999; Marcozzi et al., 2020; Tajeu et al., 2015).

Supplementary data were purchased from the AHA, including hospital characteristics (total beds, teaching affiliation), hospital affiliation status and the affiliated system, and financial performance measures. Specifically, the study employed net patient revenue as the financial performance measure. Net patient revenue is the total money gained from patient services by payors, including individual payment, private insurance, Medicaid, and Medicare. It is calculated by total patient revenue minus allowances and discounts on patient accounts. It does not factor in extra subsidies by governments, donations from foundations, or stock returns. Net patient revenue is an essential indicator of financial strength. Hospitals rely on these revenues to pay employees, maintain medical equipment, and invest in healthcare research, since net patient revenue accounts for a large share of income for many hospitals.

Net patient revenue has been widely utilized as the hospital financial performance indicator (Apenteng et al., 2020; Qi & Han, 2020; Richter & Muhlestein, 2017). For instance, Qi

and Han tested how clinical and business information technology affects hospital net patient revenue (Qi & Han, 2020). Following prior research, net patient revenue was chosen for this study to represent hospital financial performance. Several control variables were selected and collected from the AHA. It should be noted that net patient revenue may also have been affected by the COVID-19 pandemic since it was calculated based on fiscal year 2020.

The third control variable is ***hospital size***, which is measured by the number of beds in a hospital (Mcfarland et al., 2015; Williams et al., 2016). Hospital size has served as the independent variable, moderator, and control variable in empirical research, and has been confirmed as being related to hospital quality and financial performance (Silvera, 2017; Williams et al., 2016). Larger hospitals may be associated with lower patient satisfaction (McFarland et al., 2017) The study reported here summed up all affiliated hospitals' number of beds data in a hospital system and defined that as the network size and employed it in the system-level analysis.

The number of hospitals in a network could also affect system performance since a more extensive system is usually easier to generate scale effects (Nair et al., 2018). The fourth control variable was ***network scale***, which was calculated as the number of hospitals in a hospital system. Teaching status is a possibly influential factor in hospital performance analysis (Mazurenko et al., 2017; Tai & Bame, 2017) because teaching hospitals undertake research and teaching missions beyond basic healthcare responsibilities. Teaching hospitals are generally affiliated with the Council of Teaching Hospitals designation (COTH) or other teaching associations and medical schools. Therefore, teaching status was used as the fifth control variable (teaching status = 1 if a hospital has a teaching affiliation relationship, and 0 otherwise).

Finally, the geographic distribution of hospitals is also a potential influencing factor on hospital performance (Elkins et al., 2017; Stock & McFadden, 2017). The American Department

of Agriculture classifies American counties as metropolitan or non-metropolitan counties in the Rural-Urban Continuum Codes (https://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx) (U.S. Department of Agriculture, n.d.). The study matched the hospital's zip code, which was collected from the CMS, with the rural-urban county code and identified each hospital as an urban- or rural-located hospital. Hence, ***Urban*** became the sixth control variable in the research (Urban = 1 if a hospital is located in an urban area, Urban = 0 if a hospital is located in a rural area).

After collecting hospital information from the above resources, the study employed characteristics of individual hospitals to speculate that certain system features may affect a system's financial and quality performance. In order to avoid the curvilinearity problem caused by system size, the mean value and percentage of diverse hospitals in a system were used for some of the system-level measures. Specifically, the study utilized a system's average overall hospital rating and net patient revenue to represent system-level performance. Several system-level measures were used, including the percentage of accreditation status in a system, ownership, hospital type, teaching status, and urban/rural status. The summary and detailed calculation of all variables are described in the next section.

Variable Measures

Independent variable:

Accreditation level in a hospital system (%Accreditation) is measured by the percentage of hospitals in a hospital system that were accredited by the JCAHO in 2020.

Dependent variables:

Hospital system quality of care (AVGRATING) is measured by the mean value of hospitals' overall hospital rating in a hospital system.

Hospital system financial performance (AVGNPR) is measured by the average of hospitals' net patient revenue in a hospital system.

Control variables:

System scale (N) is measured by the number of hospitals in a hospital system.

System size (Tbeds) is measured by the summation of hospitals' total beds in a hospital system.

Control/Ownership in a hospital system is measured by dummy variables: **Investor-owned hospitals proportion (%Investor)** is measured by the percentage of investor-owned hospitals in a hospital system; **government-owned hospitals proportion (%Government)** is measured by the percentage of government-owned hospitals in a hospital system; and the rest **(%Not-For-Profit)** represents not-for-profit hospitals proportion.

Teaching hospital in a hospital system (%Teaching) is measured by the percentage of hospitals that have teaching programs or medical school affiliations in a hospital system.

General hospital in a hospital system (%General) is measured by the percentage of hospitals that provide general medical and surgical services as the primary service in a hospital system.

Urban hospital in a hospital system (%Urban) is measured by the percentage of urban-located hospitals in a hospital system.

Preliminary Check

The research employed SPSS 20.0 to deal with the data sets and conduct multiple linear regressions to test the hypotheses.

Before investigating the accreditation level in a hospital system, the study probed the effect of accreditation and system membership on individual hospital quality and financial performance to testify whether the results are in accordance with previous research. By checking descriptive statistics, it was discovered that around two-thirds of American hospitals joined a

hospital system, and most hospitals were accredited by TJC in 2020 (see Table 2). The large proportion demonstrates the prevalence of hospital systems and accreditation programs in America. The mean overall hospital rating is 3.27, slightly above 3 (the average score), indicating tremendous progress to be made in hospital quality enhancement.

Table 2 *Descriptive Statistics of Hospitals*

Characteristics	Number	Percentage(%)
Urban/Rural		
Urban	3691	59.9
Rural	2474	40.1
Control/Ownership		
Investor-owned	1601	26
Government-owned	1427	23.1
Not-for-profit	3137	50.9
Primary Service		
General medical and surgical	4553	73.9
Other	1612	26.1
Teaching Status		
Teaching	2615	42.4
Non-teaching	3550	57.6
Accreditation by TJC		
Accredited	4061	65.9
Non-accredited	2104	34.1
System Affiliation		
Affiliated	4114	66.7
Independent	2051	33.3
Overall Hospital Rating	Mean=3.27 (Sd=1.08)	
Net Patient Revenue	Mean=188.85 (Sd=369.40)	
Number of observations	6165	
Valid N (listwise)	3250	

Skewness and kurtosis were checked for net patient revenue (skewness = 5.338, kurtosis = 44.449) and overall hospital rating (skewness = -0.268, kurtosis = -0.609) to ensure the normality of the dependent variables (see attached histograms with normal curve overlays in Appendix B:). The net patient revenue does not have a normal distribution, but the overall hospital rating is acceptable. The non-normality problem of the dependent variable will cause invalidity in the linear regression result. In order to deal with the non-normality problems, empirical research often uses the data transformation method to generate approximate normal distribution. Thus, the

study conducted a natural logarithmic (base-E) transformation on net patient revenue and named the new variable ***LnNPR*** (Feng et al., 2013).

Next, the research tested whether the accreditation status is related to hospital quality of care and financial performance. Constraining hospital bed size, metropolitan status, ownership, primary service, and teaching status, both multiple linear regression models are significant at the 0.05 level ($F = 49.409$, $p < 0.001$; $F = 1528.461$, $p < 0.001$), as illustrated in **Table 3**[1]. The results show that whether a hospital is accredited by TJC is not significantly related to hospital quality of care ($\beta = -0.01$, $p = 0.760$) but significantly and positively associated with hospital financial performance ($\beta = 0.48$, $p < 0.001$) at the 0.05 level. Keeping all control variables constant, the predicted mean net patient revenue of accredited hospitals is approximately 47.8% higher than non-accredited hospitals.

Table 3 *Accreditation Status on Hospital Quality and Financial Performances*

Dependent variables	Overall Hospital Rating		LnNPR	
Variables	Beta	SD	Beta	SD
Intercept	**4.36**	0.076	**2.17**	0.043
Beds (Total Facility)	**-0.00**	0.000	**0.00**	0.000
Urban	**-0.14**	0.039	**0.45**	0.030
Investor	**-0.40**	0.047	**-0.21**	0.032
Government	**-0.32**	0.048	**-0.42**	0.033
General	**-0.74**	0.066	**1.00**	0.035
Teaching	**-0.15**	0.039	**0.70**	0.029
Accreditation	-0.01	0.041	**0.48**	0.028
	adjusted R-square = 0.081		adjusted R-square =0.689	
	F = 49.409		**F=1528.461**	

[1] The numbers in bold in Table 3 and the following tables indicate that the results are significant at the 0.05 level unless otherwise stated.

The research employed the same method when analyzing the accreditation effect to investigate whether hospital system membership affects hospital quality and financial performance. In **Table 4**, the regression results show that both models are significant at the 0.05 level ($F = 53.190$, $p < 0.001$; $F = 1417.790$, $p < 0.001$). System affiliation shows positive and significant linkages with hospital quality ($\beta = 0.20$, $p < 0.001$) and financial performances ($\beta = 0.16$, $p < 0.001$). It indicates that hospital system members are predicted to have a 0.204 higher score on overall hospital rating compared to independent hospitals on average, controlling for other variables. In addition, system-affiliated hospitals have approximately 15.8 percent higher net patient revenue than independent hospitals on average when keeping control variables constant.

Table 4 *Hospital System Membership on Hospital Quality and Financial Performances*

Dependent variables	Overall Hospital Rating		LnNPR	
Variables	Beta	SD	Beta	SD
Intercept	**4.24**	0.076	**2.32**	0.044
Beds (Total Facility)	**-0.00**	0.000	**0.00**	0.000
Urban	**-0.17**	0.038	**0.54**	0.030
Investor	**-0.43**	0.047	**-0.19**	0.033
Government	**-0.24**	0.050	**-0.46**	0.035
General	**-0.75**	0.066	**0.96**	0.036
Teaching	**-0.17**	0.039	**0.76**	0.029
System	**0.20**	0.041	**0.16**	0.028
	adjusted R-square = 0.087		adjusted R-square =0.672	
	F = 53.190		**F=1417.790**	

After testing the effects of accreditation and system affiliation on the individual hospital level, the statistics for the 4,114 affiliated hospitals were merged and transformed to investigate the research hypotheses. The study employed a two-step method to handle the missing data problem in overall hospital rating (1324 missing data) and net patient revenue (958 missing data). First, the research eliminated hospital systems with more than fifty percent missing data for overall hospital rating or net patient revenue; this resulted in 296 systems with 2560 hospitals. Next, mean values were assigned to the remaining missing data, and the average system overall hospital ratings and net patient revenue were calculated based on the revised data. The research utilized the merged data set to test the hypotheses.

The hospital systems in the research sample vary widely in size and financial performance (see Table 5). The not-for-profit hospital is the majority type in hospital systems, accounting for 68.3 percent of all members, followed by investor-owned (24.3%), and governmental-control hospitals (8.2%). Accredited hospitals account for 78.3 percent of total system members, which is higher than the percentage of accredited hospitals nationwide (65.9%). Before conducting multiple linear regressions, the skewness and kurtosis of AVGNPR and AVGRATING were checked. The skewness and kurtosis of AVGRATING are -0.393 and 0.628, which is acceptable for analysis. Howbeit, AVGNPR seems not to follow a normal distribution (skewness = 2.659, kurtosis = 9.884). Therefore, the study applied the same method for individual hospital net patient revenue, making a logarithmic transformation on AVGNPR, and the new variable is *LnAVGNPR* (skewness = -0.370, kurtosis = 0.784). As AVGNPR ranges from 14.63 to 1950.18 (greater than zero), all numbers can be transformed into logarithms without data loss. Table 6 presents the correlation matrix of variables in the following analysis.

Table 5 *Characteristics of Hospital Systems*

Descriptive Statistics	Minimum	Maximum	Mean	Std. Deviation	Sum
N	1	156	8.65	15.18	2560
Tbeds	25	39468	1637.41	2949.98	484672
Government	0	25	0.72	2.06	212
Investor	0	143	2.10	12.43	623
Not-for-profit	0	97	5.83	8.15	1725
General	0	148	7.73	13.27	2289
Teaching	0	106	4.46	7.99	1321
Urban	0	140	5.48	12.30	1621
Accreditation	0	153	6.78	14.22	2006
AVGNPR	14.63	1950.18	319.18	277.62	
AVGRATING	1	5	3.27	0.72	
Valid N (listwise)	296				

Table 6 *Correlation Matrix for Variables in the Model*

Variables	1	2	3	4	5	6	7	8	9	10
1 AVGRATING	1									
2 LnAVGNPR	0.06	1								
3 %Accreditation	0.03	**0.23**	1							
4 N	0.02	-0.09	0.10	1						
5 Tbeds	-0.01	**0.12**	**0.15**	**0.89**	1					
6 %Investor	**-0.20**	**-0.34**	0.02	**0.39**	**0.29**	1				
7 %Government	**-0.12**	-0.04	-0.10	-0.09	-0.09	-0.10	1			
8 %General	-0.01	0.09	-0.03	-0.09	-0.01	**-0.26**	0.02	1		
9 %Teaching	-0.04	**0.53**	**0.19**	-0.11	0.04	**-0.26**	-0.10	0.02	1	
10 %Urban	**-0.14**	**0.39**	**0.24**	0.04	**0.13**	0.06	-0.09	**-0.28**	**0.35**	1

Hypotheses Testing and Results

Hypothesis 1 was tested by conducting a multiple linear regression on LnAVGNPR; the result is shown in **Table 7**. The regression model is significant at the 0.05 level ($F = 29.796$, $p < 0.001$), although the explanation degree of the model is low (adjusted R-square = 0.438). System scale ($\beta = -0.02$, $p < 0.001$) and investor-type percentage ($\beta = -0.84$, $p < 0.001$) have a negative controlling effect; by contrast, system size ($\beta = 0.00014$, $p < 0.001$), teaching hospital percentage ($\beta = 0.75$, $p < 0.001$), and urban-located percentage ($\beta = 0.56$, $p < 0.001$) show positive controlling effect at the 0.05 level. The percentage of accredited hospitals in a hospital system displays a significant and positive correlation with Ln average net patient revenue ($\beta = 0.19$, $p = 0.057$) at the 0.1 level, which supports ***Hypothesis 1***. The hospital system's average net patient revenue is reckoned to enhance by 0.19 percent for every percent increase in the accreditation level.

Table 7 *Accreditation Level on System Net Patient Revenue*

Multiple regression analysis				
Dependent variable	LnAVGNPR			
Multiple R	0.674			
R-square	0.454			
Adjusted R-square	0.438			
Standard error	0.601			
Analysis of variance				
	df	Sum of squares	Mean square	
Regression	8	86.165	10.771	
Residual	287	103.744	0.361	
F= 29.796	Significant F = 0.000			
Variables	Beta	SD	T	Significant T
(Constant)	4.34	0.25	**17.34**	0.000
N	-0.02	0.01	**-4.00**	0.000
Tbeds	0.00	0.00	**4.93**	0.000
%Investor	-0.84	0.17	**-4.82**	0.000
%Government	0.00	0.12	0.02	0.987
%General	0.27	0.22	1.21	0.227
%Teaching	0.75	0.13	**5.77**	0.000
%Urban	0.56	0.12	**4.87**	0.000
%Accreditation	0.19	0.10	**1.91**	0.057

A multiple linear regression was run on AVGRATING to test ***Hypothesis 2*** (see **Table 8**). Although the model is significant ($F = 4.521$, $p < 0.001$) at the 0.05 level, the coefficient of Accreditation percentage shows no significance ($\beta = 0.12$, $p = 0.289$) at the 0.1 level. Only three control variables show negative significance in the model: investor-type percentage ($\beta = -0.94$, $p < 0.001$), government-type percentage ($\beta = -0.38$, $p = 0.006$), general-type percentage ($\beta = -0.45$, $p = 0.075$), and urban-located percentage ($\beta = -0.31$, $p = 0.019$). The regression result seems not to support the proposed Hypothesis 2. However, after drawing the scatterplot of %Accreditation with AVGRATING, the relationship between them is more likely curvilinear instead of linear (**Figure 6**). Therefore, the study employed a curve fit for %Accreditation and AVGRATING (see **Table 9**). The quadratic regression model is significant ($F = 2.854$, $p = 0.059$) at the 0.1 level. In contrast, the linear regression model shows no significance ($F = 0.289$, $p = 0.591$) at the 0.1 level. It indicates that the quadratic relationship fits better than the linear relationship.

Table 8 *Accreditation Level on System Quality Performance*

Multiple regression analysis				
Dependent variable	AVGRATING			
Multiple R	0.335			
R-square	0.112			
Adjusted R-square	0.087			
Standard error	0.687			
Analysis of variance				
	df	Sum of squares	Mean square	
Regression	8	17.12	2.14	
Residual	287	135.839	0.473	
F= 4.521	Significant F = 0.000			
Variables	Beta	SD	T	Significant T
(Constant)	3.96	0.29	**13.81**	0.000
N	0.01	0.01	1.46	0.145
Tbeds	0.00	0.00	-0.76	0.449
%Investor	-0.94	0.20	**-4.70**	0.000
%Government	-0.38	0.14	**-2.75**	0.006
%General	-0.45	0.25	**-1.79**	0.075
%Teaching	-0.14	0.15	-0.97	0.335
%Urban	-0.31	0.13	**-2.37**	0.019
%Accreditation	0.12	0.12	1.06	0.289

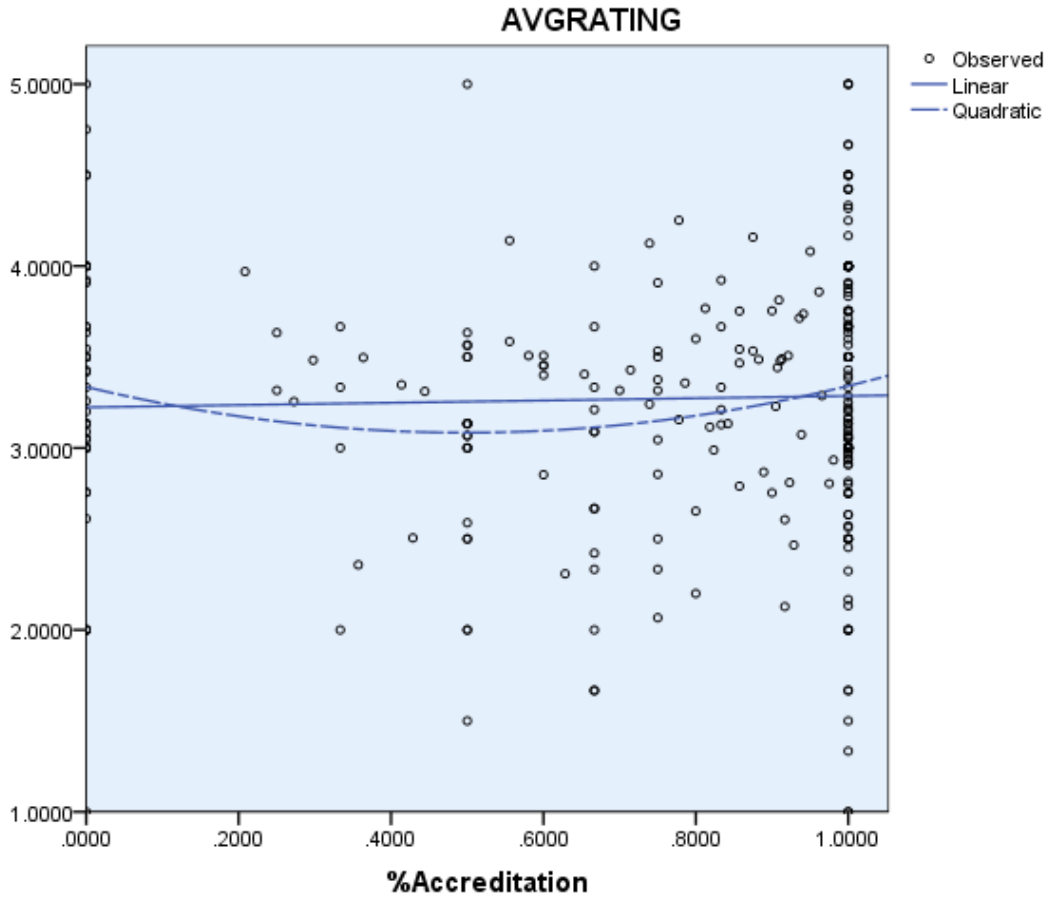


Figure 6 *Scatterplot and Fit Plots of %Accreditation with AVGRATING*

Table 9 *Curve Fit of %Accreditation and AVGRATING (linear and quadratic)*

		square of sum	df	Mean Square	R-square	F	Sig.
Linear	Regression	0.15	1	0.15			
	Residual	152.808	294	0.52			
	Total	152.959	295		0.001	0.289	0.591
Quadratic	Regression	2.923	2	1.461			
	Residual	150.036	293	0.512			
	Total	152.959	295		0.019	2.854	0.059

Hence, a quadratic transformation on %Accreditation was conducted (***%Accreditation square***) and used to re-examine the relationship, as shown in *Equation 1*.

Equation 1

$$\text{AVGRATING} = \beta_0 + \beta_1 * \text{N} + \beta_2 * \text{Tbeds} + \beta_3 * \%Investor + \beta_4 * \%Government + \beta_5 * \%General + \beta_6 * \%Teaching + \beta_7 * \%Urban + \beta_8 * \%Accreditation + \beta_9 * \%Accreditation^2$$

In addition, to reduce the multicollinearity problem brought by the polynomial items of %Accreditation, all the variables were standardized employing the z-score method. **Table 10** shows the hierarchical regression results with control variables, %Accreditation, and the quadratic item.

Table 10 *Accreditation Level on System Quality Performance Revised*

Variables	AVGRATING		
	Controls	Model1	Model2
(Constant)	**0.00**	**0.00**	**0.00**
N	0.20	0.20	**0.25**
Tbeds	-0.09	-0.10	-0.13
%Investor	**-0.31**	**-0.31**	**-0.32**
%Government	**-0.16**	**-0.16**	**-0.17**
%General	**-0.11**	**-0.11**	**-0.12**
%Teaching	-0.06	-0.06	-0.09
%Urban	**-0.14**	**-0.15**	**-0.18**
%Accreditation		0.06	**-0.73**
%Accreditation square			**0.82**
F	**5.004**	**4.521**	**5.559**
R-square	0.108	0.112	0.149
Adjusted R-square	0.087	0.087	0.122

From Model 1 to Model 2, %Accreditation becomes significant ($\beta_8 = -0.73,\ p = 0.002;\ \beta_9 = 0.82, p < 0.001$) at the 0.05 level in the model after bringing in the quadratic term. Moreover, the F value (F = 5.559, p < 0.001) and adjusted R-square (0.122) are the highest among the three models. It suggests that the U-shaped relationship is the most convincing result

in explaining the effect of accreditation level on system average quality rating. With the increase of the accreditation level in the hospital system, system average quality performance will decline initially and increase subsequently; when the accreditation percentage is around 44.5 percent, system quality performance will be at the lowest point. In the model, all control variables except Tbeds and %Teaching are significant ($\beta_1 = 0.25, p = 0.065;\ \beta_3 = -0.32, p < 0.001;\ \beta_4 = -0.17, p = 0.003;\ \beta_5 = -0.12, p = 0.045;\ \beta_7 = -0.18, p = 0.005$) at the 0.1 level.

In short, ***Hypothesis 2*** was rejected, but a U-shaped relationship between accreditation level and system quality performance was detected instead.

Finally, the study investigated ***Hypothesis 3*** after examining the direct effects. In order to test the mediating effect of financial performance, the study adopted Baron and Kenny's method for mediation (Baron & Kenny, 1986). The method consists of multi-step regressions. Specifically, it requires examining the direct effect between the explanatory variable and the dependent variable, and between the explanatory variable and the mediator first, which were explored in the preceding analysis. Then the mediator should be added to the regression model of the explanatory variable on the dependent variable to check whether the coefficient of the explanatory variable has decreased. The study followed the method to conduct a new multiple linear regression, and the relationship is depicted in *Equation 2*.

Equation 2

$$\begin{aligned}\text{AVGRATING} = {} & \beta_0 + \beta_1 * \text{N} + \beta_2 * \text{Tbeds} + \beta_3 * \%Investor + \beta_4 * \%Government + \beta_5 * \%General \\ & + \beta_6 * \%Teaching + \beta_7 * \%Urban + \beta_8 * \%Accreditation + \beta_9 * \%Accreditation^2 \\ & + \beta_{10} * AVGNPR\end{aligned}$$

As shown in **Table 11**, after bringing the mediator into the model (Model 3), the model is still significant (F = 5.520, p < 0.001) at the 0.05 level, and the adjusted R-square increases from 0.122 to 0.133, which proves the reliability of the new model. The explanatory

variable, %Accreditation ($\beta_8 = -0.71,\ p = 0.002;\ \beta_9 = 0.80, p = 0.001$), and AVGNPR ($\beta_{10} = 0.14, p = 0.034$) both show significance at the 0.05 level. Furthermore, the coefficients of %Accreditation and $\%Accreditation^2$ decrease from (-0.73, 0.82) to (-0.71, 0.80). The descent suggests that system financial performance has a partial mediating effect of accreditation level on system quality performance. In other words, the regression results support ***Hypothesis 3***. All control variables except Tbeds are significant ($\beta_1 = 0.32, p = 0.018;\ \beta_3 = -0.31, p < 0.001;\ \beta_4 = -0.18, p = 0.001;\ \beta_5 = -0.11, p = 0.061;\ \beta_6 = -0.12, p = 0.063; \beta_7 = -0.19, p = 0.003$) at the 0.1 level in the regression.

To summarize, the empirical study supports Hypothesis 1 and Hypothesis 3; Hypothesis 2 was rejected, but a U-shaped relationship was identified.

Table 11 *Mediating Effect of System Financial Performance*

Variables	AVGRATING		
	Controls	Model2	Model3
(Constant)	**0.00**	**0.00**	**0.00**
N	0.20	**0.25**	**0.32**
Tbeds	-0.09	-0.13	-0.21
%Investor	**-0.31**	**-0.32**	**-0.31**
%Government	**-0.16**	**-0.17**	**-0.18**
%General	**-0.11**	**-0.12**	**-0.11**
%Teaching	-0.06	-0.09	**-0.12**
%Urban	**-0.14**	**-0.18**	**-0.19**
%Accreditation		**-0.73**	**-0.71**
%Accreditation square		**0.82**	**0.80**
AVGNPR			**0.14**
F	**5.004**	**5.559**	**5.520**
R-square	0.108	0.149	0.162
Adjusted R-square	0.087	0.122	0.133

CHAPTER 5: DISCUSSION

Analysis of the Findings

This thesis explored a sample of 296 hospital systems with 2,560 hospitals in the U.S. incorporating hospital-level and system-level accreditation status, performance, and characteristics. The research was designed to determine what role accreditation program plays in hospital systems. Even though hospital accreditation has become prevalent and institutionalized worldwide, more research is needed to determine whether and how accreditation affects hospital system performance. Accordingly, the research reported here first clarified the concept of the hospital system, quality of care, and hospital accreditation, and reviewed the literature on this issue. Institutional theory, systems theory, and the SIOPKS method were reviewed to theoretically explain and construct a conceptual framework. Within the conceptual framework, three hypotheses were put forward: (1) that accreditation level in a hospital system is positively associated with *system quality*; (2) that accreditation level in a hospital system is positively associated with *financial performance*; and (3) that system financial performance has a mediating role between accreditation level and system quality performance. The study employed the multiple linear regression method with the secondary merged dataset to examine the three hypotheses. There was sufficient evidence to support Hypotheses 1 and 3. Hypothesis 2 was rejected, but through a curve fit and regression model comparison, the study identified a U-shaped relationship between system accreditation level and system quality performance.

The study extends several aspects of the literature through both theoretical and empirical analysis. First, the study is among the first to theoretically and comprehensively explain the impact of hospital accreditation programs on the hospital system (based on institutional theory). The hospital accreditation program is a quality assurance process that creates an incentive for

hospitals to implement quality management initiatives and promote an organizational safety culture. Nevertheless, some researchers are somewhat skeptical about the effect of accreditation.

In order to address the divergence in the literature, the study reported here combines institutional theory and systems theory to analyze the effect of accreditation programs. Based on institutional theory, getting accreditation can be treated as an institutionalization process (Alyahya et al., 2018). After borrowing from accreditation research in other industries, such as the food industry and the higher education industry, this study uses three isomorphism mechanisms to explain possible incentives and influences in hospital accreditation (Ab Talib et al., 2016; Cooper et al., 2014). Hospitals are motivated by *coercive* pressure to achieve accreditation for the purpose of gaining reimbursement qualifications from governments or foundations, fulfilling social expectations, and reducing trade barriers when entering the international healthcare market. Organizations also perceive *normative* pressure that is driven by professionalization issues. In the healthcare field, professionalization relates to professional communication through medical schools and professional associations. *Mimetic* pressure emerges due to ambiguity and uncertainty in the field.

The hospital accreditation process is generally fuzzy and laborious, leading some to doubt the value of accreditation. The financial strain and competitive environment in countries like the U.S. also cause uncertainty for hospitals, who are then motivated to mimic other accredited hospitals and are more likely to seek accreditation. Taken together, hospitals try to achieve accreditation due to institutional isomorphic pressure. Accreditation organizations can be a force that promotes other institutional initiatives since accreditation organizations are generally powerful parties in the healthcare industry. Hospital accreditation is an institutional impetus in causing hospitals to adopt Hospital-Based Palliative Care Programs (Stover, 2005).

For hospital system affiliates, the system can impose all three types of isomorphic pressure on them to get accreditation. The expectation of good performance by partners and by other hospitals in the system exerts coercive pressure on unaccredited hospitals. The communication among employees of affiliated hospitals also leads to the diffusion of standards and norms created by accreditation organizations, and this imposes normative pressure. Affiliates' membership creates motivation and the capability to mimic other hospitals in the hospital system. Accreditation serves as an institutionalization impetus in a hospital system, promoting hospital affiliates and system operators to adopt institutional initiatives.

Systems theory is based on the idea that a complex system consists of interrelated parts (Ackoff, 1971). Based on the SIPOKS process model proposed by Chuang and Inder, the study involves hospital system members in a SIPOKS model to analyze healthcare service in a holistic system (Chuang & Inder, 2009). After combining institutional theory and systems theory, the study offers a theoretical basis for investigating accreditation in a hospital system. Specifically, the paper identifies the accreditation program as a dual tool: a quality assurance instrument and a symbolic tool.

The results reported in this thesis fill a gap in the empirical research on how hospital accreditation impacts a system. Some research has explored the effect of accreditation programs and hospital system membership, respectively (Hussein et al., 2021; Jin & Nembhard, 2022). However, whether and how accreditation programs affect a hospital system remains unclear. Consistent with prior research, the study corroborates the benefit of hospital system membership on the individual level with the cross-sectional analysis (Gombeski et al., 2014; Henke et al., 2018). Hospital system membership is positively associated with overall hospital rating and net patient revenue, but the investigation of individual accreditation programs has mixed results,

detecting a positive linkage with net patient revenue but no significance on the overall hospital rating (Lam et al., 2018; Sack et al., 2011).

Accreditation and Financial Performance in a Hospital System

Regarding the system level effect, this research reveals that the system accreditation level facilitates system financial enhancement. The consistency of the relationship between accreditation and financial performance on the individual and the system level confirms the instrumental nature of accreditation programs. As the conceptual framework outlines, hospitals and stakeholders regard accreditation certification as a distinguishing feature (Sedevich-Fons, 2013). Within hospitals, the success of getting accredited boosts the morale of personnel and further enhances employee performance. Accreditation offers legitimacy and symbolic performance enhancement for accredited hospitals. Within the system, accreditation programs provide a solid foundation for trust and collaboration since accreditation signals accredited affiliates are reliably good performers.

As the loosely-coupled system has prevailed, ensuring the safety and effectiveness of networking has become more crucial for affiliated hospitals. In this circumstance, with the increase in accreditation level, communication barriers between affiliates will be reduced, and system operators can better govern their systems and make better system-related decisions. Externally, the increased legitimacy that comes with accreditation ensures more reimbursement from governments and foundations, and more trust and power in collaborating with outsourcing partners. An accreditation level increase can also enhance the system's reputation through co-branding, improving patient preference and patient loyalty. As mentioned previously, accreditation organizations may promote other institutional initiatives. Hence, with the increased accreditation level in a hospital system, the motivation and chance of adopting new institutional

initiatives also increases, resulting in performance advancement. In short, the increment in financial performance brought by the system accreditation level calls for the need to concentrate more on accreditation programs for hospital system affiliates and system operators, especially in the uncertain and competitive environment in the healthcare industry.

Accreditation and Quality Performance in a Hospital System

The study results challenge the literature by detecting a U-shaped relationship between the system accreditation level and the system quality performance. With the increase of the accreditation level in a hospital system, the system quality performance initially has a downtrend trend, but then increases gradually when the accreditation percentage exceeds 44.5 percent.

There are several possible explanations for the U-shaped relationship. First, the U-shape attests to the dual role of accreditation in a hospital system. As an institutional process, accreditation serves as a symbolic tool. The literature suggests that institutionalization promotes only symbolic performance and has no effect on substantive performance (Heugens & Lander, 2009). It then follows that the purpose of obtaining accreditation is to enhance legitimacy, so hospitals only comply with accrediting standards during the auditing period and are not motivated to implement quality management initiatives. As well, during the accreditation period, hospitals must put time and effort into complying with the accrediting team (Jaafaripooyan, 2014). this situation, accreditation will enhance legitimacy but will also reduce efficiency. Consequently, with more affiliates getting accredited in a hospital system, quality efficiency will decrease, and that will depress system quality performance. A low level of accreditation cannot trigger quality management practices since the service process in the healthcare industry is hard to evaluate due to its complexity. Thus, the costs of implementing and maintaining quality management initiatives could be comparatively high. As a result, hospitals do not have the ability

to enhance the quality of care (Lam et al., 2018). When the accreditation level is initially low, affiliates do not have the motivation and capability to implement quality management tools without causing a decrease in efficiency. Therefore, system quality performance will decrease. Another factor to consider is that affiliated hospitals would generate performance divergence when the accreditation percentage is low. Affiliated and non-affiliated hospitals generally have different quality management processes, since affiliated hospitals would be devoting themselves to following the accreditation organization's guidance and preparing the accreditation program every year. In this situation, accredited hospitals would find it challenging to coordinate with non-accredited members, causing inefficiency in networking. The divergence would also be embodied in patient experience. When choosing hospitals, patients perceive the hospital system as a whole (Gombeski et al., 2014). Therefore, when patients visit non-accredited hospitals, they may feel disappointed by the performance gap between their expectations and the actual care received. This may lead to reluctance to coordinate with physicians and nurses. Hence, perceived healthcare quality and outcome quality will decrease. Overall, the divergence among affiliated members brought by accreditation would reduce the system's quality performance.

Another possible explanation lies in the degree of collaboration. The study posits that the accreditation level will strengthen the communication of the accreditation process in the system and reduce the accreditation pressure among accredited members. However, when the accreditation level is low, affiliated members may not communicate with the accreditation programs since many systems are loosely-coupled and hospitals only exchange a few resources, such as information technology, within the system (G. J. Bazzoli et al., 2000). Therefore, the proposed impact would not be significant when the accreditation level is relatively low.

By contrast, the relationship becomes reversed when the accreditation level exceeds 44.5 percent. When the accreditation level continues to rise, the quality assurance tool of accreditation gradually comes into play in the system. The institutional pressure from accreditation organizations will increase with more affiliates getting accredited. Affiliates are more motivated to implement quality management and measurement initiatives. In addition, affiliates can have more chances to learn about efficient and effective approaches to managing quality of care since more affiliates can acquire guidance from accreditation organizations. It will generate a safety culture within a hospital system, further promoting quality management. Therefore, when the accreditation level is high, as the accreditation level increases even further, affiliates will have more motivation and capabilities to implement quality management initiatives, and the decreased efficiency could be offset through affiliates' mutual learning.

To sum up, the system accreditation level has a U-shaped relationship with the system quality performance because of the dual role of accreditation and the complexity of networking relationships. Along with Hypothesis 1, the study reveals the dual role of accreditation level in a hospital system. The symbolic tool and the quality assurance tool of the accreditation program explain its complex effect on quality and financial performance in a hospital system.

Financial Performance as the Mediator

The research validates the mediation role of the system's financial performance between the accreditation level and system quality performance. In particular, the accreditation certification affects the system's quality performance through the enhancement of the system's financial performance. Extant literature has often testified to organizational factors in quality research (Jiang et al., 2006). On the system level, the system's financial performance provides a substantial economic base for hospitals to implement and monitor quality management practices.

Well-performed hospitals would be keen to continuous quality enhancement instead of meeting minimum requirements by the Joint Commission. Although the healthcare industry focuses on the quality of care influences, the study emphasizes the effect of the financial aspect (Richter & Muhlestein, 2017). Therefore, it is reasonable to involve financial performance in quality performance investigations because hospitals are generally patient-centered, and financial revenues can offer an economic base for continuous quality improvement.

Additional Findings

This investigation is a complement to the characteristics of the hospital system. The study utilized individual hospitals' features and transformed them into system-level characteristics. Specifically, the study employed six variables: system size, total beds, percentage of hospital ownership, primary service, teaching school affiliation, and metropolitan location. The control variables indicate mixed control effects in the models. The percentage of investor-owned hospitals indicates adverse effects on the system quality and financial performance; the governmental-owned proportion only negatively correlates with the system quality performance. System size harms the system's financial performance but positively affects the system's quality performance. On the contrary, the proportion of teaching and urban-located hospitals positively links with net patient revenue and negatively correlates with the average system quality rating. The total beds of the system only show one positive and significant influence on net patient revenue. The proportion of general-type hospitals in a system only positively affects the system quality performance. In addition, the fit of the empirical model is relatively low as the adjusted R-squares are only 0.438 and 0.133 in the multiple linear regressions. The results suggest a need for better fitting models in probing hospital system impacts.

Managerial Implications

The research reported here implies several managerial implications for the healthcare industry, especially for hospital administrators, hospital system operators, and policymakers. First, hospital administrators should be more cautious when seeking accreditation. The increase in financial performance that results from accreditation programs proves the benefits of accreditation, but it must be recognized that merely fulfilling accrediting standards during the auditing period may not advance quality. But proactive learning from accreditation organizations and implementing quality assurance initiatives could ensure quality enhancement eventually. In this progress, communicating with hospital system members would be an effective method to learn and cooperate regarding the adoption of specific quality management tools.

Second, the insight for hospital system operators is to deliberate on system cooperation. The empirical result supports the effectiveness of networking. The increase in accreditation level can further boost networking benefits. Nevertheless, it is possible that accreditation programs can suppress system performance when the accreditation level is relatively low. Therefore, system operators may consider promoting deeper cooperation, including accreditation communication, among system affiliates.

Third, for policymakers, how to promote quality improvement and maintain financial balance has been a crucial and challenging question. The study identifies the accreditation role in a hospital system. With the empirical results, policymakers will be more equipped to impel and motivate hospital system integration and accreditation program innovations. Policymakers can play a role in promoting accreditation programs, encouraging hospital system collaboration, and providing resources to support hospitals in their pursuit of accreditation. In addition, policymakers should support research and evaluation efforts to assess the effectiveness of

accreditation programs and other quality improvement initiatives. This can help identify best practices and inform future policy decisions.

Limitations and Future Research

There are several limitations in the study. First, the research is a cross-sectional study using 2020 American hospital data. The static data indicate the relationships that exist only at the data collection time and cannot show variation in accreditation impact over time. The COVID-19 pandemic created major dislocations worldwide since 2020. As mentioned in section 0, the pandemic may affect overall hospital ratings and net patient revenue. Therefore, whether and how the pandemic has affected the proposed relationships remains to be discovered. For future research, a longitudinal study that traces system performance changes by the accreditation level is necessary to analyze the impact of accreditation programs and assess strikes brought by the pandemic.

Second, the study merged hospital-level characteristics to represent system-level characteristics in the empirical analysis. Whether these variables, like the percentage of teaching hospitals in a system, are valid and appropriate in exploring hospital systems has yet to be determined. Since prior research mainly utilized network size and network age in the analysis of the hospital system, future research could focus more on additional characteristics of a hospital system and explore which one impacts system performance.

Third, the missing data problem exists in transforming hospital data into system data. Although the study explored the system-level effect, there was much missing data for each measure. The response rate of hospital system surveys by the AHA is also relatively low. Thus, future researchers could conduct empirical surveys or case studies to examine hospital systems in more detail.

Fourth. the study aggregated all types of hospital systems and focused on the system relationship per se. However, different types of hospital systems, such as strategic alliances and loose-coupled networks, have been shown to perform divergently in terms of financial and quality performance (G. J. Bazzoli et al., 2000). Hence, it would be reasonable to compare the effect of accreditation in diverse hospital systems.

Fifth, there are issues with the financial performance measure selection. This empirical research only selected one measure ("net patient revenue") to represent the financial outcome for hospitals and hospital systems. But that measure may indicate only the ability to acquire payment from payors. Since healthcare accounting and financial management involves other indicators and complex modes of funding, the use of net patient revenue cannot show whether hospital accreditation could affect other financial aspects. For instance, hospitals in low-income regions tend to give more allowances to patients and receive lower patient revenues. They are more likely to rely on other income streams, like charity donations, which could also be affected by hospital accreditation programs. Other crucial indicators have also been employed in the literature. For instance, Richter & Muhlestein utilize three financial measures in their research: net patient revenue, net income, and operating margin (Richter & Muhlestein, 2017). A future analysis incorporating a more comprehensive financial measurement structure would better assist in understanding the financial influences of hospital accreditation.

Sixth, in this study the accreditation decision status by the JCAHO was used to represent the accreditation level for hospitals and systems. Nevertheless, the number of years a hospital has maintained its accreditation may serve as an indicator of its accreditation level. Also, this study only selected one accreditation organization in the analysis. Future research could incorporate

more accreditation organizations and other dimensions of accreditation programs to better capture the effect of accreditation better.

Lastly, institutional theory was employed in the paper to explain the incentive and effect of accreditation in a hospital system. The institutional theory is a reasonable approach, but other possible theories could also be applied to the analysis, such as organizational learning theory and strategic management theory (Willem & Coopman, 2016; Yang & Nowell, 2021). For instance, organizational learning theory can assist in explaining the process of learning and exchanging technical and medical knowledge between hospital affiliates. For accreditation/certification research in other fields, academics have utilized more theories to probe into accreditation, which could also be borrowed in healthcare research. An example is the study by Stranieri et al., who combined transaction cost theory and the resource-based view to explain why managers in food industries employ environmentally friendly certifications (Stranieri et al., 2022). Future research can choose a new point of view or combine other theories with institutional theory to investigate accreditation programs in hospital systems.

CHAPTER 6: CONCLUSION

The study reported here addresses the gap in knowledge about the accreditation effect on hospital systems in healthcare research. By combining institutional theory and systems theory, the study identifies three types of isomorphic pressure of accreditation and sketches the process of healthcare services in a complex system. Accreditation is viewed as both a symbolic tool and a quality assurance tool. A conceptual framework with three hypotheses is proposed based on the literature. It was hypothesized that the accreditation level in a hospital system is positively associated with the system's quality and financial performance; the system's financial performance serves as the mediator in the model.

The study involved multiple linear regressions based on a cross-sectional archival dataset to investigate the hypotheses. The empirical results indicate that the accreditation level in a hospital system positively affects the system's financial performance. The regression reveals a U-shaped relationship between a system's accreditation level and quality performance. The system's financial performance mediates between a system's accreditation level and quality performance.

REFERENCES

Ab Talib, M. S., Siti, S. S., Abdul Hamid, A. B., & Ai Chin, T. (2016). Emerging Halal food market: an Institutional Theory of Halal certificate implementation. *Management Research Review*, *39*(9), 987–997. https://doi.org/10.1108/MRR-06-2015-0147

Abukhader, K. M. S., & Onbaşıoğlu, D. Ç. (2021). The effects of total quality management practices on employee performance and the effect of training as a moderating variable. *Uncertain Supply Chain Management*, *9*(3), 521–528. https://doi.org/10.5267/j.uscm.2021.6.010

Abuosi, A. A., Poku, C. A., Attafuah, P. Y. A., Anaba, E. A., Abor, P. A., Setordji, A., & Nketiah-Amponsah, E. (2022). Safety culture and adverse event reporting in Ghanaian healthcare facilities: Implications for patient safety. *PLoS ONE*, *17*(10 October), 1–18. https://doi.org/10.1371/journal.pone.0275606

Ackoff, R. L. (1971). Towards a system of systems concepts. *Management Science*, *17*(11), 661–671.

Al-alawy, K., Azaad Moonesar, I., Ali Mubarak Obaid, H., Gaafar, R., & Ismail Al-Abed Bawadi, E. (2021). A Mixed-Methods Study to Explore the Impact of Hospital Accreditation. *Inquiry (United States)*, *58*. https://doi.org/10.1177/0046958020981463

Al-Faouri, I., Al-Dmour, A., Al-Ali, N., AbuALRub, R., & Abu Moghli, F. (2019). Effect of Health Care Accreditation Council survey site visit on perceived stress level among Jordanian healthcare providers. *Nursing Forum*, *54*(1), 30–37. https://doi.org/10.1111/nuf.12294

Al-Jabri, F. Y. M., Turunen, H., & Kvist, T. (2021). Patients' Perceptions of Healthcare Quality at Hospitals Measured by the Revised Humane Caring Scale. *Journal of Patient Experience*, *8*. https://doi.org/10.1177/23743735211065265

Alaloul, F., Myers, J., Masterson, K. M., DiCicco, J., Collins, M. P., Hogan, F., Roesler, L., & Logsdon, M. C. (2019). Patient experience factors and health-related quality of life in hospitalized individuals. *Oncology Nursing Forum*, *46*(2), 238–247. https://doi.org/10.1188/19.ONF.238-247

Alexander, J. A., Lee, S. Y. D., & Bazzoli, G. J. (2003). Governance forms in health systems and health networks. *Health Care Management Review*, *28*(3), 228–242. https://doi.org/10.1097/00004010-200307000-00004

Alyahya, M., Hijazi, H., & Harvey, H. (2018). Explaining the accreditation process from the institutional isomorphism perspective: a case study of Jordanian primary healthcare centers. *International Journal of Health Planning and Management*, *33*(1), 102–120. https://doi.org/10.1002/hpm.2397

American Hospital Association. (2022). *AHA Annual Survey Database™ | AHA Data*. AHA Data & Insights. https://www.ahadata.com/aha-annual-survey-database

Anderson, G. F., Reinhardt, U. E., Hussey, P. S., & Petrosyan, V. (2003). It's the prices, stupid: Why the United States is so different from other countries. *Health Affairs*, *22*(3), 89–105. https://doi.org/10.1377/hlthaff.22.3.89

Aniza, I., Saperi, S., & Aljunid, S. M. (2008). Clinical pathway as a strategy in improving healthcare quality and cost containment. *Medicine & Health*, *3*(2), 239–246.

Apenteng, B. A., Ekpo, I. B., Mutiso, F. M., Akowuah, E. A., & Opoku, S. T. (2020). Examining the relationship between social media engagement and hospital revenue. *Health Marketing Quarterly*, *37*(1), 10–21. https://doi.org/10.1080/07359683.2020.1713575

Araujo, C. A. S., Siqueira, M. M., & Malik, A. M. (2020). Hospital accreditation impact on healthcare quality dimensions: A systematic review. *International Journal for Quality in Health Care*, *32*(8), 531–544. https://doi.org/10.1093/intqhc/mzaa090

Bakal, C. W. (2003). Quality Improvement for Diagnostic Neuroangiography and Other Procedures. *Journal of Vascular and Interventional Radiology*, *14*(9 PART 2), 255–256. https://doi.org/10.1097/01.RVI.0000094594.83406.8b

Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research. Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bazzoli, G. J., Chan, B., Shortell, S. M., & D'Aunno, T. (2000). The financial performance of hospitals belonging to health networks and systems. *Inquiry*, *37*(3), 234–252.

Bazzoli, G. J., Shortell, S. M., Dubbs, N., Chan, C., & Kralovec, P. (1999). A taxonomy of health networks and systems: bringing order out of chaos. *Health Services Research*, *33*(6), 1683–1717. http://www.ncbi.nlm.nih.gov/pubmed/10029504%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC1070343

Bazzoli, Gloria J., Chen, H.-F., Zhao, M., & Lindrooth, R. C. (2008). *HOSPITAL FINANCIAL CONDITION AND THE QUALITY OF PATIENT CARE*. *1131*(2007), 1127–1131. https://doi.org/10.1002/hec

Becker, E., Johnston, K., Bae, J., Hockenberry, J. M., Avgar, A. C., Liu, S., Wilson, I., & Milstein, A. (2015). Variations in the patients' hospital care experience by states' strategy for Medicaid expansion: 2009-2013. *Patient Experience Journal*, *2*(1), 124–142. https://doi.org/10.35680/2372-0247.1067

Benmoussa, N., Elyamami, A., Mansouri, K., Qbadou, M., & Illoussamen, E. (2019). A Multi-Criteria Decision Making Approach for Enhancing University Accreditation Process. *Engineering, Technology & Applied Science Research*, *9*(1), 3726–3733. https://doi.org/10.48084/etasr.2352

Bogh, Sø. B., Falstie-jensen, A. M., Bartels, P., Hollnagel, E., & Johnsen, Sø. P. (2015). Accreditation and improvement in process quality of care: A nationwide study. *International Journal for Quality in Health Care*, *27*(5), 336–343. https://doi.org/10.1093/intqhc/mzv053

Brown, C. (2019). Why and how to employ the SIPOC model. *Journal of Business Continuity & Emergency Planning*, *12*(3), 198–210.

Brown, J., Kurzweil, M., & Pritchett, W. (2017). Quality assurance in U.S. higher education: The current landscape and principles for reform. *Ithaka S+R*, 3–26. http://sr.ithaka.org/?p=303620

Brueggmann, D., Hardasmalani, M., & Jaque, J. (2015). Improving trauma care for pregnant patients at the LAC+USC medical center by conducting regular multidisciplinary drills. *Quality Management in Health Care*, *24*(1), 2–3. https://doi.org/10.1097/QMH.0000000000000051

Büchner, V. A., Schreyögg, J., & Schultz, C. (2014). The impact of the board's strategy-setting role on board-management relations and hospital performance. *Health Care Management Review*, *39*(4), 305–317. https://doi.org/10.1097/HMR.0b013e31829fca10

Campbell, S. M., Roland, M. O., & Buetow, S. A. (2000). Defining quality of care. *Social Science and Medicine*, *51*(11), 1611–1625. https://doi.org/10.1016/S0277-9536(00)00057-5

Carman, J., & Fredericks, K. (2013). Nonprofits and accreditation: Exploring the implications for accountability. *International Review of Public Administration*, *18*(3), 51–68. https://doi.org/10.1080/12294659.2013.10805263

Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing*, *36*(7–8), 811–828. https://doi.org/10.1108/03090560210430818

Cerqueira, B. M. (2006). *A Literature Review on Benefits, Challenges and Trends in Accreditation as a Quality Assurance System*.

Chakraborty, S. (2020). Healthcare quality and hospital financial performance: A multilevel framework. *Operations and Supply Chain Management*, *13*(3), 233–243. https://doi.org/10.31387/OSCM0420265

Chen, J., Rathore, S. S., Radford, M. J., & Krumholz, H. M. (2003). JCAHO accreditation and quality of care for acute myocardial infarction. *Health Affairs*, *22*(2), 243–254.

Choi, S. W., & Dor, A. (2019). Do All Hospital Systems Have Market Power? Association Between Hospital System Types and Cardiac Surgery Prices. *Health Services Research and Managerial Epidemiology*, *6*, 233339281988641. https://doi.org/10.1177/2333392819886414

Chuang, S., & Inder, K. (2009). An effectiveness analysis of healthcare systems using a systems theoretic approach. *BMC Health Services Research*, *9*, 1–12. https://doi.org/10.1186/1472-6963-9-195

Cooper, S., Parkes, C., & Blewitt, J. (2014). Can accreditation help a leopard change its spots?: Social accountability and stakeholder engagement in business schools. *Accounting, Auditing and Accountability Journal*, *27*(2), 234–258. https://doi.org/10.1108/AAAJ-07-2012-01062

Dayan, M., Al Kuwaiti, I. A., Husain, Z., Ng, P. Y., & Dayan, A. (2022). Factors influencing patient loyalty to outpatient medical services: an empirical analysis of the UAE's government healthcare system. *International Journal of Quality and Reliability Management*, *39*(1), 176–203. https://doi.org/10.1108/IJQRM-11-2020-0373

de Barros, L. B., Bassi, L. de C., Caldas, L. P., Sarantopoulos, A., Zeferino, E. B. B., Minatogawa, V., & Gasparino, R. C. (2021). Lean healthcare tools for processes evaluation: An integrative review. *International Journal of Environmental Research and Public Health*, *18*(14). https://doi.org/10.3390/ijerph18147389

De Pouvourville, G. (1997). Quality of care initiatives in the French context. *International Journal for Quality in Health Care*, *9*(3), 163–170. https://doi.org/10.1093/intqhc/9.3.163-a

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*, 147–160. https://doi.org/10.1016/S0742-3322(00)17011-1

Dobrzykowski, D. D., McFadden, K. L., & Vonderembse, M. A. (2016). Examining pathways to safety and financial performance in hospitals: A study of lean in professional service operations. *Journal of Operations Management*, *42–43*(2016), 39–51. https://doi.org/10.1016/j.jom.2016.03.001

Dowling, J., & Pfeffer, J. (1975). ORGANIZATIONAL LEGITIMACY : Social Values and Organizational Behavior between the Organizations seek to establish congruence. *The Pacific Sociological Review*, *18*(1), 122–136.

Doyle, C., Lennox, L., & Bell, D. (2013). A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*, *3*(1). https://doi.org/10.1136/bmjopen-2012-001570

Drill, V. G. (2016). *A Multisite Hospital's Transition to an Interoperable Electronic Health Records System* [Walden University]. https://search.proquest.com/docview/1876048045?accountid=14784

Eaton, J. S. (2015). *An Overview of U.S. Accreditation*. *November*.

Elkins, K., Bellamy, L., Guo, J., & Dobbs, M. R. (2017). Small Rural Hospitals Have a Harder Time Achieving Success in Continuous Quality Improvement: An Example from a Stroke Care Network. *Quality Management in Health Care*, *26*(3), 165–170. https://doi.org/10.1097/QMH.0000000000000144

Elliott, M. N., Monica, S., & Giordano, L. A. (2010). Do Hospitals Rank Differently on HCAHPS for Different Patient Subgroups? *Medical Care Research and Review*, *67*, 56–73.

Feng, C., Wang, H., Lu, N., & Tu, X. M. (2013). Log transformation: Application and interpretation in biomedical research. *Statistics in Medicine*, *32*(2), 230–239. https://doi.org/10.1002/sim.5486

Fouilleux, E., & Loconto, A. (2017). Voluntary standards, certification, and accreditation in the global organic agriculture field: a tripartite model of techno-politics. *Agriculture and Human Values*, *34*(1), 1–14. https://doi.org/10.1007/s10460-016-9686-3

Frush, K., Phillips, H., Nordlund, C., & Holman, R. (2017). Healthcare Affiliation Networks: A Unique Quality Partnership to Aid in Making Communities Healthier. *Journal for Healthcare Quality*, *39*(4), 243–248. https://doi.org/10.1097/JHQ.0000000000000102

Gabriel, C. S., Bogarin, D. F., Mikael, S., Cummings, G., Bernardes, A., Gutierrez, L., & Caldana, G. (2018). Brazilian Nurses' Perspective on the Impact of Hospital Accreditation. *Enfermería Global*, *17*, 381–419. https://dx.doi.org/10.6018/eglobal.17.1.283981

Gao, X., Schroeder, M. C., Lizarraga, I. M., Tolle, C. L., Mullett, T. W., & Charlton, M. E. (2022). Improving cancer care locally: Study of a hospital affiliate network model. *Journal of Rural Health*, *38*(4), 827–837. https://doi.org/10.1111/jrh.12639

Gardner, J. W., Boyer, K. K., & Gray, J. V. (2015). Operational and strategic information processing: Complementing healthcare IT infrastructure. *Journal of Operations Management*, *33–34*, 123–139. https://doi.org/10.1016/j.jom.2014.11.003

Glied, S. A. (2008). HEALTH CARE FINANCING, EFFICIENCY, AND EQUITY. *Economics*, 312–332. https://doi.org/10.1007/978-1-349-91968-0_14

Goldstein, S. M., & Naor, M. (2005). Linking publicness to operations management practices: A study of quality management practices in hospitals. *Journal of Operations Management*, *23*(2 SPEC. ISS.), 209–228. https://doi.org/10.1016/j.jom.2004.07.007

Gombeski, W. R., Claypool, J. O., Karpf, M., Britt, J., Birdwhistell, M., Riggs, K., Wray, T., & Taylor, J. (2014). Hospital Affiliations, Co-Branding, and Consumer Impact. *Health Marketing Quarterly*, *31*(1), 65–77. https://doi.org/10.1080/07359683.2014.874873

Greaney, T. L., & Richman, B. D. (2019). Promoting Competition in Healthcare Enforcement and Policy: Framing an Active Competition Agenda. *SSRN Electronic Journal*, *874*, 1–19. https://doi.org/10.2139/ssrn.3349391

Greenfield, D., Lawrence, S. A., Kellner, A., Townsend, K., & Wilkinson, A. (2019). Health service accreditation stimulating change in clinical care and human resource management processes: A study of 311 Australian hospitals. *Health Policy*, *123*(7), 661–665. https://doi.org/10.1016/j.healthpol.2019.04.006

Guo, C., & Acar, M. (2005). Understanding collaboration among nonprofit organizations: Combining resource dependency, institutional, and network perspectives. *Nonprofit and Voluntary Sector Quarterly*, *34*(3), 340–361. https://doi.org/10.1177/0899764005275411

Harkey, J., & Vraciu, R. (1992). Quality of health care and financial performance: Is there a link? *Health Care Management Review*, *17*(4), 55–63.
Harvey, L. (2004). The power of accreditation: Views of academics. *Journal of Higher Education Policy and Management*, *26*(2), 207–223. https://doi.org/10.1080/1360080042000218267
Henke, R. M., Karaca, Z., Moore, B., Cutler, E., Liu, H., Marder, W. D., & Wong, H. S. (2018). Impact of Health System Affiliation on Hospital Resource Use Intensity and Quality of Care. *Health Services Research*, *53*(1), 63–86. https://doi.org/10.1111/1475-6773.12631
Heugens, P. P. M. A. R., & Lander, M. W. (2009). Structure! Agency! (And Other Quarrels) - a meta analysis of institutional theories of organizations.pdf. *Academy of Management Journal*, *52*(1), 61–85.
Higashi, P., Simonetti, J. P., Carvalhaes, M. A. de B. L., Spiri, W. C., & Parada, C. M. G. de L. (2013). Potenitally stressful situations for nurses considering the condition of accreditation of hospitals. *Rev Rene Northeast Network Nursing Journal*, *14*(6), 1141–1148.
Holmgren, A. J., & Ford, E. W. (2018). Assessing the impact of health system organizational structure on hospital electronic data sharing. *Journal of the American Medical Informatics Association*, *25*(9), 1147–1152. https://doi.org/10.1093/jamia/ocy084
Hussein, M., Pavlova, M., Ghalwash, M., & Groot, W. (2021). The impact of hospital accreditation on the quality of healthcare: a systematic literature review. *BMC Health Services Research*, *21*(1), 1–12. https://doi.org/10.1186/s12913-021-07097-6
Inomata, T., Mizuno, J., Iwagami, M., Kawasaki, S., Shimada, A., Inada, E., Shiang, T., & Amano, A. (2018). The impact of Joint Commission International accreditation on time periods in the operating room: A retrospective observational study. *PLoS ONE*, *13*(9), 1–10. https://doi.org/10.1371/journal.pone.0204301
Isaac, T., Zaslavsky, A. M., Cleary, P. D., & Landon, B. E. (2010). The relationship between patients' perception of care and measures of hospital quality and safety. *Health Services Research*, *45*(4), 1024–1040. https://doi.org/10.1111/j.1475-6773.2010.01122.x
Jaafaripooyan, E. (2014). Potential pros and cons of external healthcare performance evaluation systems: Real-life perspectives on iranian hospital evaluation and accreditation program. *International Journal of Health Policy and Management*, *3*(4), 191–198. https://doi.org/10.15171/ijhpm.2014.84
Jacobson, C. A., Huerta, S., & Truwit, J. (2017). Creating a System of Consistent Safety in the Froedtert & Medical College of Wisconsin Health Network. *Journal of Healthcare Management*, *62*(6), 366–369. https://doi.org/10.1097/JHM-D-17-00158
Jiang, H. J., Friedman, B., & Begun, J. W. (2006). Sustaining and improving hospital performance: The effects of organizational and market factors. *Health Care Management Review*, *31*(3), 188–196. https://doi.org/10.1097/00004010-200607000-00004
Jin, B., & Nembhard, I. M. (2021). Who Joins the Franchise, Affiliation Model of Hospital Networks? An Analysis of Hospital and Market Characteristics of Members. *Medical Care Research and Review*, *78*(6), 660–671. https://doi.org/10.1177/1077558720966129
Jin, B., & Nembhard, I. M. (2022). Effects of affiliation network membership on hospital quality and financial performance. *Health Services Research*, *57*(2), 248–258. https://doi.org/10.1111/1475-6773.13876
Katrakazas, P., Pastiadis, K., Bibas, A., & Koutsouris, D. (2020). A General Systems Theory Approach in Public Hearing Health: Lessons Learned from a Systematic Review of General

Systems Theory in Healthcare. *IEEE Access*, *8*, 53018–53033. https://doi.org/10.1109/ACCESS.2020.2981160
Kidd, V. D. (2023). Exploring Motivations and Barriers To Accreditation Adoption Among Physician Assistant and Nurse Practitioner Emergency Medicine and Orthopedic Surgery Residency and Fellowship Programs. *Cureus*, *15*(3), 15–20. https://doi.org/10.7759/cureus.36490
Kim, T. H., & Thompson, J. M. (2012). Organizational and market factors associated with leadership development programs in hospitals: A national study. *Journal of Healthcare Management*, *57*(2), 113–131. https://doi.org/10.1097/00115514-201203000-00007
Kondra, A. Z., & Hinings, C. R. (1998). Organizational diversity and change in institutional theory. *Organization Studies*, *19*(5), 743–767. https://doi.org/10.1177/017084069801900502
Lam, M. B., Figueroa, J. F., Feyman, Y., Reimold, K. E., Orav, E. J., & Jha, A. K. (2018). Association between patient outcomes and accreditation in US hospitals: Observational study. *BMJ (Online)*, *363*, 1–10. https://doi.org/10.1136/bmj.k4011
Lee, E. (2016). Safety climate and attitude toward medication error reporting after hospital accreditation in South Korea. *International Journal for Quality in Health Care*, *28*(4), 508–514. https://doi.org/10.1093/intqhc/mzw058
Lee, S. E., Vincent, C., Dahinten, V. S., Scott, L. D., Park, C. G., & Dunn Lopez, K. (2018). Effects of Individual Nurse and Hospital Characteristics on Patient Adverse Events and Quality of Care: A Multilevel Analysis. *Journal of Nursing Scholarship*, *50*(4), 432–440. https://doi.org/10.1111/jnu.12396
Lehrman, W. G., Elliott, M. N., Goldstein, E., Beckett, M. K., Klein, D. J., & Giordano, L. A. (2010). Characteristics of hospitals demonstrating superior performance in patient experience and clinical process measures of care. *Medical Care Research and Review*, *67*(1), 38–55. https://doi.org/10.1177/1077558709341323
Lewis, K., & Hinchcliff, R. (2023). Hospital accreditation: an umbrella review. *International Journal for Quality in Health Care : Journal of the International Society for Quality in Health Care*, *35*(1), 1–7. https://doi.org/10.1093/intqhc/mzad007
Li, P., Bahensky, J. A., Jaana, M., & Ward, M. M. (2008). Role of multihospital system membership in electronic medical record adoption. *Health Care Management Review*, *33*(2), 169–177. https://doi.org/10.1097/01.HMR.0000304502.20179.32
Lo, K. Y. C., & Yeung, A. (2008). *The impact of ISO 9000 on operating performance and senior executive compensation: An empirical analysis* (Vol. 3341116). https://vpn.utm.my/docview/304809186?accountid=41678
Lonial, S., & Raju, P. S. (2015). Impact of service attributes on customer satisfaction and loyalty in a healthcare context. *Leadership in Health Services*, *28*(2), 149–166. https://doi.org/10.1108/LHS-12-2013-0045
Lutfiyya, M. N., Sikka, A., Mehta, S., & Lipsky, M. S. (2009). Comparison of US accredited and non-accredited rural critical access hospitals. *International Journal for Quality in Health Care*, *21*(2), 112–118. https://doi.org/10.1093/intqhc/mzp003
Mansour, W., Boyd, A., & Walshe, K. (2020). The development of hospital accreditation in low-And middle-income countries: A literature review. *Health Policy and Planning*, *35*(6), 684–700. https://doi.org/10.1093/heapol/czaa011
Marcozzi, D. E., Pietrobon, R., Lawler, J. V., French, M. T., Mecher, C., Peffer, J., Baehr, N. E., & Browne, B. J. (2020). Development of a Hospital Medical Surge Preparedness Index

using a national hospital survey. *Health Services and Outcomes Research Methodology*, *20*(1), 60–83. https://doi.org/10.1007/s10742-020-00208-6

Mazurenko, O., Collum, T., Ferdinand, A., & Menachemi, N. (2017). Predictors of Hospital Patient Satisfaction as Measured by HCAHPS: A Systematic Review. *Journal of Healthcare Management*, *62*(4), 272–283. https://doi.org/10.1097/JHM-D-15-00050

McCovery, J., & Matusitz, J. (2014). Assessment of collaboration in U.S. health care delivery: A perspective from systems theory. *Social Work in Public Health*, *29*(5), 451–461. https://doi.org/10.1080/19371918.2013.865109

Mcfarland, D. C., Ornstein, K. A., & Holcombe, R. F. (2015). Demographic factors and hospital size predict patient satisfaction variance-implications for hospital value-based purchasing. *Journal of Hospital Medicine*, *10*(8), 503–509. https://doi.org/10.1002/jhm.2371

McFarland, D. C., Shen, M. J., Parker, P., Meyerson, S., & Holcombe, R. F. (2017). Does Hospital Size Affect Patient Satisfaction? *Quality Management in Health Care*, *26*(4), 205–209. https://doi.org/10.1097/QMH.0000000000000149

Miller, W. J., Sumner, A. T., & Deane, R. H. (2009). Assessment of Quality Management Practices Within the Healthcare Industry. *American Journal of Economics and Business Administration*, *1*(2), 105–113. https://doi.org/10.3844/ajebasp.2009.105.113

Mohiuddin, A. K. (2019). Patient Relationship Management : A CRM Approach to Patient Care. *International Journal of Health and Clinical Research*, *2*(2), 1–11.

Mosadeghrad, A. M. (2014). Factors influencing healthcare service quality. *International Journal of Health Policy and Management*, *3*(2), 77–89. https://doi.org/10.15171/ijhpm.2014.65

Mumford, V., Forde, K., Greenfield, D., Hinchcliff, R., & Braithwaite, J. (2013). Health services accreditation: What is the evidence that the benefits justify the costs? *International Journal for Quality in Health Care*, *25*(5), 606–620. https://doi.org/10.1093/intqhc/mzt059

Muñoz-Torres, A. V., Medina-Bravo, P., Valerio-Pérez, B. E., Mendoza-Salmeron, G., Escobedo-De La Peña, J., & Velázquez-López, L. (2020). Positive health beliefs are associated with improvement of glycated hemoglobin and lipid profiles in Mexican patients with type 2 diabetes mellitus: A cross-sectional study. *BMC Public Health*, *20*(1), 1–9. https://doi.org/10.1186/s12889-020-08866-4

Nair, A., Nicolae, M., & Dreyfus, D. (2018). Impact of network size and demand on cost performance for high- and low-quality healthcare service organizations. *International Journal of Operations and Production Management*, *38*(1), 109–128. https://doi.org/10.1108/IJOPM-08-2016-0471

Ng, G. K. B., Leung, G. K. K., Johnston, J. M., & Cowling, B. J. (2013). Factors affecting implementation of accreditation programmes and the impact of the accreditation process on quality improvement in hospitals: A SWOT analysis. *Hong Kong Medical Journal*, *19*(5), 434–446. https://doi.org/10.12809/hkmj134063

Nutt, P. C., & Backoff, R. W. (1993). Organizational publicness and its implications for strategic management. *Journal of Public Administration Research and Theory*, *3*(2), 209–231. https://doi.org/10.1093/oxfordjournals.jpart.a037167

Oliveira, J. L. C. de, & Matsuda, L. M. (2016). Benefits and difficulties in the implementation of hospital accreditation: The voice of quality managers. *Escola Anna Nery - Revista de Enfermagem*, *20*(1), 63–69. https://doi.org/10.5935/1414-8145.20160009

Parand, A., Dopson, S., Renz, A., & Vincent, C. (2014). The role of hospital managers in quality and patient safety: A systematic review. *BMJ Open*, *4*. https://doi.org/10.1136/bmjopen-2014-005055

Petula, S. (2005). Can Applying Systems Theory Improve Quality in Healthcare Systems? *Journal for Healthcare Quality*, *27*(6), w6-2-w6-6.

Po, R. W., Lin, F. R., Chuang, B. K., & Shaw, M. J. (2013). Exploring trust-based service value chain framework in tele-healthcare services. *Proceedings of the Annual Hawaii International Conference on System Sciences*, 1327–1336. https://doi.org/10.1109/HICSS.2013.226

Potter, S. J. (2001). A longitudinal analysis of the distinction between for-profit and not-for-profit hospitals in America. *Journal of Health and Social Behavior*, *42*(1), 17–44. https://doi.org/10.2307/3090225

Qi, K., & Han, S. (2020). Does it improve revenue management in hospitals? *Journal of the Association for Information Systems*, *21*(6), 1486–1506. https://doi.org/10.17705/1jais.00644

Richter, J. P., & Muhlestein, D. B. (2017). Patient experience and hospital profitability: Is there a link? *Health Care Management Review*, *42*(3), 247–257. https://doi.org/10.1097/HMR.0000000000000105

Rosko, M., Al-Amin, M., & Tavakoli, M. (2020). Efficiency and profitability in US not-for-profit hospitals. *International Journal of Health Economics and Management*, *20*(4), 359–379. https://doi.org/10.1007/s10754-020-09284-0

Rundall, T., Oberlin, S., Thygesen, B., & Janus, K. (2012). Success under duress: Policies and practices managers view as keys to profitability in five california hospitals with challenging payer mix. *Journal of Healthcare Management*, *57*(2), 94–111. https://doi.org/10.1097/00115514-201203000-00005

Sabella, A., Kashou, R., & Omran, O. (2014). Quality management practices and their relationship to organizational performance. *International Journal of Operations and Production Management*, *34*(12), 1487–1505. https://doi.org/10.1108/IJOPM-04-2013-0210

Sack, C., Scherag, A., Lütkes, P., Günther, W., Jöckel, K. H., & Holtmann, G. (2011). Is there an association between hospital accreditation and patient satisfaction with hospital care? A survey of 37 000 patients treated by 73 hospitals. *International Journal for Quality in Health Care*, *23*(3), 278–283. https://doi.org/10.1093/intqhc/mzr011

Schmaltz, S. P., Williams, S. C., Chassin, M. R., Loeb, J. M., & Wachter, R. M. (2011). Hospital performance trends on national quality measures and the association with joint commission accreditation. *Journal of Hospital Medicine*, *6*(8), 454–461. https://doi.org/10.1002/jhm.905

Schneider, J. L. (2010). Impact of network size and demand on cost performance for high- and low-quality healthcare service organizations. *Benchmarking: An International Journal*, *17 Iss 3 p*. https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216

Sedevich-Fons, L. (2013). Healthcare quality costs based on an ISO 9000 model. *Leadership in Health Services*, *26*(3), 184–195. https://doi.org/10.1108/LHS-02-2013-0009

Shan, S., Yoon, S. W., Khasawneh, M. T., & Gandhi, T. (2011). A multi-echelon newsvendor inventory model to consolidate hospital pharmacy inventories. *61st Annual IIE Conference and Expo Proceedings*.

Shayesteh Moghanlou, M. A., Markazi-Moghaddam, N., Tehrani, R., Hosseini, S. M., & Zargar Balaye Jame, S. (2020). Presentation a Model of Financial Indicators for Evaluating the

Performance of Specialized and Sub-Specialized Hospitals in Iran. *Nurse and Physician within War*, *8*(27), 58–69. https://doi.org/10.29252/npwjm.8.27.58
Shepard, J., Ward, W., Milstone, A., Carlson, T., Frederick, J., Hadhazy, E., & Perl, T. (2013). Financial impact of surgical site infections on hospitals: The hospital management perspective. *JAMA Surgery*, *148*(10), 907–914. https://doi.org/10.1001/jamasurg.2013.2246
Sillince, J. A. A., & Barker, J. R. (2012). A tropological theory of institutionalization. In *Organization Studies* (Vol. 33, Issue 1). https://doi.org/10.1177/0170840611425735
Silvera, G. A. (2017). The Moderating Role of Hospital Size on the Relationship between Patient Experience and Patient Safety. *Quality Management in Health Care*, *26*(4), 210–217. https://doi.org/10.1097/QMH.0000000000000148
Singh, S. R. (2012). Hospital Financial Management: What Is the Link Between Revenue Cycle Management, Profitability, and Not-for-Profit Hospitals' Ability to Grow Equity? In *Journal of Health Management* (Vol. 57, Issue 5, pp. 325–339).
Sorrentino, K. (2019). Accreditation, Credentialing, and Quality Improvement in Diagnostic Medical Sonography: A Literature Review. *Journal of Diagnostic Medical Sonography*, *35*(5), 401–411. https://doi.org/10.1177/8756479319838234
Sousa, R., & Voss, C. A. (2002). Quality management re-visited: A reflective review and agenda for future research. *Journal of Operations Management*, *20*(1), 91–109. https://doi.org/10.1016/S0272-6963(01)00088-2
Sprague, L. (2005). Hospital oversight in Medicare: accreditation and deeming authority. *NHPF Issue Brief / National Health Policy Forum, George Washington University*, *802*, 1–15.
Ssengooba, F. (2010). *Performance-based Contracting: a Case Study of Non-profit Hospitals in Uganda*. University of London.
Stock, G. N., & McFadden, K. L. (2017). Improving service operations: linking safety culture to hospital performance. *Journal of Service Management*, *28*(1), 57–84. https://doi.org/10.1108/JOSM-02-2016-0036
Stock, G. N., McFadden, K. L., & Gowen, C. R. (2007). Organizational culture, critical success factors, and the reduction of hospital errors. *International Journal of Production Economics*, *106*(2), 368–392. https://doi.org/10.1016/j.ijpe.2006.07.005
Stover, K. G. (2005). *Adoption of Hospital-Based Palliative Care Programs: Market and Organizational Correlates* [Virginia Commonwealth University]. https://doi.org/10.1017/S0165115300023299
Stranieri, S., Varacca, A., Casati, M., Capri, E., & Soregaroli, C. (2022). Adopting environmentally-friendly certifications: Transaction cost and capabilities perspectives within the Italian wine supply chain. *Supply Chain Management*, *27*(7), 33–48. https://doi.org/10.1108/SCM-12-2020-0598
Sura, A., & Shah, N. R. (2010). Pay-for-performance initiatives: Modest benefits for improving healthcare quality. *American Health and Drug Benefits*, *3*(2), 135–142.
Tabrizi, J. S., Gharibi, F., & Wilson, A. J. (2011). Advantages and Disadvantages of Health Care Accreditation Mod-els. *Health Promotion Perspectives*, *1*(1), 1–31. https://doi.org/10.5681/hpp.2011.001
Tai, T. W. C., & Bame, S. I. (2017). Organizational and Community Factors Associated With Magnet Status of U.S. Hospitals. *Journal of Healthcare Management / American College of Healthcare Executives*, *62*(1), 62–76. https://doi.org/10.1097/00115514-201701000-00011

Tajeu, G. S., Kazley, A. S., & Menachemi, N. (2015). Do hospitals that do the right thing have more satisfied patients? *Health Care Management Review*, *40*(4), 348–355. https://doi.org/10.1097/HMR.0000000000000034

Teixeira, G. C. dos S., & Maccari, E. A. (2018). The institutional role of business school accreditation agencies: a systematic literature review. *Revista de Gestao*, *25*(3), 274–290. https://doi.org/10.1108/REGE-04-2018-035

Tesfamichael, M., Twinomujuni, E., Ogeya, M., Ssebagala, S., & Mulugetta, Y. (2022). Barriers to the institutionalization of industrial energy efficiency in Africa: A case study from Uganda. *Wiley Interdisciplinary Reviews: Energy and Environment*, *11*(3). https://doi.org/10.1002/wene.427

The American Hospital Association. (2023). *The Essential Role of Financial Reserves in Not-for-Profit Healthcare* (Issue April).

The Centers for Medicare & Medicaid Services. (n.d.). *Hospitals | Provider Data Catalog*. Retrieved February 26, 2023, from https://data.cms.gov/provider-data/topics/hospitals

The Joint Commission. (n.d.). *Accreditation Data Download - Data Download | QualityCheck.org*. Retrieved February 26, 2023, from https://www.qualitycheck.org/data-download/accreditation-data-download/

U.S. Department of Agriculture. (n.d.). *USDA ERS - Rural-Urban Continuum Codes*. Retrieved February 26, 2023, from https://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx

United States Census. (2020). Health Insurance Coverage in the United States. In *United States Census*. https://doi.org/10.2307/j.ctv11smv14.6

Willem, A., & Coopman, M. (2016). Motivational paradigms for the integration of a Belgian hospital network and merger presented in the printed press. *International Journal of Organizational Analysis*, *24*(5), 811–834. https://doi.org/10.1108/IJOA-04-2013-0656

Williams, C., Asi, Y., Raffenaud, A., Bagwell, M., & Zeini, I. (2016). The effect of information technology on hospital performance. *Health Care Management Science*, *19*(4), 338–346. https://doi.org/10.1007/s10729-015-9329-z

Woodhead, A. (2013). Scoping medical tourism and international hospital accreditation growth. *International Journal of Health Care Quality Assurance*, *26*(8), 688–702. https://doi.org/10.1108/IJHCQA-10-2011-0060

World Health Organization. (n.d.). *Quality of care.* https://doi.org/10.7326/0003-4819-95-2-238_1

World Health Organization. (2007). *Everybody's business--strengthening health systems to improve health outcomes: WHO's framework for action*.

Yan, Y. H., & Kung, C. M. (2015). The Impact of Hospital Accreditation System: Perspective of Organizational Learning. *Health*, *07*(09), 1081–1089. https://doi.org/10.4236/health.2015.79123

Yang, Z., & Nowell, B. (2021). Network isomorphism?: A network perspective on the symbolic performance of purpose-oriented networks. *International Public Management Journal*, *24*(3), 350–377. https://doi.org/10.1080/10967494.2020.1824949

Yetano, A. (2013). What drives the institutionalization of performance measurement and management in local government. *Public Performance and Management Review*, *37*(1), 59–86. https://doi.org/10.2753/PMR1530-9576370103

YÜNCÜ, V. (2020). Organizational Legitimacy: An In-Depth Overview Through The Lens of Institutional Theory. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *56*, 255–278. https://doi.org/10.18070/erciyesiibd.691980

Zandian, H., Chamanian, Y., Moghadam, T. Z., & Farzaneh, E. (2018). Correlation between Organizational Learning and Accreditation of Educational Care Centers : A Case Study in Ardabil. *Evidence Based Health Policy, Management & Economics*, *2*(2), 100–108.

Zepeda, E. D., Nyaga, G. N., & Young, G. J. (2016). Supply chain risk management and hospital inventory: Effects of system affiliation. *Journal of Operations Management*, *44*, 30–47. https://doi.org/10.1016/j.jom.2016.04.002

Zhou, W. J., Wan, Q. Q., Liu, C. Y., Feng, X. L., & Shang, S. M. (2017). Determinants of patient loyalty to healthcare providers: An integrative review. *International Journal for Quality in Health Care*, *29*(4), 442–449. https://doi.org/10.1093/intqhc/mzx058

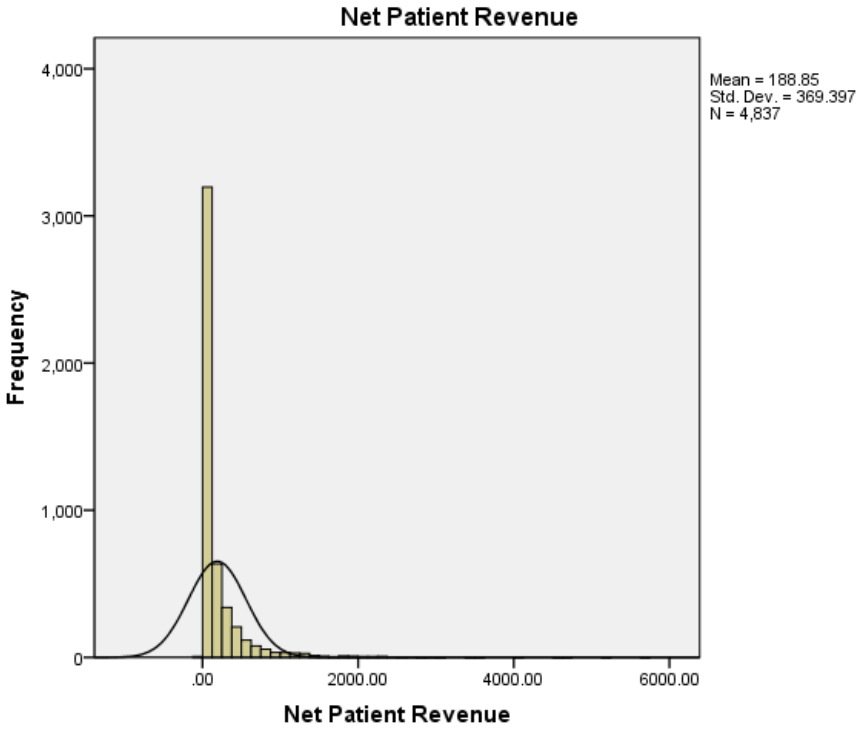
Zuckerman, H. S., & D'aunno, T. A. (1990). Hospital alliances: Cooperative strategy in a competitive environment. *Health Care Management Review*, *15*(2), 21–30. https://doi.org/10.1097/00004010-199001520-00007

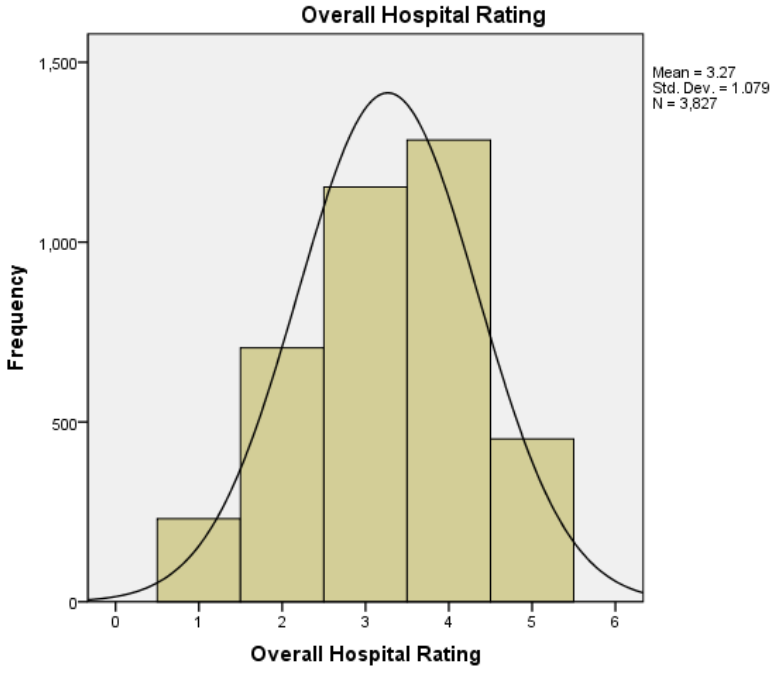
APPENDICES

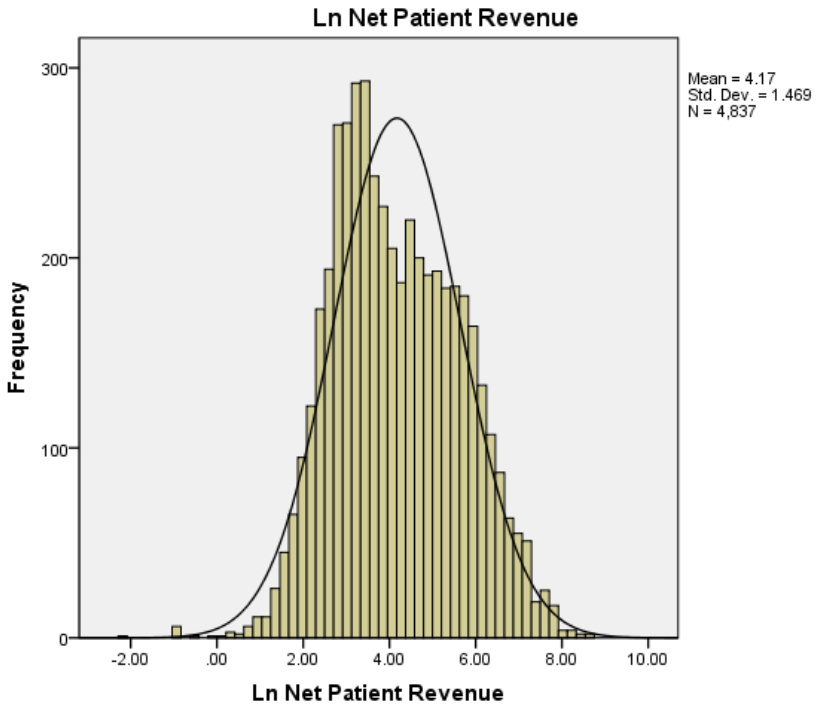
Appendix A: Measures Included in Calculating Overall Hospital Rating

Measure group	Measures	Data collection period	
		From	Through
Mortality (7)	Death rate for heart attack patients	7/1/2017	12/1/2019 *
	Death rate for coronary artery bypass graft (CABG) surgery patients	7/1/2017	12/1/2019 *
	Death rate for chronic obstructive pulmonary disease (COPD) patients	7/1/2017	12/1/2019 *
	Death rate for heart failure patients	7/1/2017	12/1/2019 *
	Death rate for pneumonia patients	7/1/2017	12/1/2019 *
	Death rate for stroke patients	7/1/2017	12/1/2019 *
	Deaths among patients with serious treatable complications after surgery	7/1/2018	12/31/2019 *
Safety of Care (8)	Central line-associated bloodstream infections (CLABSI)	4/1/2019	9/30/2020 *
	Catheter-associated urinary tract infections (CAUTI)	4/1/2019	9/30/2020 *
	Surgical site infections from colon surgery (SSI: Colon)	4/1/2019	9/30/2020 *
	Surgical site infections from abdominal hysterectomy (SSI: Hysterectomy)	4/1/2019	9/30/2020 *
	Methicillin-resistant Staphylococcus aureus (MRSA) Blood Laboratory-identified Events (Bloodstream infections)	4/1/2019	9/30/2020 *
	Clostridium difficile (C. diff) Laboratory-identified Events (Intestinal infections)	4/1/2019	9/30/2020 *
	Rate of complications for hip/knee replacement patients	4/1/2017	10/2/2019 *
	Serious complications	7/1/2018	12/31/2019 *
Readmission (11)	Hospital return days for heart attack patients	7/1/2017	12/1/2019 *
	Rate of readmission for coronary artery bypass graft (CABG) surgery patients	7/1/2017	12/1/2019 *
	Rate of readmission for chronic obstructive pulmonary disease (COPD) patients	7/1/2017	12/1/2019 *
	Hospital return days for heart failure patients	7/1/2017	12/1/2019 *
	Rate of readmission after hip/knee surgery	7/1/2017	12/1/2019 *
	Hospital return days for pneumonia patients	7/1/2017	12/1/2019 *
	Rate of readmission after discharge from hospital (hospital-wide)	7/1/2019	12/1/2019 *
	Rate of unplanned hospital visits after an outpatient colonoscopy	1/1/2017	12/24/2019 *
	Rate of unplanned hospital visits for patients receiving outpatient chemotherapy	1/1/2019	12/1/2019
	Rate of emergency department visits for patients receiving outpatient chemotherapy	1/1/2019	12/1/2019
	Ratio of unplanned hospital visits after hospital outpatient surgery	1/1/2019	12/1/2019
Patient Experience (8)	Patients who reported that their nurses communicated well	1/1/2019	12/31/2019
	Patients who reported that their doctors communicated well	1/1/2019	12/31/2019
	Patients who reported that they received help as soon as they wanted	1/1/2019	12/31/2019
	Patients who reported that staff explained about medicines before giving it to them	1/1/2019	12/31/2019
	Patients who reported that their room and bathroom were clean/ Patients who reported that the area around their room was quiet at night	1/1/2019	12/31/2019
	Patients who reported that they were given information about what to do during their recovery at home	1/1/2019	12/31/2019
	Patients who understood their care when they left the hospital	1/1/2019	12/31/2019
	Patients who gave their hospital a rating on a scale from 0 (lowest) to 10 (highest)/ Patients who would recommend the hospital to their friends and family	1/1/2019	12/31/2019
Timely and Effective Care (13)	Percentage of healthcare workers given influenza vaccination	10/1/2019	3/31/2020
	Percentage of patients who left the emergency department before being seen	1/1/2019	12/31/2019
	Percentage of patients who came to the emergency department with stroke symptoms who received brain scan results within 45 minutes of arrival	10/1/2019	9/30/2020 *
	Percentage of patients receiving appropriate recommendation for follow-up screening colonoscopy	1/1/2019	12/31/2019
	Percentage of mothers whose deliveries were scheduled too early (1-2 weeks early), when a scheduled delivery was not medically necessary	10/1/2019	9/30/2020 *
	Percentage of patients who received appropriate care for severe sepsis and septic shock.	10/1/2019	9/30/2020 *
	Percentage of outpatients with chest pain or possible heart attack who got drugs to break up blood clots within 30 minutes of arrival	10/1/2019	9/30/2020 *
	Percentage of patients receiving appropriate radiation therapy for cancer that has spread to the bone	1/1/2019	12/31/2019
	Average (median) number of minutes before outpatients with chest pain or possible heart attack who needed specialized care were transferred to another hospital	10/1/2019	9/30/2020 *
	Average (median) time patients spent in the emergency department before leaving from the visit	10/1/2019	9/30/2020 *
	Percentage of outpatients with low-back pain who had an MRI without trying recommended treatments first, such as physical therapy	7/1/2019	12/31/2019 *
	Percentage of outpatient CT scans of the abdomen that were “combination” (double) scans	7/1/2019	12/31/2019 *
	Percentage of outpatients who got cardiac imaging stress tests before low-risk outpatient surgery	7/1/2019	12/31/2019 *

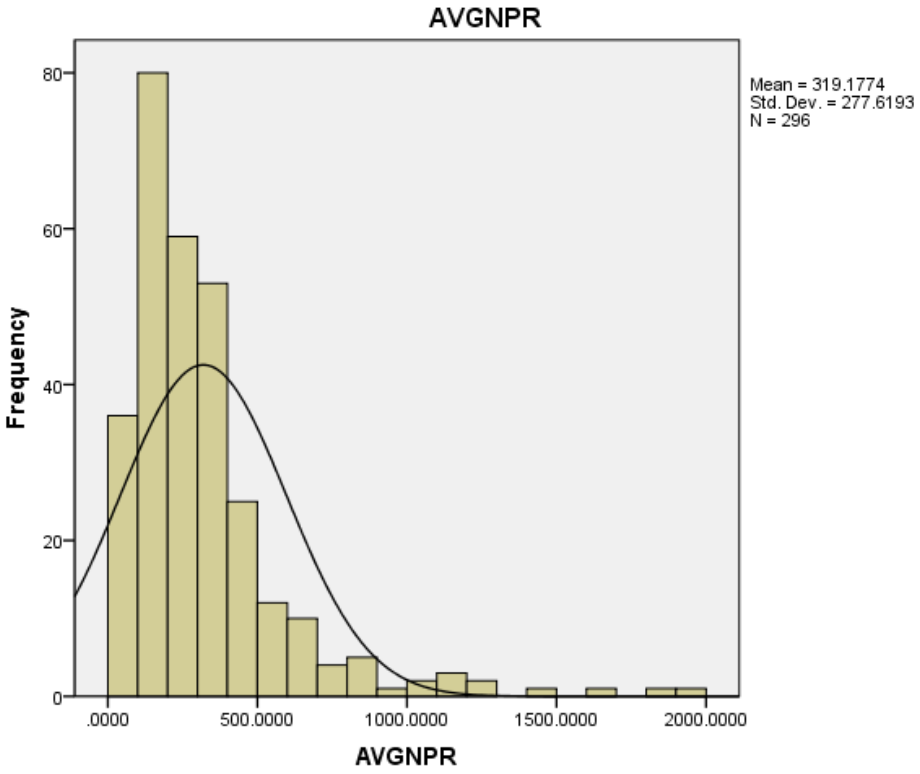
Appendix B: Histograms With Normal Curve Overlay of Individual Hospital Dependent Variables

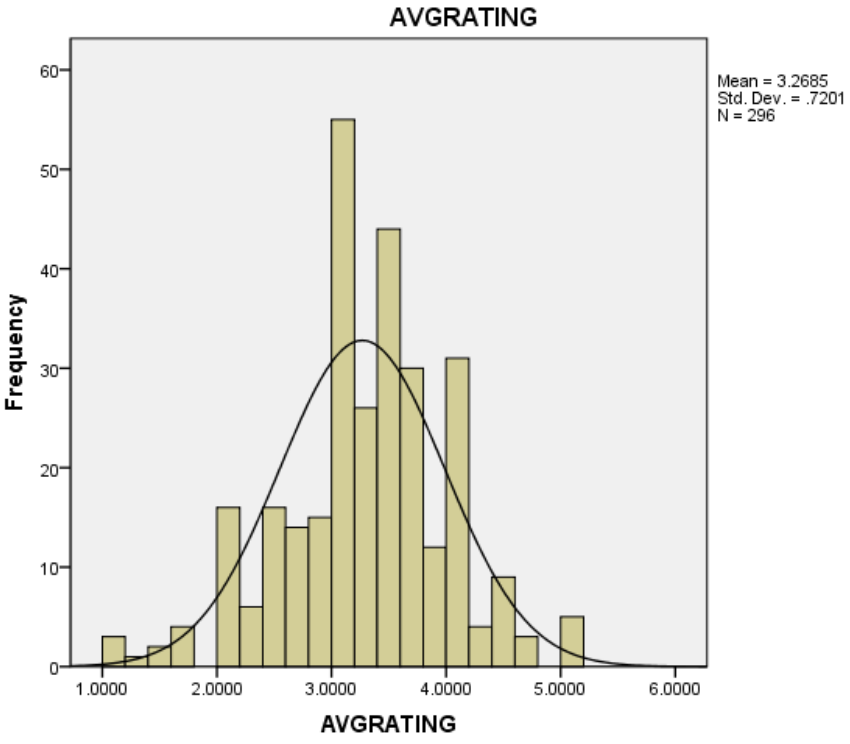


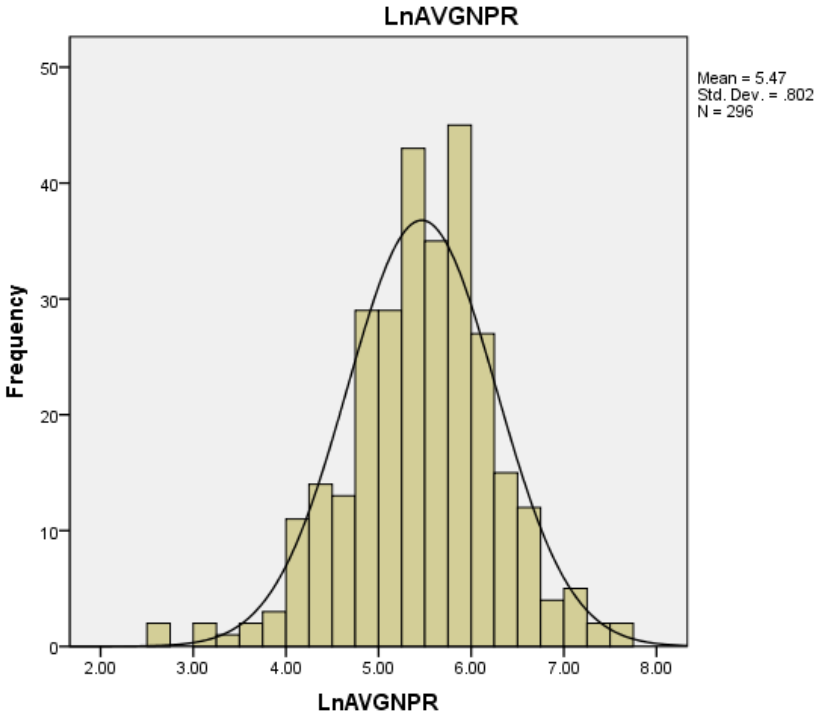



Ln Net Patient Revenue
Mean = 4.17
Std. Dev. = 1.469
N = 4,837
Frequency
300
200
100
0
-2.00
.00
2.00
4.00
6.00
8.00
10.00
Ln Net Patient Revenue

Appendix C: Histograms With Normal Curve Overlay of Hospital System Dependent Variables






LnAVGNPR
Mean = 5.47
Std. Dev. = .802
N = 296
Frequency
50
40
30
20
10
0
2.00
3.00
4.00
5.00
6.00
7.00
8.00
LnAVGNPR