Title of dissertation: **Regulatory Compliance Influences Knowledge Sharing Within the Healthcare Organization**

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Abstract

Purpose. The Health Insurance Portability and Accountability Act (HIPAA) of 1996 incorporated American legislation aimed at protecting the security and privacy of patient information, while imposing a tremendous burden on healthcare organizations and their employees. This burden has become more significant because not only are the security and privacy provisions still evolving, but also those organizations and their employees are left to interpret and determine the compliance criteria while yet struggling to decode the language of the regulation. By leveraging theories from the domains of social exchange, networking, knowledge sharing, and organizational learning, the researcher seeks through this study to illuminate the characteristics of the environment (healthcare organization), the individual (healthcare administrative professionals), and the relevant interpretations of compliance intentions that influence communication and information sharing, which will result in superior knowledge management.

Design, methodology, and approach. A study of 212 healthcare administrative professionals who were located at healthcare facilities throughout the United States were surveyed regarding their perceptions of HIPAA compliance and the underlying organizational and individual factors that influence communication and information sharing for HIPAA compliance.

Findings. The findings indicate that, although organizations have deemed HIPAA compliance critical and although basic IT security has helped to maintain compliant communication of HIPAA regulations, communication and information sharing between managers and employees is often lacking. Furthermore, employees prefer to work in a learning organizational climate that promotes feedback because they are willing to communicate and share information; nevertheless, continuous training in HIPAA regulations is essential to comply with the regulations.

Research limitations and implications. This study is not without limitations because a larger number of respondents would have strengthened the findings of the study. In addition, legislation and reform is an ongoing process; hence, this project is confined to a specific timeframe.

Originality and value. This empirical study accounts for the influence of organizational and individual communication and information sharing on intentions to comply with HIPAA.

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Dedication

I thank God for planting the seed that gave me the inspiration to pursue this terminal degree, and I humbly dedicate it to Him for His use as He sees fit. I have been blessed over the years to have had many wonderful people who provided me with the nurturing necessary to complete this dissertation. However, I am delighted to dedicate this study to four of these people. First, thank you to my grandparents, Beryl and William Cooke, for molding me into the persevering tenacious person that I have become. This aspect of my personally was beneficial in completing this program. Second, to my now 4-year-old daughter, Taylor Prescott, who unknowingly dedicated much of her toddler years to make this possible. Finally, but certainly not least, to my husband, Melvin Prescott who, although deployed in military service for most of the research, was supportive, for without his love and prayers, none of this work would have been possible.

Acknowledgments

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List of Acronyms

CEO – corporate executive officer

CMS – Centers for Medicare and Medicaid Services

DHHS – U.S. Department of Health and Human Services

EOB – explanation of benefits

FDA – U.S. Food and Drug Administration

GDP – gross domestic product

HIPAA – Health Insurance Portability and Accountability Act

HIT – health information technology

HR – human relations

IT – information technology

OCR – Office for Civil Rights

PHI – personal health information

SPSS – Statistical Package for the Social Sciences

SSN – social security numbers

URL – universal resource locator

Chapter 1: Introduction and Research Problem

Introduction

On July 8, 2010, Secretary Kathleen Sebelius and the Office for Civil Rights (OCR) announced that the Privacy and Security Rules of the Health Insurance Portability and Accountability Act (HIPAA; 1996a) would be modified to add new protections (U.S. Department of Health and Human Services [DHHS]; 2010a). The intent of the new proposed regulations was to improve privacy and security in health information exchange by extending and setting new limits on the use of protected health information. Under its Administrative Safeguards Section, HIPAA (1996b) mandated that organizations should be responsible for the selection, development, implementation, and maintenance of security measures to protect health information and to manage the conduct of the covered entity's workforce in relation to the protection of that information. To that end, healthcare organizations and their workforces are responsible for the dissemination and enforcement of HIPAA privacy and security.

Nature of the Problem

Although healthcare organizations and their employees navigate through legislative compliance requirements, the total health expenditures in American health care reached $2.5 trillion in 2009, which translates to $8,086 per person or 17.6% of the nation's gross domestic product (GDP), this figure is up from 16.6% in 2008 (DHHS; 2010a). With expenditures at $2.5 trillion and rising, this sector warrants investigation. Both advocates and critics of the American healthcare system believe that much work must be done. However, advocates support more government regulations, using the defense that the Medicare program has had some success, while critics argue that regulation stifles innovation and creates barriers (Kimbuende, Ranji, Lundy, &

Salganicoff, 2010).

Federal and state regulations play a significant role in defining, standardizing, and imposing regulations that determine the latitude of an open or a closed system, or an environment for the healthcare organization. Kogut and Zander (1996) found that, in addition to facing increased costs when new regulations are imposed on them, organizations also face costs related to the time required to comprehend, codify, and transfer intraorganizational understanding. Tushman and O'Reilly (1996) argued that regulation often mandates that management adapt and realign organizational processes to create a best fit for the organization, which can involve managing and learning from lower levels. However, hierarchical and inflexible organizational management styles limit knowledge-transfer processes. Additionally, Greenblatt and Lange (2005) argued that the ambiguity that often lies in the language—or lack thereof—of the legislation on which regulations are based negatively influencing organizational training programs, interpretation, and knowledge sharing.

However, regardless of approach to becoming HIPAA-compliant, every healthcare organization must conform to HIPAA regulations. The challenge lies not only in the ability of the employees and units within the organization to adapt and comply with regulations, but also to share relevant information effectively and efficiently based on their knowledge and interpretation of the legislation.

Knowledge sharing within an organization is critical because it directly influences the employees' abilities to accomplish tasks (Hansen, 2002; Orzano, Tallia, McInerney, McDaniel, & Crabtree, 2007). It is also of important social concern and of theoretical interest because, without new knowledge assimilation, organizations often stagnate (Ayupp & Perumal, 2008). Organizations must re-evaluate their use of a workforce to

gain a competitive advantage while remaining compliant.

Research Problem

Historical data in the Centers for Medicare and Medicaid Services (CMS, 2011a) report show that health care accounted for 17.3% of the American economy in 2009. The healthcare industry is one of the largest in the United States representing an increase in federal health spending, from $2.34 trillion in 2008 to $2.47 trillion in 2009, the largest 1-year jump since 1960 (CMS, 2011b). However, despite investing more than $2.5 trillion annually in healthcare and despite continuous changes in legislation by the United States Government, the healthcare industry is plagued with inefficiency and poor quality.

HIPAA legislation and regulations demanded that healthcare organizations implement and comply with laws and statutes. Legislation acts as an external driver that all players must meet to be compliant. Healthcare organizations and their employees must primarily follow the requirements of regulations to create a level playing field within the competitive healthcare environment and within the healthcare organization. However, both legislative and regulative directives are founded on the assumption that healthcare organizations are prepared to impose the necessary actions to adopt change and that employees understand the methods, levels, and types of security required because of these changes.

Wright (2008) suggested that implementing and maintaining compliance with regulations can become so overwhelming that organizations dedicate either an employee or a department (depending on the size of the organization) simply to track, implement, and investigate new regulations and compliance issues. In addition, Ghanavati (2007) proposed using information technology (IT) models to track regulations, reduce system gaps, and increase compliance. Ghanavati made this proposal because most

organizations are equipped with new technological innovations that have improved the speed of processing and that employ a workforce that is highly educated or has the ability to acquire higher learning from a variety of institutions. Therefore, organizations are outfitted with the necessary technology and highly educated associates to accomplish regulatory tasks.

Nevertheless, although the need for healthcare reform is apparent (Hill & Powell, 2009), what is less obvious is the daunting task of executing such meticulous compliance at the organizational level. The responsibilities of compliance yet lie squarely at the feet of a healthcare organization's employees and, because such a workforce is highly trained, educated, or able to acquire higher learning (Ghanavati, 2007), it would be considered a knowledge management asset to the organization.

Although technology plays an important role in how business is conducted today, becoming the natural focal point of many HIPAA compliance activities, the focal point should truly be that of the healthcare organization's employees. One of goals of HIPAA is to enforce the privacy and security of patient information and to ensure the continuity of health insurance; however, the decisions surrounding sharing, processing, or passing along information about individuals (regarding personal health information) are actually made in accordance with each employee's perception of HIPAA regulations. In the HIPAA regulated entities, security applies not only to the spectrum of physical and technical safeguards, but also to administrative safeguards that are in place to protect the integrity, availability, and confidentiality of information.

The employee's perception of the Privacy and Security Rules of HIPAA (1996b) has created significant challenges for the daily activity of the employee, specifically as it relates to personal health information. The employee faces daily compliance issues

concerning aspects of security and privacy that range from accessing many of the customer's personal health information to communicating with external organizations with which the company does business on a daily basis; these procedures will be affected as well. The employee's level of compliance is directly correlated to the ability of the organization to become compliant; the employee's level of sharing and communication is directly correlated to the ability of the organization to maintain continuous workflow processes (Jolly & Wakeland, 2009). Therefore, general failures of collaboration and inadequate horizontal and vertical information transfer within the healthcare organization are particularly significant issues (Bardach, 2005).

Thus, although the lack of communication and information sharing is not a recent problem and the lack of sharing is not unique (Keegan, 2002), the addition of HIPAA compliance has apparently broadened the knowledge sharing and communication gap. Consequently, the following questions emerge:

- Does the attempt to comply with HIPAA requirements limit an employee's ability to share knowledge?
- Employees fear the penalties, ranging from fees to loss of licenses and contracts; therefore, are they electing to err on the side of caution and possibly hoarding information (Goh & Hooper, 2009; Hopp, Iravani, & Liu, 2009; Minbaeva, 2007; Jolly & Wakeland, 2009)?

These questions are the basis for the study's primary research questions.

Although a body of literature examines regulations and reforms on both the state and federal levels, few researchers have examined how the HIPAA privacy and security regulations affect communication and information sharing at the organizational or employee level. Additionally, few researchers have examined how communication and

information sharing by the employees in the healthcare environment influences productivity within the organization, ultimately negating or supporting the intended purpose of the regulations. Further, it is evident that researchers have yet to determine the barriers to intraorganizational knowledge sharing because of their perceived lack of knowledge of HIPAA (1996a), of access to efficient knowledge sharing channels, of the need to seek knowledge, and of the willingness of others to share sparse knowledge.

Figure 1 illustrates a simplified version of the dynamics between regulation, the organization, and the employees. Adaptation, implementation, or dissemination of regulatory changes often create an added burden on the organization and its employees elevating barriers, creating fragmentation, and reducing collaboration within the organization generally, leading to disruption and stagnation of internal processes.

Organizations must re-evaluate the dynamics of their contingent workforce when adapting, implementing, or disseminating regulatory changes. By outsourcing to consultants and contractors, and by focusing primarily on IT changes, organizations do not capitalize on the knowledge of workers within their organization who often have many years of experience. Healthcare organizations can use this valuable expertise as leverage, saving the healthcare organization money in the long term and contributing to its competitive advantage. Thus, healthcare organizations should consider employee knowledge sharing, knowledge transfer, and knowledge management as significant factors in their compliance strategy.

Echeverri-Carroll and Ayala (2009) found that organizational costs that were directly related to regulation were $648 billion in 2004, and predicted that this number would continue to grow as regulation increased. Although this amount indicates that organizations that attempt to implement and comply with regulatory changes face

significant costs that directly affect their bottom lines, the total cost (financial and nonfinancial) of regulatory implementation and compliance on organizational processes remains unclear. Echeverri-Carroll and Ayala (2009) continued to say that both management and employees become increasingly anxious when navigating existing compliance requirements and becoming complaint while facing the threat of penalties for noncompliance.
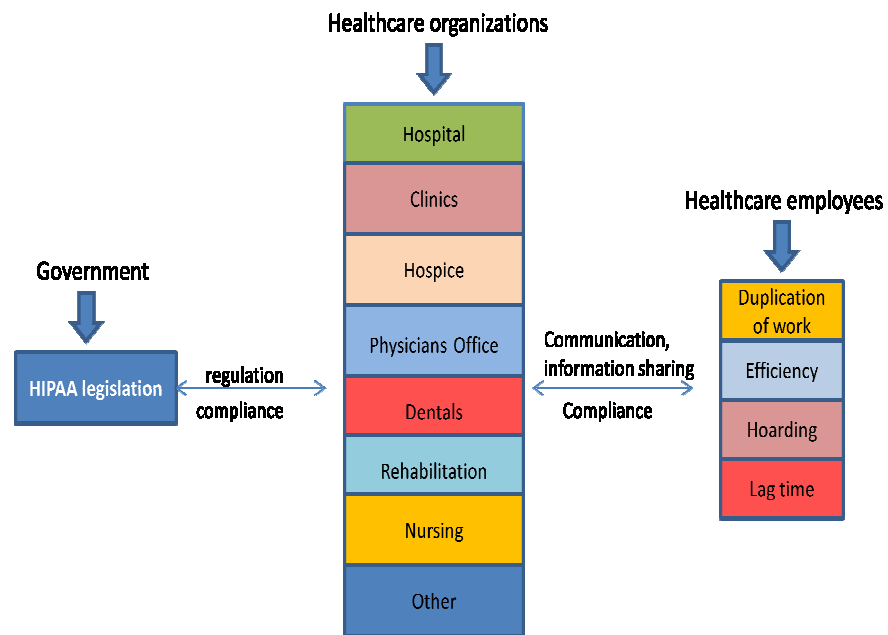
Figure 1. Elements of HIPAA-regulated entity.

Purpose of the Study

HIPAA (1996a) regulates healthcare organizations specifically through the privacy and security rule. Therefore, this study investigates intraorganizational knowledge sharing and the perceived lack of willingness of others to share knowledge in the healthcare organization. The researcher is interested in examining the impact of HIPAA at the administrative level and its influence on communication and knowledge sharing. The literature researched to date universally describes knowledge, knowledge

sharing, and knowledge management as exceedingly beneficial to the organization. According to Chun and Monteleagre (2007), knowledge management has led to the "knowledge-based view of the organization" (p. 39) which seeks to explain how to best to use information systems to exploit an organization's embedded knowledge. Lavergne and Earl (2006) pointed out that knowledge, unlike other assets, becomes more valuable as it increases with use. However, among the medical industry that is governed by HIPAA regulations, knowledge sharing is not a given, in fact, it is often forbidden (Keegan, 2002; U.S. DHHS; 2010a).

Scope of the Study

The intent of this quantitative study was to explore the perception of the administrative employees, in the process of knowledge sharing within HIPAA healthcare organizations. The focus of the study will be on (a) the variables of organizational climate, (b) the knowledge-sharing climate, and (c) the HIPAA climate on knowledge sharing behaviors in communication within the HIPAA healthcare organization all of which determine the complexities and the likely challenges involved in ensuring compliance to propose organizational processes and compliance strategies built around a conceptual framework.

Research Questions

Healthcare organizations have little or no control when they are mandated to conform to HIPAA legislation as they continue to address legislative interpretation issues and compliance deadlines. However, healthcare organizations do have some control, for they can capitalize on their employees' knowledge sharing and communication to mitigate barriers, improve collaboration, and improve efficiency when adapting or conforming to HIPAA regulations. If the employee's knowledge-sharing and

communication behaviors regarding the adoption of HIPAA could be understood, management of this knowledge would be of benefit not only to the healthcare organization, but also to the patients. The research questions for the study were developed, using the adaption of questions previously used by Han and Anantatmula (2008) and Ayupp and Perumal (2008), and questions influenced by Ohwobete's (2009) study questionnaire. The overall research questions addressed by this study are the following:

- RQ1: How is knowledge sharing within the organization affected by the employee's perception of the organizational climate?

- RQ2: How does the organizational environment affect knowledge sharing within the organization?

- RQ3: How do the organization's efforts to comply with HIPAA regulations affect knowledge sharing within the organization?

Three sub-research questions followed from this overall question.

1. What daily activities do employees perceive as required to comply with HIPAA (1996a) and how do they affect knowledge sharing?

2. How do existing organizational connections such as employee socialization (formal and informal) affect knowledge sharing?

3. What are the possible barriers created by the employees' perception?

Research Approach

To address these questions, the researcher used the quantitative approach. To gain in-depth understanding of the knowledge sharing and communication at various healthcare organizations, the researcher conducted a survey of 212 participants currently working in the health care industry. SPSS® (Statistical Package for the Social Sciences)

Version 17.0 for Windows® 2007 and Microsoft Excel® 2007, a standard spreadsheet application for data manipulation, were the statistical software packages used for processing and analyses. The method is explained in Chapter 3; the analysis is detailed in Chapter 4. The following section defines a number of terms used throughout the study.

Definitions

Health information technology. The following definitions were used throughout the study. In this study, health information technology (HIT) refers specifically to health care systems. The HIT system (Thompson & Brailer, 2004) was designed exclusively for the health care industry as a means of comprehensive and secure information exchange between health care users and providers. This system was structured to ensure the privacy and security of electronic health information because it is transmitted electronically. The HIT is defined as exchange of health information in an electronic environment. The system is one of the legislative requirements imposed on the healthcare industry to create portability and data sharing. Although the primary goal of the HIT designers was to improve the overall quality of health care, HIT also claimed that the system would increase administrative efficiency and decrease paperwork. This study focuses on these latter two claims.

Health Insurance Portability and Accountability Act. The oversight of HIT implementation and compliance falls under HIPAA (1996b), which was designed to protect the dissemination of health information by organizations that were subject to the Privacy Rule for covered entities and the standards for individual privacy regarding the understanding and use of health information. Congress' goal in writing the HIPAA (1996a) law was (a) to ensure that individual health information is properly protected while (b) allowing for the flow of health information needed to provide and promote

high-quality health care and (c) protecting the public's health and well-being. Enforcement of the Privacy Rule began April 14, 2003, for most HIPAA-covered entities. Understanding the definition HIPAA is important because changes in HIPAA regulations directly affect the health care industry. When this researcher refers to organizations in general, the broad definition of a regulation is meant; when the researcher refers to the health care industry, HIPAA regulations are meant.

Explicit knowledge. This type of knowledge is tangible and external (to the human) documented knowledge (Waltz, 2003).

Intraorganizational knowledge sharing. This type of knowledge sharing is exchanged between members of different organizations directly or indirectly through knowledge repositories (Stonerock, 2003).

Knowledge application. Applying knowledge is a process that allows individuals to apply and integrate their specialized knowledge. It also refers to the specific set of rules, standards, procedures, and instructions developed through the conversion of tacit knowledge to explicit and integrated knowledge for efficient communication (Alavi & Leidner, 2001)**.**

Knowledge creation. The creation of knowledge is a growth process of interactions between explicit and tacit knowledge. The interaction between explicit knowledge and tacit knowledge leads to the creation of new knowledge (Nonaka & Konno, 1998; Nonaka, Takeuchi, & Umemoto, 1996; Alavi & Leidner, 2001)**.**

Knowledge management. This type of management is the creation, protection, development, and sharing of information and intellectual assets (Hellriegel, Jackson, & Slocum, 2005).

Knowledge sharing. This type of sharing is the transfer of knowledge between a

knowledge provider and a knowledge seeker (Stonerock, 2003).

Knowledge storage. Storing information requires timely and easy access to knowledge while avoiding a condition of information overload (Alavi & Leidner, 2001).

Knowledge retrieval. Retrieving knowledge from memory includes retrieving information that resides in various component forms, written documentation, structured information stored in electronic databases, codified human information stored in expert systems, documented organizational procedures and processes, and tacit knowledge acquired by individuals and groups (Alavi & Leidner, 2001).

Knowledge transfer. Transferring knowledge is the distribution of information between individuals, from individuals to groups, between groups, across groups, and from the group at various levels of the organization (Alavi & Leidner, 2001).

Tacit knowledge. This type of knowledge is the "Intangible, internal, experiential, and intuitive knowledge that is undocumented and maintained in the human mind" (Waltz, 2003, p. 63). This definition is based on Polanyi's (1966) characterization of highly tacit knowledge as personal and difficult to express explicitly. Tacit knowledge has also been labeled informal knowledge (Business Dictionary, 2011) or common knowledge (Dixon, 2000).

Knowledge depreciation. This type of depreciation occurs when knowledge is underused, a condition represents the "largest hidden cost in organizations" (Sveiby & Simons, 2002, p. 420).

Regulatory relief. This type of relief is a deregulation and slowing of the growth of new regulations to promote economic growth in response to which organizations should cut back their regulations (Echeverri-Carroll, & Ayala, 2009).

Organization of the Dissertation

In Chapter 1, the researcher introduced the study by describing the research problem, the research questions, and the nature of the problem; by explaining the purpose and scope of the study; and by defining the terms used throughout this study. Chapter 2 reviews the literature regarding regulatory, punctuated, and organizational changes; discusses their impact on IT systems, knowledge sharing, and leadership; and focuses primarily on knowledge sharing and knowledge transfer as they relate to the HIPAA regulations. Chapter 2 presents a critical analysis of empirical study related to the central questions of the study. The third chapter of the study presents the method by which the researcher collects and analyzes data for the study.

In Chapter 3, the researcher describes the method used to answer the research questions and to test the hypotheses; describes the survey instruments used for data collection; and operational variables. In Chapter 4, the researcher describes the results of the data analysis. In Chapter 5, the researcher discusses the implications of results, and presents the limitations of the study, directions for future research, and the significance the study's findings.

Chapter 2: Literature Review

Introduction

In a healthcare organization, when the employee's knowledge is viewed as an asset, the organization might claim that it possesses better knowledge resources than its competitors. Regardless of the quantity or quality of knowledge, the ability to manage knowledge involves interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application (Alavi & Leidner, 2001). Figure 1 (on p. 7) previously, summarizes the elements involved at a healthcare organization when examining the impact of HIPAA (1996a) on employee knowledge. The significance of this figure is that it views knowledge as an asset that produces long-term business continuity and organizational compliance benchmarking that leads to a competitive advantage for the organization (Cole, 1998; Spender, 1996; Nonaka & Takeuchi, 1995).

In this literature review, the researcher provides an overview of regulatory changes that are specific to the health care industry, background knowledge on how a regulation is made, and how organizations become compliant. The researcher examines the relationships (if any) of the willingness of others to share knowledge intraorganizationally among the members of the HIPAA environment. To develop the context for this research study, the researcher systematically reviewed topics that are germane to HIPAA (1996a), leadership, control, and trust in organizational learning and knowledge sharing. Specific topics that were addressed included (a) tacit knowledge and explicit knowledge, (b) barriers to knowledge sharing, (c) strong and weak ties, and (d) the importance of the individual providing the background and theories necessary to define the problem and to illuminate individual behavior regarding knowledge sharing.

The authors whose studies were reviewed emphasized how knowledge sharing occurs among individuals and departments in the HIPAA-regulated environment. Many studies in the literature review overlapped; therefore, placing them in one category or another was arbitrary in some cases.

Regulation

To maintain its status as a global leader, the federal government of the United States has wrestled with regulation and deregulation to find the best fit for the economy. In 1974, in response to the lack of accountability and oversight in regulatory issues, President Ford issued Executive Order 11281, giving him control over regulatory policies. In 1988, the Reagan Administration formed the Competitive Policy Council to provide regulatory relief (Echeverri-Carroll, & Ayala, 2009). From January 20, 1989, to January 20, 1993, the George H. W. Bush Administration retained the status quo, whereas in 2007, the G. W. Bush Administration issued two executive orders to strengthen regulatory policies and practices.

When the federal government passes legislation, each state subsequently adopts or amends it, and each state might decide to amend federal laws fully or partially and to create new statues and codes, drawing on its state constitution. State laws precede federal laws, as was observed in the case of *Wyeth v. Levine* (2008; as cited in David, 2010) in which the U.S. Supreme Court ruled that federal law does not pre-empt state law regarding compliance with the regulations of the U.S. Food and Drug Administration (FDA). Thus, organizations are required to follow laws that apply to the states in which they are headquartered.

Haveman, Russo, and Meyer (2001) described regulatory change as punctuated because it disturbs and interrupts normal work processes by imposing laws on

organizations and demanding compliance, regardless of the level of interruption to the organization. The authors explained that punctuated equilibrium could assume two distinct forms: (a) long periods of quasi-equilibrium and (b) brief periods of disequilibrium. Regulatory changes that involve long periods of quasi-equilibrium are larger in nature and the organization expects them. For example, long-term quasi-equilibrium allows the organization to weigh risk factors, monitor progress, and plan for alternative methods in the event of crisis. However, the shifting caused by brief periods of disequilibrium can lead to unintended and often negative outcomes during the organizational implementation process.

In their study of hospitals, Haveman et al. (2001) found that regulatory punctuation releases pressure, but can also redirect stress to other areas because of lack of foresight. Specifically, they found that it eroded boundaries, placed additional financial risk on providers, and reduced profit margins. Although not immediate, the authors found that these changes had a direct impact on corporate executive officer (CEO) performance; CEOs capable of adjusting to change thrived, while those who had difficulty adapting were replaced, reinforcing the importance of compliance to the organization. However, compliance involves various levels of complexities that can create challenges for organizations.

The first process of adherence to compliance for the organization is acceptance and adaptation by organizational leaders. When Gilliland and Manning (2002) investigated how agencies attempted to monitor organizational activities within their jurisdiction and enforced regulation, they found that compliance could be difficult to achieve in many intraorganizational settings, and might become particularly problematic in a regulatory context because of differing interpretations between agencies and

organizations.

When the authors used social control theory to investigate organizational responses to regulatory control activities (firm compliance) and how these responses are moderated by the extent to which firms agreed with agency regulations, they found that compliance is attainable through informal control and, conversely, that formal control does not motivate compliance. The authors explained that informal control motivates compliance through the sharing of rich information and that organizations benefit from maintaining a positive relationship with regulatory agencies. However, they warned that becoming compliant does not occur without cost to the organization.

When Echeverri-Carroll and Ayala (2009) investigated the increasing cost of complying with changing federal economic, workplace, environmental, and tax regulations, they found that compliance with all forms of regulation cost US$648 billion in 2004. Echeverri-Carroll and Ayala also found that compliance increases the cost to regulatory agencies that must employ workers full-time. The increase is significant because it shows how important regulation and regulatory compliance have become. Echeverri-Carroll and Ayala claimed that regulatory action has historically lacked accountability because it has lacked executive branch oversight and accountability. Indeed, the disregard of regulatory compliance during the Nixon, Carter, and Ford Administrations led to the development of HIPAA (1996a).

Adaptation of Regulation

According to Wright (2008), organizations should assign an employee or department, depending on the size of the organization, with the responsibility of ensuring regulatory compliance. Using HIPAA (1996a) as an example, he indicated that an internal regulatory department should attain knowledge of privacy rules, monitor

organizations for compliance, investigate allegations of noncompliance, respond to specific questions attempting to clarify ambiguity, and conduct educational training for staff. Although the objective of HIPAA (1996a) was to protect the privacy of consumers, Wright (2008) argued that absolute protection is unattainable, but privacy breaches can be prevented. Wright suggested that some of the stipulations can be considered commonsensical, such as securing social security numbers (SSNs) or diagnosis information, for unsecured access to such data can lead to misuse or fraud within the organization.

Greenblatt and Lange (2005) investigated the gaps, loopholes, and ambiguity in the language of new HIPAA regulations attempting to regulate, control, and secure sensitive data. Greenblatt and Lange found that, although new regulations become effective when there is some resolution to a pending issue, more questions usually arise that are not addressed. Therefore, Greenblatt and Lange suggested that the preamble to a passed regulation be given as much attention as the regulation itself because it might contain examples and explanations that would assist in understanding the regulation. Additionally, Greenblatt and Lange indicated that interaction with state agencies and state regulatory bodies might yield clarity regarding the intended purpose of the regulation. Organizations are best served if they review the proposed laws prior to the final stage because it is only before this stage that they can influence the regulations, obtain clarity, or force complete rejection of sections of the legislation. Therefore, to be acknowledged, organizational responses must be submitted in a timely manner.

To critique the adaptation of HIPAA regulations, Natale (2008) used Wilson's (2001) Consilience Model that posits, "All knowledge and understanding is bound together by some unknown common theory" (p. 1). Decisions made by leaders in

becoming compliant can be part of an organizational power play. For example, leaders can use ambiguity in the regulation to their advantage, claiming that the intended compliance was founded on vague guidelines that led to limited knowledge and direction.

Natale (2008) claimed that because individuals function in an assumptive world, one in which they make decisions from their assumptions and experiences, the world as a whole lacks uniformity and standardization for the decision-making process. HIPAA (1996a) serves to eliminate assumptions by serving as a formal standardization source. Natale (2008) argued that, although there is room for much improvement, HIPAA (1996a) creates an opportunity for standardization and knowledge sharing that enables leaders to add to their personal assumptions, creating an environment for better decision making.

In their investigation of the control challenges that managers face while implementing HIPAA regulations, Jensen, Cline, and Guynes (2007) found that, in addition to ambiguity in the interpretation of regulations, managers have difficulty finding a balance between how much and what type of information should be exposed to employees, departments, and customers. HIPAA regulations provide little guidance; therefore, management is confronted with creating new strategies to buffer these situations, leading to constant stress for organizational leaders. Emphasis is often shifted among normal operations, new implementation, disaster recovery, security, and privacy to remain compliant. The IT department is usually affected by regulatory change because most organizations depend on IT networking systems to store, process, and transfer data. The IT department and management are often confronted with internal politics and chaos when planning for organizational change that is related to absorbing new regulations.

Information Technology and Regulatory Implementation

Formed in December 2005, the Office of Health Information Technology serves as the principal federal administrator in the development of an agency-wide Health Information Technology (HIT) strategy. The purpose of the Health Information Technology Innovation Initiative by the Office of Health Information Technology is to implement health information technologies to improve efficiency and reduce waste. Focusing on the impact of the federally proposed technology advance of the HIT policy from a "state push," Beaton (2008) addressed several issues concerning Democratic Experimentalist Theory, which he described as "constitutional and administrative government intended to promote continuous improvement and adaptability in a federal or decentralized system" (p. 1700).

Beaton's (2008) main source of data was the HIT system that the federal government implemented. Beaton examined the state implementation process and questioned the incentive of regulation versus stakeholder, taking into account the financial burden placed on the organization in using this system. Beaton found that, although this regulation requires major capital investment and employee training in the short term, it reduces paperwork, creates standardization, and increases efficiency in the long term if successfully implemented. Beaton concluded that, to operate in the new virtual world, states must inevitably transition from traditional paper processes to electronic processes.

In accordance with Beaton's (2008) findings, Thompson and Brailer (2004) identified an urgent need for the standardization of IT in the health care industry. From their examination of government policies and DHHS data, Thompson and Brailer (2004) argued that the implementation of a public–private, information-rich health care system

would not only reduce medical errors, but would also accelerate the diffusion of knowledge. However, they warned that its successful implementation would require leadership, collaboration, financing, and communication.

DePhillips (2007) and Bernstein, McCreless, and Côté (2007) discussed the history of technology since the 1970s. Bernstein et al. used qualitative rather than quantitative data to prove their hypothesis that barriers exist in the healthcare industry. Both DePhillips (2007) and Bernstein et al. (2007) argued that cost expenditures and cost savings present major challenges in the implementation of IT (structural) change, particularly at the rural and small business level. DePhillips (2007) described those challenges as barriers, whereas Bernstein et al. (2007) identified certain constants that should serve to reduce or prevent such barriers.

Barlow (2009) focused on the government's regulation of IT implementation, investigating the idea that such regulation is a "cure all" for the health industry. Barlow reported that the Obama administration created an incentive of over $10 billion for healthcare facilities that adopt and implement the IT system. Although Barlow agreed with the benefits of this adoption, he sought to compare its short-term costs with its long-term prospective gains. Barlow also posited that initial costs, given the current economic downturn, represent a deterrent for many organizations. Barlow noted that, given macroeconomic conditions, major capital investments have not been popular among those in management. Instead, leaders tend to look within the organization for possible solutions, building on existing capabilities when it is feasible to do so.

Therefore, in this study, the researcher proposes that leaders investigate the use of tacit knowledge as possible solutions for building on existing capabilities. This shift enables the healthcare organization to expand and integrate beyond the capabilities of

enhanced IT systems to using employee knowledge as an asset.

Tacit Knowledge and Explicit Knowledge

In health organizations (e.g., hospitals), the HIPAA for privacy and security rule restricts an employee's ability to share knowledge. To understand knowledge, knowledge transfer, and communication in the healthcare organization, it is important to become familiar with two types of knowledge: tacit and explicit. Thus, investigates the dynamics of tacit knowledge and explicit knowledge as a significant contributor to knowledge sharing within the healthcare organization.

Polanyi (1966) introduced the concept of tacit knowledge. Tacit knowledge involves the vast, unwritten, unspoken, and hidden storehouse of knowledge held by practically every human being through his or her emotions, experiences, insights, intuition, observations, and internalized information (Business Dictionary, 2011). Along those lines, the healthcare organization has the ability to capture and transfer this tacit knowledge into explicit knowledge that can be articulated, codified, and stored so that it can be readily transmitted to others, which results in a knowledge asset base for the organization. There is a shift in organizational focus related to knowledge and knowledge-based asset as a primary resource that accounts for 50% of the world's gross domestic product assets in the 21st century (McCall, Arnold, & Sutton, 2008) signifying the influence of tacit and explicit knowledge.

Dixon (2000) defined tacit knowledge as knowledge that is in the minds of employees and explicit knowledge as taking the form of laid-out processes, steps, and procedures. Tacit knowledge has also been labeled informal knowledge (Business Dictionary, 2011) or common knowledge (Dixon, 2000). Dixon (2000) explained that common knowledge is knowledge that the organization has already gained from existing

processes while remedying prior crises in the course of performing work functions. It is the experience and knowledge of employees that give the organization its competitive edge (Dixon, 2000).

Drucker (1967) played a role in coining the term *knowledge worker* and suggested that knowledge would be the chief economic engine on which organizations would focus in the future. The knowledge worker conducts daily activities within the healthcare organization while complying with HIPAA regulations. The knowledge worker leverages knowledge by continuously creating activities that move or transfer common knowledge in their daily functions. Exploitation of leveraged common knowledge produces enormous cost savings for an organization (Dixon, 2000). Figure 2 illustrates how common knowledge is gained when tasks are preformed. The larger cycle represents the process by which common knowledge can be leveraged.
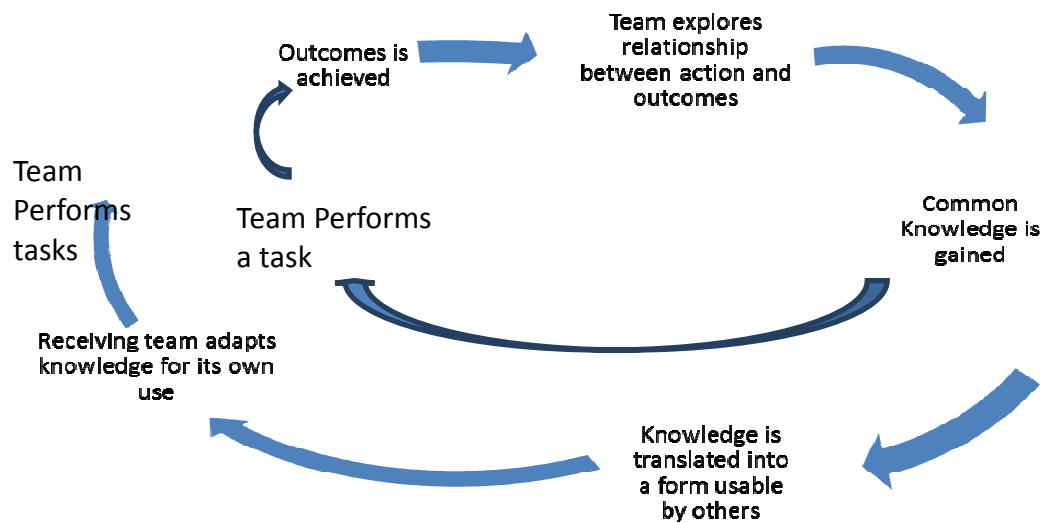
Figure 2. Leveraging common knowledge. From Nancy M. Dixon, 2000, *Common knowledge: How companies thrive by sharing what they know,* Harvard Business School Press, Boston, MA, p. 20. Adapted with permission.

The goal of management is to capture common knowledge and to translate it into usable and transferable data. Once this task is accomplished, receivers of the knowledge

can adopt and implement it within their respective processes. The type of knowledge being transferred—tacit or explicit—makes a difference regarding which method will work the best.

In addition to introducing the concept of tacit knowledge, Polanyi (1966) was credited for distinguishing between explicit knowledge and tacit knowledge. Polanyi argued that all knowledge has some tacit dimension and that the degree of *tacitness* is directly related to the difficulty of expressing knowledge. Highly tacit knowledge is difficult to express or codify, whereas highly explicit knowledge can be known widely by persons with little common background (Polanyi, 1966). Explicit knowledge and tacit knowledge are complementary, meaning that both types of knowledge are instrumental to knowledge creation (Seidler-de Alwis & Hartmann, 2008, p. 134). The interaction between tacit knowledge and explicit knowledge produces new knowledge and new value (Seidler-de Alwis & Hartmann, 2008). Further, Itami (1987), who pioneered the initial discussion of these two types of knowledge, suggested that tacit knowledge is the knowledge of single individuals and is personal, but that explicit knowledge is shared by the organization through tangible items such as documents, databases, and e-mail.

Tacit knowledge transfer is related to individual learning (Jensen, 2009); therefore, it provides the learning curve through shared experiences or observations (Seidler-de Alwis & Hartmann, 2008) that enable the organization to transfer this knowledge into tangible items. Droege and Hoobler (2003) stated that, to transfer tacit knowledge from one employee to another, employee interaction, collaboration, and access to others requires tacit knowledge. Additionally, Droege and Hoobler's views support Polanyi's (1966) belief that tacit knowledge can be transferred when individuals have common background, training, and experience. Therefore, tacit knowledge transfer

within the organization would begin between employees in the same department before it would extend to other departments. However, tacit knowledge is unwritten and undocumented; therefore, it is susceptible to loss. When employees leave the organization, the ability to capture and create new knowledge is placed at risk (Droege & Hoobler, 2003).

Galia (2008) suggested that the generation of knowledge really occurs when capturing knowledge and, ultimately, during the conversion of tacit knowledge to explicit knowledge. Explicit knowledge is codified in books or databases (Waltz, 2003), and it can be considered information (Wang, Ashleigh, & Meyer, 2006). Thus, explicit knowledge can be shared through verbal, written, and electronic media communication channels (Vera-Muñoz, Ho, & Chow, 2006). However, although explicit knowledge is codified and more accessible, it must first be assessed for its usefulness, after which it can be made accessible to other users (Davenport & Prusak, 1998) as an asset in organizational learning. Therefore, explicit knowledge transfer is closely related to organizational learning (Jensen, 2009).

Hsiao, Tsai, and Lee (2006) claimed that, to learn from knowledge, healthcare organizations could think of knowledge in three distinct ways. First, they could view knowledge as an object, such that technologies are used to codify and represent knowledge for transfer. Second, they could view knowledge as cognition, such that knowledge is shared best through personal communications. Third, they could view knowledge as capability, such that knowledge is considered a result of participation in various work activities and situations. These three approaches of knowledge can be seen as transitioning from explicit to tacit knowledge (Hsiao et al., 2006) and toward organizational learning and knowledge management.

Harlow (2008) had a slightly different but overlapping approach to that of Hsiao et al. (2006), for Harlow, tacit knowledge was classified in two dimensions. Similar to Hsiao et al.'s concept of capability, Harlow's (2008) first dimension of tacit knowledge was know-how, meaning knowledge of work activities. The second dimension of tacit knowledge was that it encompassed "beliefs, values, attitudes, ideals, mental maps, and schemata which are related to the cultural shaping of 40 the individual and the group" (Harlow, 2008, p. 151). Muhammed, Doll, and Deng (2009) reiterated Harlow's (2006) dimensions by categorizing tacit knowledge as conceptual knowledge (know-why), contextual knowledge (know-who, know when, and know-where), and operational knowledge (know-how and know-what). Simply, stated, for the healthcare organization, performance is dependent on the ability to use all available knowledge in value generating activities (Harlow, 2008). However, the ability to create value resides in the know-how or tacit knowledge of an organization's employees (Harlow, 2008). Within the healthcare organizational environment, employees can be viewed as both the individuals and groups that influence knowledge transfer.

Therefore, according to Kautz and Kjaergaard (2007), different perspectives on knowledge not only explain the explicit and tacit categorizations, but they also include the context of individual knowledge and group knowledge categorizations. Individual knowledge, Kautz and Kjaergaard said, is that knowledge held by an individual that guides an individual's actions; group knowledge is that knowledge common to a group that guides a group's actions. Group knowledge includes how the group works, social norms, corporate memory, and task knowledge (Kautz & Kjaergaard, 2007). Further, Kautz and Kjaergaard (2007) explained that explicit group knowledge concerns "shared stories about previous successes or failures" (p. 94). A major benefit of group knowledge

can be in keeping a group from "reinventing the wheel" in successful projects, or from pursuing certain failure; therefore, it can be seen as a cost saving measure (Kasper, Mühlbacher, & Müller, 2008). However, Kautz and Kjaergaard (2007) stated that not all group members possess all group knowledge. However, differences between the past successes and failures of group knowledge and individual knowledge can enhance group knowledge; therefore, it can enhance performance. However, tacit knowledge is internal and personal (Waltz, 2003); therefore, tacit knowledge might not be easily shared within the group or organization (Wang et al., 2006).

Therefore, one must ask the following question:

- How is tacit knowledge of value to a healthcare organization?

How is tacit knowledge of value to a healthcare organization? On this topic, Nonaka and Takeuchi (1995) stated, "Tacit knowledge of individuals is the basis of organizational knowledge creation" (as cited in Waltz, 2003, p. 74). Rothwell and Poduch (2004) also emphasized the importance of passing on tacit knowledge, for "without knowledge of what has been done in the past, it is impossible to know how to deal with present issues or future plans" (p. 407). However, Brown and Duguid (2000, as cited in Jones, 2005) said that tacit knowledge is "difficult to rebuild after it is lost" (p. 2). This difficulty is often seen when knowledge employees leave or retire, for tacit knowledge is then lost to the organization.

Identifying and Capturing Tacit Knowledge

One difficulty with passing on tacit knowledge is the identification of efficient communication channels to enable the transfer of tacit knowledge. Channel efficiency is determined in part by the methods of communication, including face-to-face, video teleconferencing, e-mail, and telephone (Gupta & Govindarajan, 2000; Lindsay, Chadee,

Mattson, Johnston, & Millett, 2003). Face-to-face and telephone communication are classified as rich because they are personal and allow for immediate feedback (Murray & Peyrefitte, 2007). Other channel issues pertain to the richness of the channel with respect to the amount of information transmitted (i.e., the amount and type of information content along with the information cues available; Sussman & Siegal, 2003). Gupta and Govindarajan (2000) stated that the healthcare organization should evaluated *rich channels* for informality, openness, and density of communications to identify those that are used for transfer of tacit knowledge.

Murray and Peyrefitte (2007) explained that rich channels are used for transfer of tacit knowledge because tacit information cannot be codified (Kautz & Kjaergaard, 2007). Sharing tacit knowledge requires socialization processes, by not limiting personal acts of communication (Schilling & Kluge, 2009) and creating multiple channels of communication (Davenport & Prusak, 1998). Zack (1999) acknowledged that, in complex organizations such as those in the field of healthcare, knowledge could become fragmented; then, it becomes difficult to locate and share or it might be inconsistent. Similar to the work of Dixon (2000), Zack's (1999) article focused on how to capture and configure knowledge. Zack stated that organizations blindly accept tacit knowledge and often do not challenge the way in which information is stored, treated, or communicated.

The payoff of this transfer of tacit knowledge for the organization is increased innovation capability through knowledge sharing (Cavusgil, Calantone, & Zhao, 2003). Working alongside a knowledge source provides the opportunity for interactive conversations in which experiences and stories can be shared, and observations can occur (Vera-Muñoz et al., 2006). Vera-Muñoz et al. (2006) stated that these socialization processes are most effective "when allowing the recipient maximum possible

opportunities to work alongside the source of the knowledge" (p. 136). Socialization processes will be further addressed later in this chapter.

Davenport and Prusak (1998), Vera-Muñoz et al. (2006), and Cavusgil et al. (2003) concluded that employees within the organization must develop relationships with each other to transfer tacit knowledge effectively to create solutions to the hard problems that can be found in HIPAA regulations and implementation. To develop these relationships, rich communication channels must exist (Davenport & Prusak, 1998). Stonerock (2003) found that a perceived lack of access to efficient information-sharing channels was not only negatively related to intraorganizational knowledge shared, but also was identified as the number one statistically significant barrier to sharing information (see Figure 3).

Figure 3 depicts the daily activities of employees at healthcare organizations and shows how the employees' interpretations of the HIPAA privacy act might hinder knowledge sharing within the organization. If employees choose not to share knowledge or to use information-sharing channels, their behavior might cause negative effects such as lag time, work duplication, and hoarding, which reduce the efficiency of knowledge sharing that is required to comply with regulatory guidelines.

Conversely, Bogue and Sorenson (2009) found that, although knowledge might exist within databases and other explicit forms, workers in general prefer to seek out other workers to obtain knowledge. This indicates that HIPAA regulations might be a limiting factor in information sharing in the healthcare organizational environment. Therefore, the absence of a proper framework that provides frank exchanges and information-sharing channels affects the healthcare organization's ability to manage knowledge effectively.
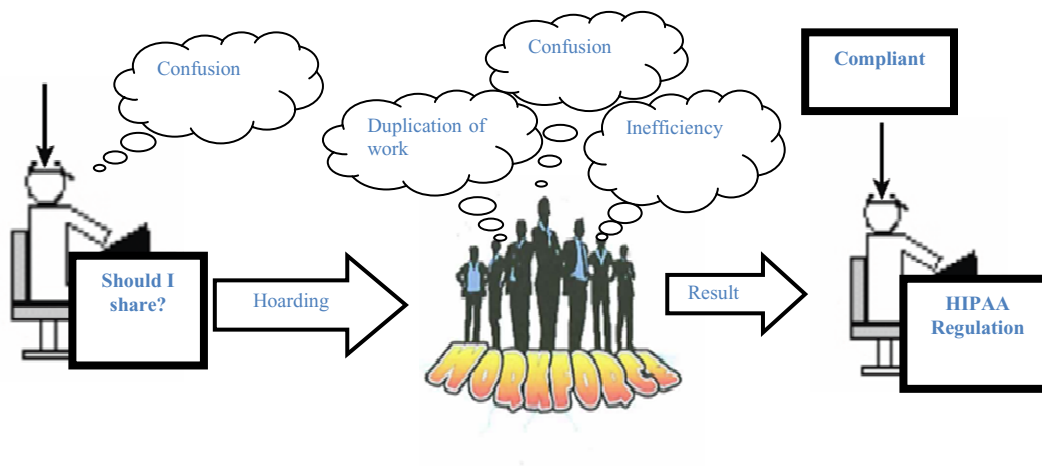
Figure 3. HIPAA knowledge sharing among employees.

Knowledge Sharing

Knowledge sharing and knowledge management are major instruments in an organization's success (Bock & Kim, 2002; Laycock, 2005) and competitive advantage (Cummings & Teng, 2006; Hong, Doll, Nahm, & Li, 2004; Senge, Lichtenstein, Kaefuer, Bradbury, & Carroll, 2007). Figure 1 summarizes the elements involved at a healthcare organization when examining the impact of HIPAA (1996a) on employee knowledge and Figure 4 illustrates the employee organizational knowledge management that is designed to facilitate knowledge processes and best practices. Knowledge management identifies and leverages collective employee knowledge in an organization to help the organization compete (von Krogh, 1998). The knowledge management and knowledge sharing procedures alone will not help an organization if they do not enable its recipients to create value. Most knowledge management projects have one or more of three goals: (a) to make knowledge visible and to show the role of knowledge in an organization, (b) to develop a knowledge-intensive culture by encouraging knowledge sharing (as opposed to hoarding) and proactively seeking and offering knowledge; and (c) to build a

knowledge infrastructure (Davenport & Prusak, 1998).

Implicit within this argument is the acknowledgement that knowledge does exist within the organization. Various overlapping description of monitoring and managing knowledge fall under knowledge creation in Figure 4. One approach is that of "a state or fact of knowing" in which a condition of understanding is gained through experience, study, perception, or discovery (Schubert, Lincke, & Schmid, 1998). Knowledge can also be described as Dixon (2000) defined tacit knowledge, that is, the knowledge that is in the minds of employees, which is explicit knowledge that takes the form of laid-out processes, steps, and procedures.

In Figure 4, in the box labeled "storage and retrieval" (Zack, 1998), knowledge is defined as an object, suggesting that knowledge could be stored and manipulated. Finally, the "knowledge transfer" and "knowledge application" boxes in Figure 4 signify that knowledge has the capability and potential to influence future action (Watson, 2005). For the healthcare organization, knowledge management involves distinct but interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application (Holzner & Marx, 1979; Pentland, 1995).

Two understated but significant items in Figure 4 are Monitoring and Managing. This represents the learning process of the knowledge management model because it involves a feedback process or cycle process (Argyris, 2002; Argyris & Schön, 2007). Argyris and Schön (2007) emphasized that feedback process or cycle process creates a double-loop learning which offers great challenges because organizations have difficulty producing because of organizational structure. The double-loop learning process allows the organization to detect and correct its errors using the feedback method.
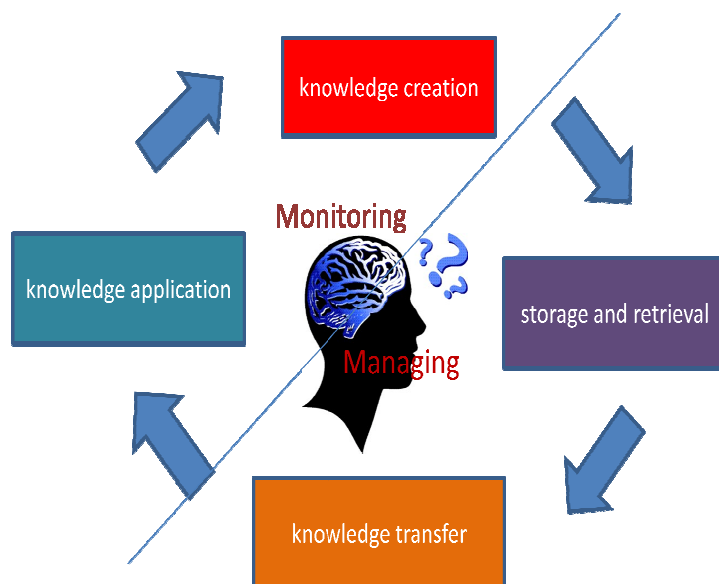
Figure 4. Monitoring and managing knowledge. Flow chart based on Holzner and Marx, 1979, *The knowledge application: The knowledge system in society,* Boston, MA: Allyn-Bacon. Flow chart adapted from Pentland, 1995, Information systems and organizational learning: The social epistemology of organizational knowledge systems, *Accounting, Management and Information Technologies, 5*(1), 1–21. Retrieved from http://googlescholar.com/. Image based on http://xml.managementsite.com/images/138/kennis2.gif

Employees within the organization are the single most critical resource knowledge creation because, once it is identified, this knowledge can be stored, retrieved, transferred, and applied to the organizational learning processes. The ability to exploit knowledge successfully, using this diagram, reduces barriers in the healthcare organization's processes.

However, the successful use of knowledge management and knowledge sharing instruments can be hampered by regulations such as HIPAA's specific misconception of the security and privacy regulation that influences the culture of the organization such that culture is defined as the norms, practices, values, and customs governing individual behavior within an organization (Hellriegel et al., 2005). Knowledge management and knowledge sharing environmental factors are important as influencers of an individual's

knowledge creating and sharing posture by first, establishing that tacit knowledge exists and, secondly, acknowledging that it becomes more valuable knowledge when transformed for wider circulation (explicit; McLaughlin, 2010).

Integrating knowledge sharing and HIPAA

Knowledge sharing within an organization is critical because it directly influences the employees' abilities to accomplish tasks (Hansen, 2002; Orzano et al., 2007). Additionally, knowledge sharing is important to the organization because the creation of new knowledge solves problems (Kim & King, 2004; Parent, Roy, & St-Jacques, 2007). Lavergne and Earl (2006) and Yang (2007) took it a step further, explaining that new knowledge becomes more valuable as it is used. However, an incomplete transfer of knowledge might lead to knowledge depletion and knowledge depreciation (Yang, 2007), and lag time, duplication of work, hoarding, or inefficiency (Figure 3) for the organization. Knowledge depreciation can occur for a variety of reasons (Yang, 2007) of which the most significant are (a) incomplete knowledge transfer between employees and (b) difficulty in accessing knowledge.

In health organizations, the HIPAA (1996b) privacy and security rule might restrict an employee's ability to share knowledge, possibly creating (a) incomplete knowledge transfer between employees and (b) difficulty in accessing knowledge, resulting in lag time, duplication of work, hoarding, or inefficiency (Figure 3) for the organization.

This restriction is made because the privacy rule of HIPAA (1996b) specified that organizations governed by HIPAA must protect the confidentiality, integrity, and availability of electronic personal health information (PHI). The Administrative Safeguards (Section 164.308) rule read as follows:

- Administrative safeguards are administrative actions, policies, and procedures that are used to manage the selection, development, implementation, and maintenance of security measures to protect electronic protected health information and to manage the conduct of the covered entity's workforce in relation to the protection of that information.

- The organization must identify the security official who is responsible for the development and implementation of the policies and procedures required by this subpart for the entity. The organization must implement policies and procedures to ensure that all members of its workforce have appropriate access to electronic protected health information, as provided, and to prevent those workforce members who do not have access from obtaining access to electronic protected health information.

- The organization must implement policies and procedures for authorizing access to electronic protected health information that are consistent with the applicable requirements.

- The organization must implement technical policies and procedures for electronic information systems that maintain electronic protected health information to allow access only to those persons or software programs that have been granted access or specific rights as stipulated in S.164.308(a)(4).
  o Access Control
  o Access Control Implementation Specifications
  o Unique User Identification
  o Emergency Access Procedure
  o Automatic Logoff

- Encryption and Decryption

- Audit Controls

Additionally, the penalties for noncompliance with HIPAA (1996a) range from fines and penalties to prison sentences. "HIPAA calls for civil and criminal penalties for privacy and security violations, including: fines up to $25K for multiple violations of the same standard in a calendar year—fines up to $25 K and/or imprisonment up to 10 years for knowing misuse of individually identifiable health information" (University of Texas Medical Branch, 2011). This creates an environment for organizational chaos between HIPAA knowledge and employee knowledge sharing and fear of noncompliance (Goh & Hooper, 2009; Hopp et al., 2009; Jolly & Wakeland, 2009; Minbaeva, 2007).

Coupled with the privacy and security rule, (a) incomplete knowledge transfer between employees and (b) difficulty in accessing knowledge can also be attributed to the influence of high-level employee turnover that prevents the importation of new ideas (Schilling & Kluge, 2009). Therefore, the healthcare organization would be best served with highly trained, long-term, HIPAA employees.

Long-term knowledge employees are usually viewed as highly trained workers who develop insight from accumulated experience; when those knowledge employees leave, they take their unique knowledge with them (Boone, Ganeshan, & Hicks, 2008). This directly influences knowledge sharing because it depletes the organization of their tacit knowledge, which leads to knowledge depreciation (Ackerman, 2007). In the healthcare organization, knowledge depreciation represents HIPAA regulation knowledge that is underused, a condition representing the "largest hidden cost in organizations" (Sveiby & Simons, 2002, p. 420). This potentially affects the ability to maintain HIPAA compliance and, ultimately, the organization's bottom line.

Knowledge sharing and knowledge management should be integrative and interactive, allowing leaders of healthcare organizations strategically to manage knowledge, to understand knowledge requirements, and to devise a strategic business knowledge strategy, which reduces barriers (Zack, 1999). However, McLaughlin, Paton, and Macbeth (2008) indicated that, within a complex organization such as a healthcare organization, several barriers exist to knowledge creation, knowledge transfer, and knowledge sharing.

Barriers to Knowledge Sharing

Sometimes employees have their own perceptions of how to be regulatory compliant with HIPAA (1996a); thus, a challenge arises in determining what the privacy acts restrict versus what an employee perceives as restricted, which might result in more than one of the following effects or none at all: lag time, duplication of work, hoarding, and efficiency. Employees must rely on their knowledge and interpretation of HIPAA (1996a) as well as their organization's policies and procedures. To hide their confusion, employees tend to err on the side of caution, limiting how much information they share. An example of this limitation is that of an employee who obtains data, but does not understand how it affects the job function. Employee A (an X-ray technician) might receive an e-mailed explanation of benefits (EOB) from an insurance company regarding the status of a client's billing. In this example, the EOB was accidentally e-mailed to the X-ray Department, instead of the Billing Department. Barriers to knowledge sharing include the time to share, the willingness to share, the lack of access, and the need to communicate with others. An example of these limitations include that of an employee who meets a HIPAA compliance deadline, but is unaware of additional existing information which would improve the quality and accuracy of said report. This might

lead to the variables of creating lag time, hoarding, and inefficiency whereby Employee A might not meet the deadline because Employee B is unknowingly hoarding information, and as both Employee A and B are inefficient because of the lack communication.

Lack of Time

Riege (2005) identified individual, organizational, and technological barriers to information sharing. On the employee level, barriers included lack of time to share knowledge or to pinpoint coworkers who need knowledge, low awareness of the value of possessed knowledge to others, lack of time for interaction, lack of social network, and lack of trust (Riege, 2005). The prior example clearly indicates low awareness of the value of possessed knowledge to others (Riege, 2005).

The employees or departments who would need to rely on this information "[do] not know what they do not know" (Socrates, *Apology*, 21d; Thompson & Martin, 2010, p. 1). In the example of the EOB previously mentioned, the Billing Department contacts the insurance company for an already existing EOB (i.e., lag time, duplication of work, or efficiency) and the billing for the client's outstanding payment. In this scenario, the Billing Department is also "spinning its wheels" trying to find the information or making decisions with incomplete information. This illustrates that issues that might be perceived as a barrier at one point in the organization might not be perceived similarly somewhere else in the organization (McLaughlin et al., 2008). If the scenario were to be compounded it could have a significant impact on other areas of the organization (e.g., hospital revenue, billing inefficiencies, and external reporting as timing of revenue as cash, receivable, or bad debt). Lack of willingness to initiate transfer is another possible barrier in a healthcare organization.

Willingness to Share

Schwartz (2007) noted that the lack of willingness to initiate transfer is a barrier. Instead of reaching out and communicating with a fellow associate, manager, or the Billing Department, Employee A hoards the information out of fear of destroying or divulging important information based on his or her own perception of compliance with HIPAA (1996a). The employee might also view knowledge sharing as loss of control of information or loss of competitiveness (Goh & Hooper, 2009), possibly leading to information hoarding. Additionally, a lack of confidence concerning the value of the possessed knowledge might contribute to the lack of interest in sharing (Goh & Hooper, 2009).

Lack of willingness could also be attributed to reluctance to spend time sharing information (Hopp et al., 2009; Minbaeva, 2007). Jolly and Wakeland's (2009) research results indicated that hoarding knowledge is the rational strategy for individuals who lack willingness to share. An employee might maximize his or her advantage of job security by hoarding personal knowledge and acquiring knowledge from others (Jolly & Wakeland, 2009). However, if each employee hoarded knowledge, the employees and the organization would suffer through lack of sharing (Jolly & Wakeland, 2009). Hoarding reduces functionality not through a violation of HIPAA (1996a), but because the information is not transferred or shared with the appropriate users. The employee might be compliant by retaining the information in their perception of HIPAA; however, he or she is also nonfunctional by impeding processes by increasing lag time, duplication of work, and inefficiency.

Knowledge sharing activities include the employee's willingness to contribute knowledge actively and to consult with coworkers to receive knowledge (H. F. Lin,

2007). However, the level of details shared might be negatively affected because of perceived threats to self-interest (Wang, 2004); for example, the perceived threat of job termination because of HIPAA (1996a) noncompliance might affect the level of details shared. Management has to investigate the characteristic reciprocity influencing knowledge sharing behavior; the perception that others are willing to share their knowledge, promotes willingness to share knowledge (Jolly & Wakeland, 2009; Minbaeva, 2007).

As was demonstrated in Figure 3 (p. 30), lack of cohesive and collaborative knowledge sharing among employees and departments within the organization creates disruption to the workflow processes. Other employees and departments are not aware of information that is already in house, nor are they aware of what is required from each other. Thus, Hypothesis 1 follows:

- ▪ H1: As an organization's efforts to comply with HIPAA regulations increase, knowledge sharing within the organization will decrease.

Sveiby and Simons (2002) raised the issue of whether competition or collaboration is more effective in generating value for the organization. Sveiby and Simons (2002) argued that the collaborative climate is viewed more favorably in the private sector than in the public sector. The private sector market economy thrives on competition for success (Sveiby & Simons, 2002); thus, it must balance the requirement for collaboration with competition. Public organizational cultures tend to be individualistic and competitive (Bundred, 2006), and public employees might be less willing to share (Bundred, 2006). However, collaboration and knowledge sharing are considered very favorably in contributing to success (Bock & Kim, 2002; Laycock, 2005); therefore, Sveiby and Simons (2002) concluded that the potential for improving

knowledge work in the any organization is great, specifically in the public sector. Thus, a need exists to understand current perceptions of the impediments to collaboration, knowledge sharing, and the willingness to share from a public and private healthcare organizational perspective.

Lack of Access

Riege (2005) stated that technology contributes to the lack of access barriers to sharing information. Lack of familiarity with new HIPAA information technologies, lack of compatibility of information technologies, and lack of information about HIPAA (1996a) and other security and privacy regulations create chaos with the employee's day-to-day operations. The employees who need to know information are unable to discover it because the information resides in inaccessible electronic repositories, which becomes another issue for the organizations (Newell, Bresnen, Edelman, Scarbrough, & Swan, 2006). Additionally, the ability of employees to adapt the knowledge they gained from prior projects and systems might be lost in the transition or implementation stages, making it difficult to locate prior solutions or to identify and communicate with other workers who can assist with the problem at hand (Boone et al., 2008).

The HIT Innovation Initiative under HIPAA (1996a) is intended to implement health information technologies to improve efficiency and reduce waste (DHHS; 2010b). Thus, the reliance on technology information instead of on human capital becomes almost mandatory under HIPAA (1996a), illuminating the potential of a power shift. Knowledge sharing through electronic medium increases the speed of problem solving, but information sharing is also easier when members are physically located near each other (Sondergaard, Kerr, & Clegg, 2007). However, organizations fail to realize that human capital is crucial and that, when it is not taken into consideration, technology

implementation might not provide the expected results (Reimus, 1997). Davenport (1994) argued that, although it is believed that once the right technology is in place, appropriate information sharing will follow, the common organizational mistake is to assume that employees from different departments, different managers, or different employees will adapt to the technology, know how to use it, or will be willing to use it to share knowledge.

On the contrary, what might develop are *knowledge silos*, resulting in less knowledge transfer within the organization (Sondergaard et al., 2007). Sveiby (2007) stated that the silo mentality was identified as the number one barrier to knowledge sharing. Sondergaard et al. (2007) indicated that proximity and sharing in groups might form silos, inhibiting access and knowledge flows outside the groups or departments. Johnston (2005) found that employees were more willing to share knowledge within tight networks such as groups or departments.

Need to Communicate With Others

Szulanski (1996) indicated that one of the biggest barriers to sharing information is that of "ignorance on both ends" (as cited in Riege, 2005, p. 25); ignorance occurs when neither the employee who is seeking knowledge nor the source of that knowledge is concerned with who needs the knowledge or who has the knowledge (Figure 3). Schwartz (2007) confirmed that the primary issue attributed to this barrier is the lack of awareness of information. Lack of awareness causes the availability of information to stagnate. Coupled with the lack of awareness is the "not-invented-here syndrome" (Gupta & Govindarajan, 2000) that prevents a knowledge employee from accepting information outside his or her department (Katz & Allen, 1982). This could be considered pride, independence, and lack of trust the part of the employee.

Goh and Hooper (2009) investigated barriers to knowledge communicate further by identifying several contributing factors, including fear of being perceived as incompetent, pride, independence, and lack of trust in of the knowledge of others. Borgatti and Cross (2003) stated that significant to communication is first knowing someone else's level of expertise and knowing how to contact that expert. These factors influence when and whether an employee or department will be sought out for information (Borgatti & Cross, 2003). However, identification with a particular work unit or department relative to the whole organization was also found to inhibit information seeking behavior (Burgess, 2005). The requirement to know where sources of information are means that employees must be aware of the sources in the first place; this awareness requires cultivating a need to seek out information sources (Ford & Staples, 2006; Kotlarsky & Oshri, 2005).

Strong and Weak Ties

Healthcare organizations should obtain a better understanding not only of barriers, but also of employee knowledge transfer and of the methods that could be used to direct knowledge sharing activities for the benefit of the organization. This is an important social concern and of theoretical interest because, without new knowledge assimilation, organizations often stagnate (Ayupp & Perumal, 2008). The social exchange communication theory (Thibaut & Kelley, 1959) speaks to the employee knowledge and employee knowledge transfer. How does an employee acquire knowledge and then exchange this knowledge with other employees within the department and other departments?

Social exchange theory posits that human beings recognize a communication need and that they are likely to engage in some form of reciprocity. This exchange usually

creates a condition in which a response is correlated to the worth of the original knowledge transfer message. Gouldner (1960) and Hofmann and Morgeson (1999) suggested that, one party acts in ways that benefits another party such that an implicit obligation for future reciprocity is created.

In this study, knowledge sharing in the organization is considered as a process of social exchange in which employees are involved. Although organizations operate primarily in the economic sphere as economic units, it is obvious that processes within them go beyond economic transactions. Social exchange theory further explains the social dynamics of knowledge sharing, knowledge sharing networks, social networks, and knowledge ties across department as perceived by the employee in the HIPAA organizational environment. Knowledge sharing networks, social networks, and knowledge ties across the organization should improve performance results because expertise that is more relevant is available to provide information (Cross & Cummings, 2004). Conversely, lack of social networks is a barrier to knowledge sharing (Riege, 2005).

When social exchange theory intercepts knowledge sharing, a powerful tool is created in that it predicts that when the benefits of sharing are perceived to be more valuable than the knowledge exchanged, individuals disclose more knowledge (Hofmann & Morgeson, 1999). Social learning theory explains and makes predictions about the process of knowledge acquisition.

The concept of knowledge ties is defined as how many of a person's knowledge exchange partners know each other (McFadyen, 2003). Strong ties includes friendship and familiar relationships; strong ties mean all of a person's within network know and have a relationship with each other. Conversely, weak ties relationships have limited

investment of time and intimacy; relationships in weak ties are infrequent and marginal at best (McFadyen, 2003). Granovetter (1983) stated that social systems were lacking in weak ties and that this inhibited the spread of new ideas. Weak ties are often more important in spreading information as the serve as bridges between disconnected groups (Granovetter, 1983). However, employees with few weak ties were unable to access information residing in distant parts of the organization's social system (Granovetter, 1983); instead, strong ties are required. Strong ties facilitate reformulation and validation of problems (Cross & Sproull, 2004). Organizations with strong ties tend to have greater motivation to assist and are more available to share knowledge (Granovetter, 1983). Strong ties improve communication; the presence of strong ties within a network means that these networks can transfer know-how and other tacit knowledge (McFadyen, 2003).

Strong ties of both tacit and explicit knowledge are advantageous: strong ties creates a trusting environment and knowledge seekers must trust the competence of a source sharing tacit knowledge to a greater degree than a source sharing explicit knowledge: therefore, the employee's creativity can be inhibited (Mitchell & Nicholas, 2006). However, tacit knowledge transfer allows each network member to know what each other member knows (McFadyen, 2003). Frequent interactions within the organizations would foster strong relationships, and strong relationships would be more likely to result in in-depth communication and exchange of detailed information (Cavusgil et al., 2003). Additionally, Wang et al. (2006) found that social relationships facilitated efforts to seek information from sources external to the department.

Hansen (1999) noted that healthcare organizations with internal strong ties are less inclined to seek information outside existing contacts or to develop new contacts when seeking knowledge. Organizations look externally primarily as an alternative ways

of solving issues. Capitalizing on the existing strong ties and weak ties among the employees could potentially resolve existing issues without having to seek external resources.

Further, strong ties might act as constraints because of obligations and requests for help from other groups (Hansen, 1999). Weak ties across organizations might enhance the ability of an information employee to find novel or new information to solve problems (Cross & Sproull, 2004). However, if knowledge is complex, weak ties might be disadvantageous in transferring that knowledge across boundaries (Hansen, 1999). Constant, Sproull, and Kiesler (1996) indicated that it is also possible for employees to receive useful advice and information from knowledge sources even in the absence of personal connections.

The benefit of weak ties is that they are project-oriented, escaping the complexities and penalties of being strongly meshed (Hansen, 1999). The problem encountered by the healthcare organizations is that of identifying the useful knowledge and transferring this knowledge to the relevant subunits within a short period. Hansen (1999) indicated that neither weak nor strong ties between employees or departments are primarily beneficial because both have their respective strengths and facilitate knowledge sharing at various points. However, strong intradepartmental ties provide for the greatest relative completion when knowledge is highly complex, proving Hansen's hypothesis that weak ties impede knowledge transfer in complex knowledge environments.

Continuing his investigation of knowledge networks, Hansen (2002) argued that best knowledge practices are transferred more easily when a positive relationship is established among subunits through spanning subunit boundaries. In other words, more knowledge is obtained when there is less distraction in interdepartmental networking and

when time is used to complete the implementation of the new regulation. From these findings, Hansen concluded that joint consideration of related knowledge and lateral networking is required for effective knowledge sharing and that both strong and weak ties affect the transfer of knowledge; strong ties provide the greatest relative completion when the knowledge environment is highly complex, but weak ties create less distraction and decreasing time lag. Although the weak ties would seem to be an advantage in trying to find novel information (Greve, 2005), weak ties might also inhibit the passing of complex information (Hansen, 1999; e.g., HIPAA regulations).

Borgatti and Cross (2003) focused on the relationships between key barriers to knowledge sharing (the independent variables) and the level of intraorganizational knowledge shared (the dependent variable). In their study on social networks, Borgatti and Cross argued that knowing that an individual or department has no information-seeking ties is not sufficient "without knowing why it is difficult to suggest interventions" (p. 443). However, results of their research indicated that both strong and weak ties were factors that were perceived to be the most influential hindrances to knowledge sharing. In summary, healthcare organizations with employees who each possess with weak ties in their network might have more unique knowledge to offer (Levin & Cross, 2004); however, regardless of the strength of the tie, the seeker must trust the source for the seeker to be willing to spend time and effort seeking knowledge (Cross & Sproull, 2004).

Organizational Learning

Organizational learning is another theory in which the concept for knowledge sharing can be investigated (Greve, 2005; Rosendaal, 2006) in a healthcare organizational setting. Organizational learning is an area of knowledge within organizational theory that

studies the way that an organization learns and adapts to which Greve (2005) argued that organizations learn from experience. Organizational learning using experience gained by capitalizing on tacit explicit knowledge, strong ties, or weak ties shows how knowledge is transferred in organizations from individuals to a group (Guirdham, 2002).

Lavergne and Earl (2006) stated that knowledge is most valuable to the organization when it is shared (Lavergne & Earl, 2006). Each person interprets and reuses knowledge through individual experiences, filters, and ties; thus, new knowledge is generated in the organization (Parent et al., 2007). However, for the HIPAA-regulated organization, knowledge sharing can have ethical implications, positively or negatively shaping social behavior (C. P. Lin, 2007; Wang, 2004; De Bruijn, 2006).

Lewis (2004) suggested that the organization could use a transactive memory system, the set of individuals' knowledge repositories and a shared understanding of who knows what information, to boost healthcare organizational learning. These memory systems are important because knowledge-based teams come together to solve a problem. Child and Shumate (2007) used the notion of memory systems to demonstrate how the diffusion and sharing of knowledge within cross-functional teams or department occurs when work is interdependent. This is critical to the healthcare environment because internal organizational policies and procedures that are related to HIPAA compliance are interdependent and conformist.

In this environment, when unshared information is provided, teams or employees with expert roles derive better solutions (Kimmerle, Wodzicki, & Cress, 2008). When employees are familiar with each other, they are often more willing to "offer, discuss, and consider unique information" (Lewis, 2004, p. 1521) because they trust each other. On the contrary, employees who have strong ties to each other might have more overlapping

knowledge that makes discerning unique knowledge more difficult (Lewis, 2004).

Argyris (2002) defined the organizational learning process as taking the form of single-loop or double-loop learning. Single-loop learning occurs when organizational errors are corrected with no changes to the rules in the healthcare organization so that employees can make these adjustments during daily activities. Double-loop learning on the other hand occurs when the organization changes the governing rules. Argyris (2002) explained that, although leaders are aware of double-loop learning, they are unable to produce it.

Zander and Kogut (1995) found that communication and experience are the most important factors in the speed of transfer knowledge and organizational learning. Wallmark and McQueen (1986) emphasized that the speed of knowledge transfer is based primarily on the organizational structure, which affects the ways that employees interrelate, create social communities, and share coding schemes to facilitate knowledge transfer. One influential factor is that of time, as implementation of and conformity to HIPAA regulations must often be performed rapidly. The ability to comprehend, codify, and transfer information on an intraorganizational level requires coordination and cooperation, which directly affects organization learning.

Kogut and Zander (1996) expanded the focus by arguing that knowledge in the organization has economic value. The cost involved is not transactional; instead, it is knowledge embedded in the competence of the individual depending on what he or she knows. Connectivity and foresight can be diffusers of barriers in knowledge sharing and facilitating knowledge transfer; thus, they can improve performance.

When Gupta and Govindarajan (1991) examined the flow of organizational knowledge, they found that a mixture of formal and informal mechanisms interact

simultaneously in the organization. Although complex, managers have more control over formal knowledge because it is directly related to the organization's policies and the employees' job tasks. Formal mechanisms can be described as the policies and procedures used as guidelines for the daily operations of the organization (Gupta & Govindarajan, 1991). More significant to the organization is the difficulty that arises regarding how to manage informal knowledge flows and differences in knowledge-flow patterns. To capitalize on the impact of knowledge flow, managers must focus not only on the magnitude of the knowledge flow, but also on the direction of the flow.

Gupta and Govindarajan (2000) confirmed that every organization constitutes a bundle of knowledge, but that many organizations lack the ability to exploit and transfer this knowledge effectively and efficiently in the intraorganizational context. The authors asserted that, the greater the value of knowledge, the more attractive that knowledge becomes for other units that promote organizational learning in the healthcare organization. However, certain employees or departments might enjoy a monopoly by hoarding knowledge; thus, they create power struggles within the organization (Gupta & Govindarajan, 2000).

Levinthal and March (1993) argued that, although limits exist to organizational learning, simplification and specialization allow for positive adoptive responses and improved organizational performance. However, the same mechanisms that improve learning can erode learning when organizations ignore the larger picture and the long-term impact, or when the experiential record is misleading or biased. When new regulations are implemented, the organization might be unprepared to resolve any issues that might arise, leading it to struggle with the new problems of ignorance, conflict, and ambiguity as they create obstacles that further impede knowledge sharing. However,

organizations that have learned how to reconfigure and transform have acquired skills that can be used strategically (Teece, Pisano, & Shuen, 1997). Thus, Hypothesis 2 follows:

- H2: As the organizational environment becomes more conducive to learning, knowledge sharing within the organization will increase.

In other words, the healthcare organization cannot transfer knowledge that it does not understand. Too often, organizational dependencies lack the ability to imitate processes because some routines within the process might be stand-alone routines and require additional adjustment to fit into another organizational unit (Teece et al., 1997). Gaining the necessary understanding requires (a) deep processing, sometimes through trial and error and often through codification; (b) shifting from a hierarchical structure; (c) being open to feedback; and (d) creating transmission channels that foster knowledge transfer. Management must first understand the requirements of the HIPAA regulations and then understand the employee knowledge sharing dynamics before seeking the best methods of implementation to become compliant with HIPAA (1996a).

Although HIPAA-regulated organizations qualify as knowledge-intensive and knowledge-sensitive organizations (Willem & Buelens, 2007), one significant aspect of organizational knowledge management behavior relates to lateral coordination, which is described as formal, but not planned (Willem & Buelens, 2007). Lateral coordination and informal coordination are best fit to knowledge sharing and organizational learning because they are flexible and decentralized (Willem & Buelens, 2007). Lateral coordination and informal coordination efforts result in more communication; consequently, more opportunities will exist for knowledge sharing (Willem & Buelens, 2007). The downside to informal coordination for the healthcare organization is that

employees within the network might "feel obliged to cooperate with other network members instead of with nonmembers and to collect knowledge predominantly within the network" (Willem & Buelens, 2007, p. 586).

Importance of the Individual Employee

Analysis of information sharing of the individual employee is significant to the healthcare organization because "workers determine largely by themselves with whom and how they share and develop knowledge" (Poell & Van der Krogt, 2003, p. 399). The employee is the building block of organizational knowledge because individuals create knowledge (Nonaka et al., 1996). Additionally, according to Minbaeva (2007) and Szulanski (1996), researchers have found that the employee can also hinder knowledge transfer. When examining the importance employee knowledge intraorganizationally, Minbaeva argued, "It is important to include determinants that are related. . .to the individuals involved in the transfer process" (p. 590).

Further highlighting the importance of individual employees, Lindsay et al. (2003) stated, "The role of individuals in building relationships is an integral part of the process of knowledge transfer" (p. 13). In addition, Sondergaard et al. (2007) argued that individual motivations are important factors in knowledge-sharing and knowledge-seeking behaviors because they require detailed examination; however, results are conflicting for the use of extrinsic motivators.

According to the research conducted by Bock and Kim (2002), extrinsic motivators did not produce lasting changes in knowledge sharing behavior. Instead, addressing the issue of the employee's knowledge sharing in the HIPAA environment, Schilling and Kluge (2009) stated that individuals search for information using the perception of a given problem. Doordan and Stupak (2005) added that the perception of

reality influences beliefs and beliefs influence actions (Guirdham, 2002); therefore, the perceptions of individuals regarding barriers to sharing knowledge are important. The importance of individual perceptions indicates a need to determine what barriers (if any) individuals perceive so that appropriate interventions can be recommended to improve job performance. Therefore, Hypothesis 3 predicts:

- ▪ H3: As an employee's perception of the organizational climate becomes increasingly positive, knowledge sharing within the organization will increase.

The value that an employee places on knowledge might also influence what knowledge the employee is willing to share (Ford & Staples, 2006). Factors that influence the employee regarding the value of held knowledge include uniqueness and tacitness (Ford & Staples, 2006). Barua, Ravindran, and Whinston (2007), Bundred (2006), and Ford and Staples (2006) indicated that an employee might not share unique knowledge, particularly if the sharing takes an effort; this would be so because of the nature of the knowledge. This reluctance to share has implications for the employee who might seek knowledge from experts or management who have unique HIPAA knowledge because such sources might be unwilling to share (Barua et al., 2007; Ford & Staples, 2008).

The perceived lack of need to seek knowledge is an aggregated construct, based on "a multitude of possible impediments" (Stonerock, 2003, p. 19) coming from the employee. One such impediment that Sveiby and Simons (2002) noted is the plateau reached by professional or long-term employees who feel that they have learned what they need to know and, thus, have become less motivated to find fresh knowledge affecting efficiency. The attitude is consistent with Drucker's (1969) argument concerning lack of motivation over time among knowledge workers. Anklam, Cross, and

Gulas (2005) corroborated this argument by stating that ignorance of others' experiences is an impediment across internal organizational boundaries; this ignorance occurs because employees do not know how to seek or are afraid to seek knowledge. Employees are more willing to search for knowledge if they have a need; however, even with a need identified, many employees fail to seek knowledge until they know it is available (Rogers, 1995).

Kellerman (2007) did not look at the employee's perception, but instead focused on the dynamics between the employee and the leader. Kellerman (2007) contributed to organizational knowledge sharing by calling for managers to observe the dynamics of the organization. The complexities and increased virtual knowledge sharing that exist in organizations creates an environment in which it is often unclear who is following and who is leading. Kellerman (2007) suggested that leaders should become aware of the power and influence of their followership (i.e., employees). Kellerman argued that employee communication and learning would increase if management understood its followership.

The Effect of Leadership on Knowledge Sharing

Leaders need to develop among employees a desire for knowledge (McLaughlin et al., 2008). McLaughlin et al. (2008) said that, to facilitate this need, it is important that leaders of the healthcare organization encourage knowledge from "information 'pull' culture instead of a 'push' culture" within the healthcare organizational structure. Although an employee can choose to access information and can decide what information to trust and what information is relevant (Davy, 2006), leaders can also influence, direct, channel, and capitalize that resource (House & Aditya, 1997).

House and Aditya (1997) found that leaders have the power to influence by

improving effectiveness through motivating employees to attain higher achievement. House and Aditya (1997) argued that the one of the first steps that managers should take in becoming more effective is to assess their leadership characteristics to determine their management style. Second, leaders should gain an understanding of group dynamics, which coupled with adopting the correct management style to facilitate knowledge sharing, could be a strategic tool in gaining competitive advantage.

Shamir and Howell (1999) and Weber (1947) argued that charismatic leaders are best suited at times of crisis, turbulence, or stress, typically during high-impact situations that threaten the viability of the organization. Katz and Kahn (2005) asserted that the charismatic characteristics give leaders the flexibility to enhance their control in a variety of situations to include organizational learning. With the continuous implementation of HIPAA regulations couples with the complexity of knowledge sharing intraorganizationally, the characteristics of the charismatic leader appear to be most adaptive (House & Aditya, 1997).

Kotter (2008) stated that one of the major challenges faced by the management of established organizations (e.g., healthcare organizations) is complacency, which often leads to latency and inefficiency. Management should have the ability to shift from its existing protocol or empower employees for broad-based action to become compliant (Poell & Van der Krogt, 2003). Additionally, when tasks are imposed on subordinates, management must be aware of the methods of enhancement or detraction because they relate to the employees' daily activities, including information transfer (Bacharach, Bamberger, & Mundell, 1993). Bacharach, Bamberger, and Mundell (1993) argued that traditionally, leadership social hierarchies have viewed the employee from the perspective of a unidimensional status (e.g., occupation) instead of from the perspective

of their individual profile or of their knowledge as an asset. Simon (1955) emphasized that the differences between designing information-processing systems and designing computers and networks was that the impact on the human interaction required for overall processing has been ignored.

Trust and Control

Barr (2008) stated that, although a majority of managers understands the importance of collaborating, collaboration is not often encouraged. Leaders should be aware that trust among employees is linked to social networks and social network ties (C. P. Lin, 2007). Goh and Hooper (2009) claimed that lack of trust was a contributing factor to knowledge sharing because employees choose what information to access, decide what information to trust, and what information is relevant (Davy, 2006). However, Lewis (2004) added that team members who are familiar with each other are more willing to "offer, discuss, and consider unique information" (p. 1521) because they trust each other.

Management should be aware that trust develops rapidly as temporary systems or alliances are created (Meyerson, Weick, & Kramer, 1996). Citing Goodman and Goodman (1976), Meyerson et al. (1996) explained that, when tasks are complex and rely on interdependencies for completion, employees and organizations adapt by creating new temporary structures to achieve the required goal. Internally, this process can be observed in the creation of task groups or teams, whose members might be unfamiliar with each other, but who have the required skill set and whose diversity can lead the groups or teams to become either fragile or resilient (Meyerson et al.,1996; Lewis, 2004). However, because these affiliations are temporary in nature; employees have insufficient time to develop expectations; instead, they import an existing culture into their primary

setting, creating a resilient culture that focuses on the immediate task (Meyerson et al., 1996).

Reed (2001) argued that (a) interplay exists between trust and control, (b) trust is a discretionary resource intimately related to constraints, and (c) in fact, trust and control are different sides of the same coin. Based on Gidden's (1984) argument that trust is an "attitude of the mind" and that "willingness" must be present for trust to be effective, Reed (2001) termed control high trust because it shifts emphasis to commitment and compliance and is usually associated with authority or a form of supervision. When leaders of the new world cling to the old organizational structure, they create additional dilemmas of managing and maintaining control (Handy, 1995). Traditional managers are unsure of how to use knowledge as an asset to increase efficiency while managing, which leads to control issues.

To examine trust and communication, Kasper-Fuehrer and Ashkanasy (2001) found that, although time and distance barriers were reduced because of technology, so also was the face-to-face and verbal communication necessary for building trust. Today's intraorganizational, virtual, healthcare organizations lack traditional hierarchical control mechanisms; therefore, Kasper-Fuehrer and Ashkanasy concluded that they lack an effective, stable, and reliable platform from which to build trust and increase communication.

He and Paul (2007) examined time pressure (control) and psychological factors such as trust and motivation and found that pressure influences trust because it forces open communication and more information sharing. Trust is a requirement for open communications, positively influencing willingness to share (Ardichvili, Page, & Wentling, 2003; Disterer, 2001; Guirdham, 2002; Levin & Cross, 2004; Reychav &

Sharkie, 2010; Sveiby &Simons, 2002). However, although He and Paul (2007) stated that trust leads to more information sharing, research by Wang et al. (2006) indicated that causality is unknown regarding which factor comes first, trust or knowledge sharing.

In summary, although HIPAA (1996a), through its privacy and security regulations, has been intent on providing safeguards to protect the security and confidentiality of medical records (DHHS; 2010a), it actually impairs knowledge sharing in the organization. Knowledge sharing within an organization is critical because it directly influences the employees' abilities to accomplish their tasks (Hansen, 2002; Orzano et al., 2007). The authors in the literature suggested hope is possible for the development of a new knowledge-sharing model in the HIPAA-regulated healthcare environment.

Research method and design is presented in Chapter 3. Data analysis is presented in Chapter 4, and the researcher's conclusions are presented in Chapter 5.

Chapter 3: Research Method and Design

The purpose of this quantitative study was to examine the relationships (if any) of perceived difficulties (if any) for intraorganizational knowledge sharing in HIPAA-regulated organizations, specifically on intraorganizational knowledge sharing among the employees in a HIPAA-regulated organization. Cook and Cook (2008) stated that research design reveals relationships between a study's research questions, the collected data, and conclusions drawn from data analysis.

Quantitative methods are appropriate when a relationship between variables is of interest, or when attitudes or perceptions are being studied (Trochim, 2001). Possible cause and effect patterns can be identified (McBurney, 1994), although the proposed survey research design cannot define causality (Trochim, 2001). However, Coughlan, Cronin, and Ryan (2009) stated that survey research is reliable because of its dependence on the standardization of instruments, thus, reducing the researcher's bias. Additionally, using a survey allows a large quantity of primary data to be gathered quickly, efficiently, and with minimum cost (Zikmund, 2003). Therefore, given the time constraints, conducting a survey was be the most feasible path.

Table 1

Characteristics of Quantitative Research

Metatheoretical assumptions	Quantitative research
Ontology	Person (researcher) and reality are separate
Epistemology	Objective reality exists beyond human mind
Research object	Research object has inherent qualities that exist independently of the researcher
Method	Method Statistics, content analysis

Metatheoretical assumptions	Quantitative research
Theory of truth	Correspondence theory of truth: One-to-one mapping between research statements and reality
Validity	Certainty: Data truly measures reality
Reliability	Replicability: Research results can be reproduced

As a data collection process, an online survey questionnaire allows for quicker access for a large group of respondents. It is also optimal for collecting data because it provides access to groups and individuals in situations in which it would be otherwise difficult to find a large, concentrated group of people to conduct face-to-face discussions. It might save time for researchers, allowing researchers to collect data while they work on other tasks and can save money on copying expenses (Coughlan et al., 2009). Therefore, this researcher conducted an online survey.

Data Collection Techniques

The instrumentation for the research consisted of a structured self-report survey (Stonerock, 2003). Similar to Stonerock's (2003) survey, this researcher's survey was developed only after an extensive literature search did not reveal a standardized test for any of the research variables. The lack of a standardized test is not surprising because knowledge transfer and knowledge sharing in the concepts surrounding the HIPAA environment are difficult to operationalize and to measure quantitatively (Ford & Staples, 2008; Willem & Buelens, 2007).

Rudestam and Newton (1992) argued for the value of unique instruments for particular research. Leavitt (2001) argued that (a) the literature is full of too many measures and (b) researchers should determine what valid measures are already available. Hence, the decision was made that a modified, pre-existing instrument would provide

more value than a new instrument. The survey questionnaire (Appendix D) was developed, using the adaption of questions previously used by Han and Anantatmula (2008) and Ayupp and Perumal (2008), and questions influenced by the Ohwobete (2009) study questionnaire. These questions were used to collected data that would allow a more in-depth exploration of relationships between the study's selected variables.

When the survey topics are deemed sensitive by potential respondents, response rates may be affected. However, the survey topics were believed to be nonsensitive; therefore, the response rate was minimally affected (Fowler, 1995; Wood, Nosko, Desmarais, Ross, & Irvine, 2006), which eliminated nonresponse bias (Thompson & Surface, 2007). This was elaborated below in the time taken to open and complete the survey. Czaja and Blair (2005) found that reporting of behavior is greater when the method of data collection provides anonymity to respondents. Therefore, the anonymity of the online survey contributed to an increased response (Hanna, Weinberg, Dant, & Berger, 2005). Although the survey variables were not deemed sensitive, a possible bias might yet exist in how the respondents responded. Respondents might have answered in such a way as to maintain a positive self-image with respect to their knowledge of HIPAA (1996a) and knowledge sharing (Fowler, 1995).

The study's research questions were closed questions, limiting the respondents' answers to the survey with single word or a selection of short phrases. Closed questions are better suited to open questions for this quantitative survey because they have the following characteristics: (a) they give one facts, (b) they are easy to answer, and (c) they are quick to answer. The survey questions are focused on the employee's attitudes and perception; therefore, the Likert scale was selected as the form of measurement.

Operational Definition of variables

The *perceived barriers* concept has been extensively used in behavioral medicine. The earliest widespread use of the barriers concept was associated with the Health Belief Model. Merriam-Webster (2011a) defines a *barrier* as "something that impedes or separates" and *perceive* as "to attain awareness or understanding of" (Merriam-Webster, 2011b). The concept of barriers to the accomplishment of a goal or of a specified task is assumed so straightforward that it is often left undefined. For the purposes of this study, the perceived barrier will be defined as a person's estimation of the level of challenge of social, personal, environmental, and economic obstacles to the ability to share knowledge. Therefore, an employee's perception of compliance with HIPAA (1996a) will be defined as a person's estimation of awareness or understanding of HIPAA regulations. Part 3 Questions (Appendix D) are directly related to the employee's knowledge of HIPAA and his or her perception compliance.

Knowledge of scope of job is usually described, or, rules defined as principles, and guidelines formulated or adopted by an organization to reach its long-term goals. They are designed to influence and determine all major decisions and actions, and all activities take place within the boundaries set by the organization. These procedures are the specific methods employed to express policies in action in daily operations of the organization. HR Department training and continuous, on-the-job training, whether hands-on or online, ensure that a point of view held by the governing body of an organization is translated into steps that result in an outcome that is compatible with that view (Business Dictionary, 2010). In addition, the daily tasks of an employee are often influenced by of some external requirement such as compliance with governmental regulations (e.g., HIPAA, 1996a).

Rhoades and Eisenberger (2002) suggested that organizational support, personifies, the organization's legal, moral, and financial responsibility for the actions of its agents. This personification is seen in organizational policies, norms, and culture that provide continuity and prescribe role behaviors. Further, it is the power and influence that the organization's agents exert over individual employees. Moreover, it extends to an employee's valuation of the organization, and the employee's equipage with the right tools and access to complete the job. Knowledge of scope of job goes beyond the ability to know HIPAA (1996a) laws. Instead, it involves the mental capacity of an employee to incorporate both the academic training and HIPAA laws into his or her daily operations. Part 2 Questions (Appendix D) are directly related to the employee's knowledge of organizational training as it pertains to the scope of his or her job.

Knowledge of the scope and other departmental functions can be derived through social interaction within the organization. For the purpose of this study, the researcher has defined a relationship as a connection between two or more individuals that measures an employee's ability to socialize and share information within the organization. In the organization, these relationships usually involve some level of interdependence. People in a relationship tend to influence each other, share their thoughts and feelings, and engage in activities together. This sharing often happens because, in the relationship, some level of exchange occurs that results in an effect on the other member. Social interaction can also refer to an act that takes into account the action, reactions, and informational exchange of individuals.

This variable is an extension of the preceding variable in that it incorporates methods of knowledge sharing by employees in daily operations with other departments of the organization. To share knowledge with other departments, an employee requires

some general knowledge of the functions of these departments. The HR Department might acquire some of the knowledge through training and continuous on the job training, but most of this knowledge might be gained through social interaction between employees. Part 1 Questions (Appendix D) are directly related to an employee's knowledge sharing through the organization and knowledge sharing through an employee social interaction.

Specificity of Variables

Specificity of variables is extremely significant to the extent that they define measurement and reduce misinterpretation. Variables can be both operational and conceptual; as such, the specificity of variables used in this research design is defined here.

Validity and reliability considerations. "Reliability and validity are tools of an essentially positivist epistemology" (Watling, 1995, as cited in Winter, 2000, p. 7). A research product must achieve both validity and reliability if the research is to be of use to others. Researchers who use logical positivism or quantitative research employ experimental methods and quantitative measures to test hypothetical generalizations (Hoepfl, 1997) and the measurement and analysis of causal relationships between variables are emphasized (Denzin & Lincoln, 1998). Epistemologically, the researcher's focus and professional interest both converge; therefore, the research reliability and validity had to be achieved.

Kirk and Miller (1986) identified three types of reliability in quantitative research, which relates: "(1) the degree to which a measurement, given repeatedly, remains the same; (2) the stability of a measurement over time; and (3) the similarity of measurements within a given time period" (pp. 41–42), as indicated in Chapter 4.

Additionally, Charles (1995) stated that consistency refers to whether the same questionnaire items are answered or whether an individual's scores remain relatively the same. This attribute of the instrument is actually referred to as stability. The researcher determines the validity by asking a series of questions in various forms and by analyzing the answers in the research for similarity (Joppe, 2000).

The principle of abstraction and generalization. The principle of abstraction and generalization requires the researcher to relate the details revealed by the data collection through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action. The principle with its philosophical backing in the works of Heidegger and Husserl (Palmer, 1969) and supported by Walsham (1993) who drew on following generalizations:

1. The development of concepts.

2. The generation of theory for why certain organizational actions take place.

3. The drawing of specific implications.

The contribution of rich insight into the phenomenon of healthcare organizations in the identified environments through a proposed framework.

Credibility considerations. It is extremely difficult for social science researchers to be neutral in carrying out their research activities. This recognition compelled the sociologist Merton (1973) to articulate certain universal norms of science that are widely shared by both scientists and nonscientists. According to Merton, universalism stipulates that scientific accomplishments must be judged by impersonal criteria because the personal attributes of the investigator are irrelevant. Thus, in quantitative endeavors, it is important that the researcher address all the relevant issues concerned with the research, including transferability, dependability, confirmability, and

authenticity of the knowledge created. Thus, these issues are discussed in more detail.

Transferability. The goal of transferability is to enable the researcher to present a sufficiently detailed account of his findings to enable the reader to judge how these findings could be transferred to other concepts. To achieve this goal, the quantitative data consisted of 212 participants. Participants in the study were nearly equally distributed among the five categories (see Chapters 4 and 5).

Dependability and confirmability. The aim of dependability and confirmability is to ensure that all statistical calculations and ensuing interpretive processes are documented so that the reader can follow them and the choices made in the study research. To achieve this dependability and confirmability, researchers have striven to make the research process as explicit as possible; therefore, the researcher used the SPSS industry software to analyze the data collected. Thus, the tactic was to make the research process explicit (Strauss & Corbin, 1990) and to enable others to follow in detail the process that this researcher used to arrive at the conclusions.

Hypotheses and Variables

As explained in Chapter 2, the following hypotheses would be tested by the data:

- H1: As an employee's perception of the organizational climate becomes increasingly positive, knowledge sharing within the organization will increase.

- H2: As the organizational environment becomes more conducive to learning and sharing ideas, knowledge sharing within the organization will increase.

- H3: As the organization's efforts to comply with HIPAA regulations increase, knowledge sharing within the organization will decrease.

These hypotheses generate three independent variables and one dependent variable, which are operationalized below.

Perception of Organizational Climate (independent variable). Perception of organizational climate was measured with eight indicators, which appeared as questions 22 through 29 in the survey questionnaire (Appendix D). Each of these questions was specific to the organizational climate and together they represented a respondent's perception of the organizational climate where he or she works. To create the aggregate scale variable, the values of the individual indicator questions were summed.

Perception *of Sharing Environment (independent variable).* Perception of organizational climate was measured with eight indicators, which appeared as questions 5, 6, 10, 17, 18, 19, 20 and 31 in the survey questionnaire (Appendix A). Each of these questions was specific to the sharing environment and together they represented a respondent's perception of the sharing environment where he or she works. To create the aggregate scale variable, the values of the individual indicator questions were summed.

Perception of HIPAA Compliance (independent variable). Perception of organizational climate was measured with 7 indicators, which appeared as questions 30, and 32, through 37 in the survey questionnaire (Appendix D). Each of these questions was specific to the HIPAA compliance and together they represented a respondent's perception of the HIPAA compliance where he or she works. To create the aggregate scale variable, the values of the individual indicator questions were summed. Cronbach's (1951) alpha was used to measure the reliability and internal consistency of the scales knowledge sharing, organizational climate, sharing environment, and HIPAA compliance. The dependent variable was intraorganizational knowledge sharing (Y).

A nonparametric test statistic from the Cronbach's (1951) alpha (α) (Leontitsis, & Pagge, 2007) was used to test the reliability of the aggregate scale variable. Cronbach's alpha statistical coefficient measures the reliability and internal consistency of a group of

items or questions used in constructing a variable. This simulation approach takes advantage of computational power to give exact results for the distribution of the null hypothesis regarding this coefficient (Leontitsis & Pagge, 2007). Two advantages of the Cronbach's alpha statistical method is that it can be robust against missing values, which frequently occur in practice, and can handle cases where the mean of a question is a priori known.

The sampling distribution for Cronbach's (1951) alpha has been investigated by Kristof (1963) and Feldt (1965; 1980). As discussed by Feldt (1990); Feldt, Woodruff, and Salih (1987); and Feldt, Woodruff, Salih, and Srichai (1986), for a given sample of n examinees taking a test with k items, the upper and lower confidence interval limits for the sample Cronbach's alpha at the given statistical significance level γ can be constructed. Although, as a rule of thumb, for some professional a reliability a minimum of 0.70 is acceptable; however, in this study, the sample size of this study higher values of alpha are more desirable.

- Organizational learning environment (independent variable).
- HIPAA compliance (independent variable).
- Knowledge sharing (dependent variable).

Likert Scale Measurements

For the current study, a Likert Scale was used to measure attitudes. Participants were asked to respond to a series of statements about a topic by indicating the extent to which they would agree or disagree with them, in order to capture the cognitive and affective components of their attitudes (Burns & Grove, 1997). Using a Likert scale provided an effective approach to measure latent concepts related to each participant's attitudes about knowledge sharing in the HIPAA environment. The response set ranged

from 1 (*strongly disagree*) to 5 (*strongly agree*) with *neither disagree nor agree* as the neutral value. The researcher decided that, using the Likert scale as an online survey was the easiest and the most cost-effective way to conduct the survey.

Online Selection and Sample

The automatic data information gathering technique is usually desirable because information will be sent directly to a database. Using a Web-based survey, as for official surveys, would not only receive a high response rate, but would also reduce the recommended time invested by respondents (Fowler, 1995; Thompson & Surface, 2007; Maguire, 2009; Hanna et al., 2005). When data is collected automatically, both retrieval and use obviously become enhanced. However, ultimately, to increase response rates, surveys must be distributed in a manner that is easily accessible (Greenlaw & Brown-Welty, 2009). Therefore, in this study, data was collected automatically by using electronic devices that send information directly to a database using a universal resource locator (URL; Zoomerang, 2010).

The researcher identified and consulted with the online survey companies Survey Monkey, Zoomerang, and Toluna to examine existing databases, cost, and turnaround time. After several correspondences, Zoomerang (2010) was selected for the survey distribution because its promised response rate was very high and cost efficient (Jordan & Lawrence, 2009).

With the assistance from Zoomerang (2010), the researcher employed purposive sampling to select the healthcare persons that would meet the above criteria for this study (Marshall & Rossman, 2006; Patton, 2002). Purposive sampling starts with a purpose in mind; thus, the sample is selected to include people of interest and to exclude those who do not suit the purpose. Purposive sampling suggests that the researcher handpicks the

subjects or organizations to participate in the study because of the identified criteria and variables under consideration. Zoomerang's panel was able to guarantee a sample of 200 from its national pool.

Participants were limited to individuals who worked for organizations that were governed by the regulations of HIPAA (1996a). The medical professions (e.g., nurses and doctors) were not included because of time, availability, and patient confidentiality issues. Specifically, participants in the sample included workers from health service organizations such as hospitals, clinics, hospices, physicians' offices, dental offices, rehabilitation centers, nursing homes, other health service providers, and other organizations that fall into the following categories:

1. Covered healthcare providers: This pertains to any provider of medical or other health services, or supplies, which transmits any health information in connection with a transaction for which U.S. DHHS has adopted a standard.

2. Health plans: This pertains to any individual or group plan that provides or pays the cost of medical care (e.g., a health insurance issuer and the Medicare and Medicaid programs).

3. Healthcare clearinghouses: This pertains to any public or private entity that processes another entity's healthcare transactions from a standard format to a nonstandard format, or vice versa.

4. Sponsors of the Medicare prescription drug card: This pertains to any nongovernmental entity that offers an endorsed discount drug program under the Medicare Modernization Act.

In addition to belonging in one of the preceding categories, a prospective participant's work organization must also have been in at least one of the following categories to

qualify:

1. The organization is publicly traded in the United States, including all their divisions and wholly owned subsidiaries that are affected by HIPAA (1996a).

2. The organization is a non-American, public, multinational company doing business in the United States and is affected by the provisions of HIPAA.

3. The organization is private, and operates and complies with HIPAA privacy and security framework requirements for achieving a best-practices benchmark.

Survey Creation

The survey questionnaire (Appendix D) was adapted from questions previously used by Han and Anantatmula (2008) and Ayupp and Perumal (2008), and questions influenced by the Ohwobete (2009). There was a concern about the length of the survey questionnaire and the time needed for respondents to complete the questionnaire. Using a limited set of questions minimizes survey fatigue (Sveiby & Simons, 2002) or the feeling of being over surveyed (Thompson & Surface, 2009). Czaja and Blair (2005) argued for a short questionnaire that would take no more than 15 minutes, particularly for Web-based instruments, which would give the respondent time to look over each question and to decide his or her response. Edwards (1997) argued that surveys should be short to minimize resistance by respondents.

An initial instrument was pilot tested by Zoomerang (2010), and revealed that 40–45 questions would take less than 15 minutes. From the Zoomerang presurvey results, it was decided that excluding the demographics and general information of 39 questions would fall into that criteria. The final instrument contained 47 questions, and it was expected that respondents could complete the questionnaire in approximately 15 minutes.

Data Collection

The Zoomerang (2010) Internet system was used for the survey distribution because traditionally the Zoomerang response rate tends to be very high and cost efficient (Jordan & Lawrence, 2009). The survey instrument was deployed on April 25, 2011, at 12:10 p.m. Potential respondents were notified through e-mail invitation, informing them of the availability of the survey. Informed consent was stressed in the instructions. Further, the survey instructions clearly stated that no answers were right or wrong; that individual perceptions were what were sought. Additionally, the first screen that introduced the survey gave general information about the survey and gave respondents the opportunity to opt out of taking the survey. By continuing with the survey, the respondent was ensuring consent. Social desirability bias was minimized because responses were not correlated to specific individuals (Maguire, 2009), by continuing with the survey, respondent was ensuring consent.

The survey questionnaire began with instructions for the survey, which clearly indicated the procedures to be followed and the risk (if any) that might be associated with participation. Sensitive information was not requested from participants (Appendix D). Participants who elected to proceed with the survey were allowed access to the survey questionnaire. Respondents were given a week to respond, allowing the respondents' sufficient opportunity and ability to respondent to the survey during nonworking hours.

After the respondents completed the survey, the researcher was notified via e-mail. The completed survey was closed after 48 hours because 212 responses had been received, meeting the study's goal of 200. The researcher made no further contact with the Zoomerang (2010) or the participants regarding the survey because contact might have been seen as unwelcome solicitation that would compromise the voluntariness of the

survey (Schemer, 2009). Next, the collected individual responses had to be processed and converted into useable data. When converted, the data records become the foundation of all further data analysis.

Processing Data Preparation for Analysis

In the editing phase, the primary goal is to prepare the surveys for data entry and analysis. SPSS® Version 17.0 for Windows® 2007 and Microsoft Excel® 2007, a standard spreadsheet application for data manipulation, were the statistical software packages used for processing and analyses. SPSS is a data analysis package for research that can perform a variety of statistical analyses (Kirkpatrick & Feeney, 2003; Pearson 2010). Additionally, Excel software was used to some extent because of certain positive features, including the ease of data entry and manipulation, and ubiquity (Meehan & Warner, 2000). Therefore, the data was electronically converted into an Excel spreadsheet before being transfer into SPSS.

In transferring data from Excel to SPSS, it is a good idea to ensure that any questions involving categorical responses (e.g., yes/no/don't know or male/female) were entered in Excel as numeric data (codes) rather than text. For example, using "male" as 0 and "Female" as 1. The data fields were also checked for any discrepancies and inconsistency in presentation. Additionally, before data could be transferred to SPSS it had to be arranged in Excel so that the responses from different people would appear in different rows, while the responses to the different questions would appear in different columns. This was automatically done when the data was converted to the spreadsheet from the Zoomerang (2010) survey. Next, the data was imported into SPSS. SPSS Version 17 was used to conduct descriptive statistics, calculate the Cronbach's alphas, and conduct multiple regressions. A discussion of these analyses follows, and the result

of these analyses is shown in Chapter 4.

Descriptive statistics illustrate the main features of a collection of quantitative data. It is helpful concerning central tendency, dispersion, and the shape of the data distribution. Descriptive statistics were performed on all of the questionnaire items to provide a general observation of performance and the distribution of the data collected for this study. The number of respondents (n), mean values (m), and standard deviation (s) were computed for each variable. In addition, the researcher allowed for the examination of the data for skewness and *kurtosis*. This is an important aspect of the description of a variable because it gives the shape of its distribution, indicating the frequency of values from different ranges of the variable. Additionally, you need to determine the normality of the variables to check the regression assumption.

To answer the research questions and test the hypotheses, multiple regression was used. Multiple regression allows the simultaneous testing and modeling of multiple independent variables. Multiple regression analysis also assumes that the noise term has no such systematic property. Multiple regression analysis will select a plane so that the sum of squared errors is at a minimum. The assumption that the noise term is usually zero suggests an estimate of the line that lies roughly in the midst of the data with some observations below and some observations above said line. To pick one particular line, regression analysis embraces a criterion that relates to the estimated noise term or "error" for each observation. The general form of the multiple regression equation for this dissertation is

a=the regression constant

b_1= Organizational Climate Independent Variable 1

b$_2$= Sharing Environment Variable 2

b$_3$= HIPAA Compliance Variable 3

$$Y \text{ (knowledge sharing)}= a+b_1x_1+ b_2x_2+ b_3x_3$$

where γ is expected to be positive (Pearson, 2010).

Before beginning the analysis, the four assumptions of multiple regression were examined for violations: normality, independence of the errors (no serial correlation), linearity of IV and DV, and homoscedasticity. (Further discussion and evidence that these assumptions were met are indicated in Chapter 4.)

The researcher then conducted a hierarchical, multiple-regression analysis. Hierarchical multiple regression is different from standard multiple regression in that all the variables in a normal multiple regression, using the "enter" method, are entered into the same model at the same time or all at once. In a hierarchical regression, the researcher specifies the order in which the variables are entered, and each variable or set of variables is added to the regression at a different times, making it easier to understand graphically. Hierarchical regression creates blocks, and each block represents a different regression model. For example, if one entered variables into four different blocks, one would have four different models with four different sets of results. SPSS runs the first block and gives results. For the second block, it runs the variables in the first block, but adds the variables in the second block to the model. This way one can see whether the addition of the variables in the second block added anything to model beyond the predictive value of the variables in the first block. For the third block, SPSS runs the variables in the first, second, and third blocks in one model.

The analysis of the results is presented in Chapter 4. The analyses performed included exploratory data analysis, reliability analysis, and multiple regression analysis.

Chapter 4: Results

To test the hypotheses, the researcher conducted a quantitative analysis in which data was collected via online interview questions (Appendix D). The research of Anantatmula (2008), Ayupp and Peruma (2008) and Ohwobete (2009) influenced the structure of the survey questionnaire that was a mix of multiple-choice questions. The survey instrument was deployed on April 25, 2011, and was open over a 7-day period. The SPSS data analysis package (Kirkpatrick & Feeney, 2003; Pearson 2010) for the research was the software used to conduct the statistical analyses for this dissertation. The results of that analysis are reported in this chapter.

First, the chapter discusses the reliability and internal consistency of the scales used, which is followed by presentation of the descriptive statistics of the main features of the data collection. Next, the results of the hierarchical, multiple-linear, regression analysis are covered.

Reliability

Cronbach's alpha (1951) was used to measure the reliability and internal consistency of the scales (variables) of Knowledge Sharing, Organizational Climate, Sharing Environment, and HIPPA Compliance. The items used in each of the four scales (variables) were found to be reliable and consistent, yielding alpha values above .8 for each of the subscales. Cronbach's alpha values are presented in Table 2, and question items used to construct each scale, as well as the interitem correlations for Knowledge Sharing, Organizational Climate, Sharing Environment, and HIPAA Compliance, are presented in Appendix A. The items used in constructing the scales were found to be highly correlated and internally consistent. Moreover, the value of alpha if deleted for each item was not significant and did not warrant excluding any of the items.

Table 2

Cronbach's Alpha Measures of Reliability for Knowledge Sharing,
Organizational Climate, Sharing Environment, and HIPAA Compliance

Subscale	Number of items	Cronbach's Alpha
Knowledge sharing	7	.87
Organizational	8	.94
Sharing environment	8	.84
HIPAA compliance	7	.84

Descriptive Statistics

Participants. Responses from 212 participants were collected for the study. In Section 1 of the survey, participants were asked to identify their position within the organization, their genders, their ages, years of experience, and years in position. The frequency distributions and central tendencies of their responses to these questions are presented in Table 3. Participants in the study were nearly equally distributed among the five categories of position: 60 participants (28.3%) were support staff, 46 participants (21.7%) were managers, 43 participants (20.3%) were technical staff, 37 participants (17.5%) were in a position other than what was given, and 26 participants (12.3%) were executives. A majority of the participants were female participants, comprising 61.3% of the sample, while male participants accounted for 38.7% of the sample. Participants over the age of 50 accounted for 84 (39.6%) of the participants, 54 participants (25%) were 40–49 years of age, 48 participants (22.6%) were 30–39 years of age, and 27 participants (12.7%) were 20–29 years of age. Among the participants, 1 year was the minimum amount of experience, and the maximum was 55 years of experience (*M*=16.21, *SD*=11.50). Six months was the minimum amount of time in the position, and the

maximum time was 40 years of experience (M =8.82, SD=7.74).

Table 3

Frequency Distribution of Position Level, Gender, and Age for all Participants

Variable	Category	*n*	%
Position Level	Support staff	60	28.3
	Manager	46	21.7
	Technical staff	43	20.3
	Other	37	17.5
	Executive	26	12.3
Gender	Female	130	61.3
	Male	82	38.7
Age	Over 50	84	39.6
	40–49	53	25.0
	30–39	48	22.6
	20–29	27	12.7
	Min.	Max.	*M*	*SD*
Years experience	1	55	16.21	11.50
Years in position	.5	40	8.82	7.74

Note. n=212.

The participants in the sample were asked to describe their organization by identifying (a) the type of industry in which their organization operates, (b) the type of organization (non profit, public profit etc), and (c) the size of the organization. The frequency distributions of their responses to questions on type of industry, type of organization, and size of the organization is presented in Table 4. For industry type,

responses were nearly even in distribution between private (70 industries or 33%), nonprofit (67 industries or 31.6%), and public (65 industries or 30.7%). Ten (4.7%) participants worked for an organization that was neither private nor public, and was not a nonprofit. Nearly half of the participants were employed by a hospital (96 participants or 45.3%), 54 participants (25.5%) were employed by an organization type not listed, and 62 participants (29%) were employed by an organization type such as a physician's office, nursing home, or clinic. Over half of the participants were employed by an organization with more than 501 employees (109 participants or 51.4%), 51 participants (24.1%) were employed by an organization with less than 50 employees, 38 participants (17.9%) were employed by an organization with 101–500 employees, and 14 participants (6.6%) were employed by and organization with 51–100 employees.

Table 4

Frequency Distribution of Overall Industry Type, Organization Type, and Organization Size

Variable	Category	*n*	%
Industry Type	Private	70	33.0
	Nonprofit	67	31.6
	Public	65	30.7
	Other	10	4.7
Organization Type	Hospital	96	45.3
	Other	54	25.5
	Physician's Office	21	9.9
	Clinic	16	7.5
	Nursing Home	10	4.7
	Dental Office	7	3.3

Variable	Category	*n*	%
	Hospice	4	1.9
	Rehabilitation	4	1.9
Organization Size	Over 501	109	51.4
	Under 50	51	24.1
	101 to 500	38	17.9
	51 to 100	14	6.6

Note. n=212.

Items and scales. In addition to the demographic questions, participants were asked to answer 39 questions pertaining to their organization, the knowledge sharing within the organization, and the effect of HIPPA compliance on knowledge sharing within the organization. These questions were then used to create the four scales used in the hypotheses testing. The frequency distribution of responses to each of the questions is presented in four tables. Within each of the four tables are the questions used in the creation of a scale, starting with Knowledge Sharing, then Organizational Climate, Sharing Environment, and finally HIPAA Compliance. The tables of frequency distributions are presented in Appendix B.

To understand better the frequency with which the statements occurred, responses to the questions comprising the Knowledge Sharing scale (variable) were averaged for each question and then rank ordered by the mean. The question "I am willing to share my knowledge with other team members" (*M*=4.21, *SD*=.81) had the highest mean of the seven questions, followed by "I am willing to share new ideas" (*M*=4.14, *SD*=.85), and "I am willing to talk with fellow employees about new ideas" (*M*=4.11, *SD*=.85). The three questions with the lowest averages were "My manager shares his or her healthcare

information with me" (*M*=3.33, *SD*=1.24), followed by "My manager encourages the sharing of healthcare information among team members" (*M*=3.36, *SD*=1.26), and "I am willing to discuss healthcare information gained with coworkers" (*M*=3.85, *SD*=1.10). The seven questions comprising the Knowledge-Sharing scale (variable) are rank ordered and presented in Appendix C.

The same process was used to examine responses to the eight questions comprising the Organizational Climate subscale (variable). The three questions with the highest averages were "It is important to work at an organization whose organization climate encourages employee feedback" (*M*=4.32, *SD*=.78), followed by "It is important to work at an organization whose organizational climate encourages learning, innovation, and contributions" (*M*=4.26, *SD*=.83), and "It is important to work at an organization that attempts to improve training environments to enhance learning" (*M*=4.25, *SD*=.74). The three questions with the lowest average were "It is important to work at an organization that provides dedicated trainers" (*M*=3.98, *SD*=.93), followed by "It is important to work at an organization in which the organizational climate encourages the sharing of healthcare information" (*M*=4.09, *SD*=.88), and "It is important to work at an organization whose organizational climate encourages adapting and changing to accommodate the environment" (*M*=4.21, *SD*=.78). The eight questions comprising the Organizational Climate scale (variable) are rank ordered and presented in Appendix C.

The process was repeated again to analyze responses to the eight questions comprising the Sharing Environment subscale (variable). The three questions with the highest averages were "My organization has general IT security" (*M*=4.13, *SD*=1.03), followed by "At my organization, a designated place is provided to conduct meetings" (*M*=3.77, *SD*=1.09), and "At my organization, a designated place is provided to gather

for coffee breaks" (M=3.53, SD=1.34). The three questions with the lowest averages were "Employees have the opportunity to be rotated around projects to learn and share new healthcare information" (M=2.91, SD=1.15), followed by "Employees have the opportunity to attend conferences or training programs to acquire knowledge" (M=3.43, SD=1.16), and "My organization provides opportunities for employees to share their healthcare information" (M=3.44, SD=1.09). The eight questions comprising the Sharing Environment scale (variable) are rank ordered and presented in C.

Among the seven questions comprising the fourth and final subscale (variable), HIPAA Compliance, the three questions with the highest average response were "HIPAA compliance is important to my organization" (M=4.42, SD=.92), followed by "There is a deliberate effort by my organization to maintain compliance" (M=4.39, SD=.82), and "There is continuous training on HIPAA process and requirements" (M=3.97, SD=1.07). The three questions with the lowest average response were "HIPAA rules present a challenge to sharing healthcare information with other departments" (M=3.42, SD=1.14), followed by "Training processes directly affects my current job function" (M=3.56, SD=1.12), and "My organization's operations and technology environments have been affected by HIPAA" (M=3.83, SD=1.11). The 10 questions comprising the HIPAA Compliance scale (variable) are rank ordered and presented in Appendix C.

To test the hypotheses, four subscales were created from the survey questions. Responses to the questions corresponding to each subscale were averaged. Responses to Questions 7, 8, 9, 11, 12, 16, and 21 were averaged to create the Knowledge Sharing scale (variable). The Knowledge Sharing scale (M=3.87, SD=.76) had a minimum score of 1 and a maximum score of 5. Responses to Questions 22–29 were averaged to create the Organizational Climate scale (variable). The Organizational Beliefs scale (M=4.21,

SD=.69) had a minimum score of 2 and a maximum score of 5. Responses to Questions

5, 6, 10, 17, 18 19, 20, and 31 were averaged to create the Sharing Environment scale

(variable). The Sharing Environment scale (*M*=3.13, *SD*=.70) had a minimum score of

1.11 and a maximum score of 4.44. Finally, responses to Questions 30, and 32–39 were

averaged to create the HIPAA Compliance scale (variable). The HIPAA Compliance

scale (*M*=3.94, *SD*=.75) had a minimum score of 1.14 and a maximum score of 5. The

central tendency of each of the four subscales is presented in Table 5.

Table 5

Central Tendency of Knowledge Sharing, Organizational Beliefs,
Sharing Environment, and HIPAA Compliance

Scale	Min.	Max.	*M*	*SD*
Knowledge sharing	1.0	5	3.87	.76
Organizational beliefs	2.0	5	4.21	.69
Sharing environment	1.11	4.44	3.13	.70
HIPAA compliance	1.14	5	3.94	.75

Note. n=212.

Hypothesis Testing

Examining the assumptions of linear regression. Prior to conducting the

hierarchical multiple regression to answer the research questions and to test the

hypotheses, the assumptions of multiple regression were tested to assess the ability of this

model to be generalized across the larger population of healthcare professionals and

healthcare organizations. Specifically, four assumptions were addressed: independence

of errors, normality, linearity, and homoscedasticity. The assumption of independence of

errors was assessed with the Durbin-Watson statistic and was found to be 1.89. This was

very close to 2; therefore, the assumption of independence of errors was met. The assumption of normality was assessed with the aid of histograms and both the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The results of the inferential statistics are presented in Table 6 and show that the distributions of the four study variables differ significantly from a normal distribution. Multiple regression is a flexible robust method of data analysis that may be appropriate whenever a quantitative variable (the dependent or criterion variable) is to be examined in relationship to any other factors (expressed as independent or predictor variables).

Relationships might be nonlinear, independent variables may be quantitative or qualitative, and one can examine the effects of a single variable or multiple variables with or without the effects of other variables taken into account (Cohen, Cohen, West, & Aiken, 2003). The assumptions of linearity and homoscedasticity were assessed by examining a plot of the predicted values of the dependent variable against the residuals.

Table 6

Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality

	Tests of Normality	
	Kolmogorov-Smirnov	**Shapiro-Wilk**
Variable	**Statistic**	**Statistics**
Knowledge Sharing	.08**	.96**
Organizational Beliefs	.12**	.91**
Sharing Environment	.08**	.97**
Transformed HIPAA Compliance	.06*	.98**

Note. df =212.
* *p*<.05. ** *p*<.01.

The frequency distribution of scores for the Knowledge Sharing scale (variable) is presented in Appendix E. The histogram shows that the distribution is somewhat negatively skewed, so data transformations were attempted. However, after reflecting the variable, square root, log, and inverse data transformations were attempted, the original distribution was found to be the closest to normal.

The histogram for the frequency distribution for the Organizational Beliefs scale (variable) is presented in Appendix E. The frequency distribution is platykurtic and negatively skewed, indicating that the scores for the variable deviate from a normal distribution. Data transformations were attempted to achieve a normal distribution. The variable was negatively skewed; therefore, the scores were reflected and then transformed. Square root, log, and inverse transformations were attempted; however, no transformation improved the distribution of the data, so the original scores were used.

The frequency distribution of scores for the Sharing Environment scale (variable) is presented in Appendix C. The distribution was close to a normal distribution; however, data transformations were attempted to correct the slight negative skew. The skew was negative; therefore, the scores were reflected before being transformed. Square root, log, and inverse transformations were attempted; however, no transformation improved the distribution of the data, so the original scores were used. The histogram of the transformed Sharing Environment scale (variable) is shown in Appendix E.

The frequency distribution of scores for the HIPAA Compliance scale (variable) is presented in Appendix C. The data were found to be moderately negatively skewed and data transformations were attempted to achieve a normal distribution. The skewness was negative; therefore, the variable was first reflected. Then a number of data transformations were attempted until the log 10 transformation was found to bring the

distribution as close as possible to normal. The log 10, transformed, HIPAA Compliance

scale (variable) is shown in Appendix E.

The assumptions of linearity and homoscedasticity were assessed in the output of

the multiple regression by examining a plot of the predicted values of the dependent

variable against the residuals. This plot is presented in Appendix E. The shape of the

scatterplot points does not reflect a curvilinear relationship; therefore, a linear

relationship is assumed. The data points also tend to be evenly dispersed about the length

of the line and do not form a distinctive funnel shape at either end of the data, indicating

that the assumption of homoscedasticity has been met. Also presented in Appendix E are

the partial regression scatter plots of the residuals of the dependent variable and each of

the independent variables when both variables are regressed separately on the remaining

independent variables. The disbursement of the data points about the line indicates that

the relationship between the variables is in fact linear and reaffirms that the assumption

of homoscedasiticy has been met.

Performing the regression. The following hypotheses were tested:

- H1: As an employee's perception of the organizational climate becomes
  increasingly positive, knowledge sharing within the organization will increase.
- H2: As the organizational environment becomes more conducive to learning
  and sharing ideas, knowledge sharing within the organization will increase.
- H3: As the organization's efforts to comply with HIPAA regulations increase,
  knowledge sharing within the organization will decrease.

To test these hypotheses, and answer the general dissertation research questions, a

hierarchical multiple regression was conducted. The dependent variable in the analysis

was knowledge sharing, and the three independent variables were organizational beliefs;

sharing environment; and the log 10, transformed, HIPAA Compliance. Each of the three independent variables was entered into the model sequentially in blocks, beginning with Organizational Climate, then Sharing Environment, and finally HIPAA Compliance. The results of the analyses are presented in Table 7.

Model 1, that used organizational beliefs as the predictor, was significant: $F(1,210)=123.10, p=< .01$. As a predictor of knowledge sharing and organizational beliefs, Model 1 accounted for 37% of the variance in knowledge sharing, meaning that 37% of knowledge sharing scores could be predicted by the organizational beliefs alone. In Model 1, the relationship between Knowledge Sharing variable and the Organizational Beliefs variable was such that, for every one point of increase in Organizational Beliefs, Knowledge Sharing increased by .68 points.

Model 2, that used Organizational Beliefs and Sharing Environment as variable predictors, was also significant: $F(2,209)=140.53, p=<.01$, and accounted for 57.4% of the variance in Knowledge Sharing scores. The addition of the Sharing Climate variable to Model 2 added significant predictive value to the model, increasing r^2 from .37 to .574. In Model 2, the relationship between the Knowledge Sharing, Organizational Climate, and Sharing Environment variables was such that for every one point of increase in Organizational Climate, Knowledge Sharing increased by .46 points, and, for every one point of increase in Sharing Environment, Knowledge Sharing increased by .54. With the addition of the Sharing Environment variable to Model 2, the influence of Organizational Beliefs on Knowledge Sharing decreased, while the overall predictability of the model increased. This result suggested that the Sharing Environment variable is a stronger predictor of the Knowledge Sharing variable value than is the Organizational Climate variable.

Model 3, that used Organizational Climate, Sharing Environment, and HIPAA
Compliance as variable predictors, was significant: $F(3,208)=93.65$, $p<.01$, and
accounted for 57.5% of the variance in Knowledge Sharing scores. The addition of
HIPPA Compliance to Model 3 did not significantly add predictive value to the model
and the overall significance of the model is attributable to the predictive value of the
Organizational Climate and Sharing Environment variables. The HIPAA Compliance
variable was reflected and then transformed; therefore, this variable was taken into
consideration in the interpretation of the relationship between Knowledge Sharing and
HIPAA Compliance. Although another regression was conducted using the
untransformed HIPAA Compliance variable, the findings of significance were similar.
However, the relationship between Knowledge Sharing and HIPAA Compliance was
negative, such that for every one point of increase in HIPAA Compliance, Knowledge
Sharing decreased by .07 points. Although HIPAA Compliance was not a significant
predictor of Knowledge Sharing when Organizational Climate and Sharing Environment
were included in the model, there was evidence that HIPAA Compliance could inhibit
Knowledge Sharing.

Table 7

*Hierarchical Multiple Linear Regression with Organizational Climate, Sharing
Environment, and HIPAA Compliance Predicting Knowledge Sharing*

	Knowledge Sharing			
			Model 3	
Variable	**Model 1 *B***	**Model 2 *B***	***B***	**95% CI**
Constant	1.03**	.27	.08	[−0.60, 0.76]
Organizational Climate	.68**	.46**	.47**	[0.35, 0.59]

Variable		Knowledge Sharing		
			Model 3	
	Model 1 B	Model 2 B	B	95% CI
Sharing Environment		.54**	.56**	[0.44, 0.68]
HIPAA Compliance			.21	[–0.36, 0.78]
R^2	0.37	0.57	0.58	
F	123.10**	140.53**	93.65**	
ΔR^2		0.20	.001	
ΔF		99.96**	.53	

Note. CI = Confidence Interval.
**p<.01.

Hypothesis 1 is supported:

- RQ1: How is knowledge sharing within the organization affected by the employee's perception of the organizational climate?

- $H1_0$: An employee's perception of the organizational climate does not affect knowledge sharing within the organization.

- $H1_A$: As an employee's perception of the organizational climate becomes increasingly positive, knowledge sharing within the organization will increase.

The results of Model 2 of the hierarchical multiple regression displayed in Table 7 show that Organizational Beliefs is significantly related to Knowledge Sharing within the organization. Therefore, the null hypothesis is rejected and the alternative hypothesis is supported. The relationship is positive and strong, and along with sharing environment, accounted for 57.4% of the variance in Knowledge Sharing scores. In Model 2 with Sharing Environment, Organizational Beliefs significantly predicted Knowledge Sharing, but to a lesser degree than Sharing Environment, with Knowledge Sharing increasing .46

points for every one point of increase in Organizational Beliefs.

Hypothesis 2 is supported:

- RQ2: How does the organizational environment affect knowledge sharing within the organization?

- $H2_0$: The organizational environment does not affect knowledge sharing within the organization.

- $H2_A$: As the organizational environment becomes more conducive to learning and sharing ideas, knowledge sharing within the organization will increase.

To answer Research Question 2 and to test the corresponding hypothesis, the variable Sharing Environment was created to represent an environment that was conducive to the open and accepted sharing of ideas, innovation, patient information, and learning. The researcher hypothesized that higher sharing environment scores would correspond to an environment more conducive to these activities. Sharing Environment was significantly and positively related to Knowledge Sharing in Model 2 as can be seen in Table 7. The researcher hypothesized that the relationship would be positive, the null hypothesis was supported, and the alternative hypothesis was rejected. In Model 2, Sharing Environment significantly improved the model, increasing r^2 from .37 to .57. In Model 2, the relationship with Knowledge Sharing was such that, for every one point of increase in Sharing Environment, Knowledge Sharing increased by .54 points.

Hypothesis 3 is not supported:

- RQ3: How do the organization's efforts to comply with HIPAA regulations affect knowledge sharing within the organization?

- $H3_0$: The organization's efforts to comply with HIPAA regulations do not affect knowledge sharing within the organization.

- H3$_A$: As the organization's efforts to comply with HIPAA regulations increase, knowledge sharing within the organization will decrease.

To answer Research Question 3 and to test Hypothesis 3, the HIPAA Compliance scale was created to gauge the degree to which Knowledge Sharing is disrupted because of the implementation of organizational processes intended to maintain HIPAA compliance. HIPAA Compliance did not significantly contribute to Model 3 that predicted Knowledge Sharing. Therefore, the null hypothesis fails to be rejected in favor of the alternative hypothesis.

To interpret the nature of the relationship between Knowledge Sharing and HIPAA Compliance, the untransformed HIPAA Compliance variable was used in a separate regression because the transformed HIPAA Compliance variable had been reflected and the log 10 taken. Model 3 (see Figure E2 in Appendix E) that used the untransformed HIPAA Compliance variable along with organizational beliefs and Sharing Environment was yet nonsignificant; however, the relationship was negative as hypothesized. Although not statistically significant as a predictor, the results of the ancillary hierarchical regression using the untransformed HIPAA Compliance variable did indicate a potentially negative relationship between Knowledge Sharing and HIPAA Compliance.

Conclusion

Chapter 5 provides summary and conclusions of this analysis. Further, in Chapter 5, the researcher introduces the significance of the results, the limitations of the study, recommendations for further research, and implications for management and conclusions that could be adopted and adapted to suit a HIPAA healthcare organizational environment.

Chapter 5: Significance of the Results

The purpose of the HIPAA (1996b) Security Rule is to ensure that every covered entity has implemented safeguards to protect the confidentiality, integrity, and availability of patient information. Under the Administrative Safeguards Section HIPAA (1996b) mandated that organizations be responsible for the selection, development, implementation, and maintenance of security measures to protect health information and to manage the conduct of the covered entity's workforce in relation to the protection of that information. Healthcare organizations have a strong tradition of safeguarding private health information. However, in today's world of new legislation, healthcare reform, and electronically data, healthcare organizations and their employees are challenged in their ability not only to adapt and comply with regulations, but also to share relevant information effectively and efficiently depending their knowledge and interpretation of the legislation. This agreement provides the rationale for this study, which the researcher opted to test using a quantitative approach.

Demographics and Descriptive Statistic

The quantitative data collected yielded responses from 212 participants. Participants in the study were nearly equally distributed among the five categories of position: 28.3% were support staff, 21.7% were managers, 20.3% were technical staff, 17.5% were in a position other than what was given, and 12.3% were executives. In addition, responses were nearly evenly distributed between private 33%, nonprofit 31.6%, and public 30.7% institutions. From the results, the researcher surmised that the employees within the organization and the type of healthcare organization were equally represented in this the survey. The survey also indicated that the females are in the majority at healthcare organizations. As indicated by the 61.3% female respondents,

while nearly half of the participants were employed by a hospital with over 501 employees. This observation encourages the researcher to believe that the results might have been different if more participants had been included from smaller healthcare organizations. In addition to the demographic information, descriptive statistics regarding the frequency distribution of questions reveals the following data on the knowledge-sharing subscale.

Knowledge-sharing subscale. The question "I am willing to share my knowledge with other team members" (M=4.21, SD=.81) had the highest mean of the seven questions, followed by "I am willing to share new ideas" (M=4.14, SD=.85), and "I am willing to talk with fellow employees about new ideas" (M=4.11, SD=.85). Contrarily, the three questions with the lowest averages were "My manager shares his/her healthcare information with me" (M=3.33, SD=1.24), followed by "My manager encourages the sharing of healthcare information among team members" (M=3.36, SD=1.26), and "I am willing to discuss healthcare information gained with coworkers" (M=3.85, SD=1.10). The research indicates that employees are willing to sharing information, but have difficulty sharing between employee and manager. For the healthcare organization, this difficulty might be a reflection of a hierarchal operating structure that creates possible gaps in communication. In addition, although the findings indicated that the employee has no problems sharing ideas with fellow employees, they are more hesitant in discussing healthcare information. The results could be an indication that employees are aware of the HIPAA rules and penalties and so are afraid to share, or the employee might have interpreted "healthcare information" as a healthcare regulation and so the perception was that his or her knowledge of health care regulation was lacking. The fact that employee sees that difficulty exists in information sharing between the

employee and manager should be of primary concern for the HIPAA environment. Most of the compliance policies and procedures come from management. It shows that management is not openly feeding information to the employees or that the relationship between employee and management is such that the employee feels that they are not getting sufficient interaction from management as it pertains to sharing information.

Organizational climate subscale. The three questions with the highest averages were "It is important to work at an organization whose organization climate encourages employee feedback" (M=4.32, SD=.78), followed by "It is important to work at an organization whose organizational climate encourages learning, innovation, and contributions" (M=4.26, SD=.83), and "It is important to work at an organization that attempts to improve training environments to enhance learning" (M=4.25, SD=.74). The three questions with the lowest average were "It is important to work at an organization that provides dedicated trainers" (M=3.98, SD=.93), followed by "It is important to work at an organization in which the organizational climate encourages the sharing of healthcare information" (M=4.09, SD=.88), and "It is important to work at an organization whose organizational climate encourages adapting and changing to accommodate the environment" (M=4.21, SD=.78).

From the above results, the researcher concluded that employees believe that they thrive in learning organizations, but that healthcare organizations do not necessarily have to have dedicated training. The researcher anticipated the opposite outcome. Therefore, the researcher questions whether the current economy, high job loss, and high unemployment rate might have stressed to the employee the importance of job training. In an environment where job stability and financial stability is in the forefront of the employee's mind, training would most definitely not be at the forefront. Although

HIPAA promotes training for employee, this researcher still believes that the checks and balances of the HIPAA training at organizations is lacking. Instead, addition to general information, training and testing should be strategic to department. Additionally, HIPAA testing should be conducted randomly without the employee being notified and or given the opportunity to take the same test repeatedly.

Sharing environment subscale. The three questions with the highest averages were "My organization has general IT security" (M=4.13, SD=1.03), followed by "At my organization, a designated place is provided to conduct meetings" (M=3.77, SD=1.09), and "At my organization, a designated place is provided to gather for coffee breaks" (M=3.53, SD=1.34). The three questions with the lowest averages were "Employees have the opportunity to be rotated around projects to learn and share new healthcare information" (M=2.91, SD=1.15), followed by "Employees have the opportunity to attend conferences or training programs to acquire knowledge" (M=3.43, SD=1.16), and "My organization provides opportunities for employees to share their healthcare information" (M=3.44, SD=1.09).

To the researcher, this data indicated that general areas are provided for socialization and meeting, which encourages knowledge sharing. The result is a direct reflection of the structure of larger healthcare organizations, as is indicated by fact that 51.4% of the participants were employed by an organization with over 501 employees. However, the results indicated that cross-training and scheduled time for continuous training are lacking, which creates obstacles in the knowledge sharing process at healthcare organizations. Management might view this type of training as down time from daily processes, which results in job interruptions. Alternatively, employees might perceive the healthcare organization as not investing in its ability to learn

intraorganizationally. Any cross training in the short run results in down time. However, conducting cross training at low production times instead of peak times would minimize the impact of down time. Further, the result of cross training, in the end, would have less job interruptions from daily processes

HIPAA compliance. The three questions with the highest average response were "HIPAA compliance is important to my organization" (M=4.42, SD=.92), followed by "There is a deliberate effort by my organization to maintain compliance" (M=4.39, SD=.82), and "There is continuous training on HIPAA process and requirements" (M=3.97, SD=1.07). The three questions with the lowest average response were "HIPAA rules present a challenge to sharing healthcare information with other departments" (M=3.42, SD=1.14), followed by "Training processes directly affects my current job function" (M=3.56, SD=1.12), and "My organization's operations and technology environments have been affected by HIPAA" (M=3.83, SD=1.11). To the researcher, this data indicated that healthcare organizations comply or attempt to comply with HIPAA regulations through training.

The researcher anticipated the opposite response on the question "HIPAA rules present a challenge to sharing healthcare information with other departments," which leads the researcher to question whether the question should have been less general and more pointed to specific HIPAA rules. From personal observation in the HIPAA environment, the research believes the contrary to be true. The question, "My organization's operations and technology environments have been affected by HIPAA" could be subject to timing. Respondents could have interpreted this question from current events; therefore, it could be a reflection of little or no technology or HIT implementation occurring within the healthcare organizations at the time the survey.

Additionally, as indicated in the literature review, larger organizations have the necessary capital to meet HIPAA compliance effectively. It would have been interesting to observe whether the results would have been different if more of the respondents were from smaller organizations.

Further, to answer the research questions and test the hypotheses, a hierarchical multiple regression was conducted using the dependent variable knowledge sharing (y), and the three independent variables were (a) organizational climate; (b) the transformed sharing environment scale; and (c) the transformed, HIPAA Compliance scale. The regression analysis substantiated the results of the descriptive statistic indicated above to reveal the following results.

As a predictor of knowledge sharing, organizational climate accounted for 36% of the variance in knowledge sharing, meaning that 36% of knowledge sharing scores could be predicted by the organizational climate alone. Organizational climate and sharing environment as predictors was also significant, $F(2, 204)=118.57$, $p=<.001$, and accounted for 53.3% of the variance in knowledge sharing scores. Although, the model that uses the untransformed HIPAA compliance was nonsignificant, the relationship was negative as hypothesized. Although not statistically significant as a predictor, the results did indicate a potentially negative relationship between knowledge sharing and HIPAA compliance.

This is significant in that it indicates that knowledge sharing in the organization in an important issue. Knowledge sharing in the HIPAA environment is does not necessarily make it more of an issue although it does have an impact. These results also indicate that the atmosphere (climate) within the organization is much more significant to whether the employee shares or withholds information. Although the findings in the

survey were certainly within the scope and were validated by statistical analysis, it was not without limitations.

Limitations of the Study

A major limitation of this research is that the survey focused only on the healthcare organization, while HIPAA privacy and security extends to other sectors such as education. This study relied solely on data collection through a survey. Further, the data collection for this survey was only as good as the self-reporting of the respondents. Therefore, although the findings in the survey were certainly within the scope and were validated by statistical analysis, the ability to generalize findings is somewhat limited. A larger number of respondents would have strengthened the findings of the study.

A larger sample of the population of healthcare organizations would have also allowed the researcher to investigate other factors affecting healthcare organizations and might have resulted in different conclusions. Sampling error increases as the number of respondents decreases (Fowler, 2009; Leavitt, 2001). The sample size was purposive and convenient; therefore, a high response rate was necessary to provide power (Aron & Aron, 2002) and to minimize nonresponse bias (Thompson & Surface, 2007). Additionally studies on a larger scale might be undertaken to determine the effectiveness of information sharing and communication in healthcare organizations.

With respect to the survey instrument, the assumption was that respondents understood the questions sufficiently to respond appropriately. Even minor wording differences could lead to incorrect interpretations (Trochim, 2001). The questions were formatted so that sensitive information was not divulged. The formulation of these questions limited the responses to one answer with no explanation or elaboration on the selection. Misunderstanding of the questions could be a problem because the respondents

might not provide any indication that they did not understand (Presser et al., 2004).

Another limitation is the subjective nature of much of the information gathered in the survey. The employees of healthcare organizations provided this information; therefore, it might have been subject to a number of biases. To obtain a concept for measuring the variables, different questions were used to measure convergent validity and discriminant validity. The questions were structured to assess the relationship to or divergence from knowledge sharing and socialization theory. In addition, a long questionnaire would have probably resulted in a low response rate because respondents might have chosen not to complete the survey if they considered the questionnaire long.

The survey was a self-report instrument; therefore, it was subject to some respondent bias to make the responses appear favorable to the researcher or organization (Leiter, Day, Harvie, & Shaughnessy, 2007; Minbaeva, 2007; Ruane, 2005; Trochim, 2001). However, social desirability bias is minimized when the researcher (Maguire, 2009) does not know individual responses. For the research project, the survey instrument was distributed, completed, and retrieved without direct contact between respondent and researcher. Unique identifiers (e.g., a signed informed consent form) were not used, which assured anonymity and confidentiality (Fowler, 1995) and minimized the nonresponse bias (Thompson & Surface, 2007). An advantage of using a computer-based instrument is that it reduced social desirability bias (McBurney, 1994). However, some Web-based surveys did yield lower social desirability scores than paper-and-pencil surveys (Joinson, 1999, as cited in Wood et al., 2006).

Another validity issue might be the use of convenience sampling bias and the fact that the sample is not representative of the entire population. This bias and lack of representativeness might cause criticism regarding the limitation of generalizing and

making inferences about the entire population. This bias and lack of representativeness might result in a low external validity of the study. Therefore, the researcher has been specific in why and how the sample was selected (see Sample section).

Reliability of the measures might have been a limiting factor in correlating the data between variables (Leavitt, 2001). Reliability, as assessed by use of Cronbach's alpha, relates to the idea of error obscuring a relationship between variables (Trochim, 2001). Cronbach's alpha calculated for the responses ranged from .84 to a high of .94. The reliabilities were considered high (Stonerock, 2003), as .9>α≥.8 is considered good and α≥.9 is considered excellent (Aron & Aron, 2002). The number of survey question might have been a limitation, as reliability is a function of the number of questions on a scale (Trochim, 2001). The number of survey items affects the calculation of Cronbach's alpha. Therefore, Cronbach's alpha scores are higher when more items are used.

Using the cross-sectional survey did not allow the analysis of longitudinal effects (Willem & Buelens, 2007) because data were gathered at one point in time (Minbaeva, 2007; Ruane, 2005). The correlational nature of the study hindered the ability to determine causality (Thompson & Surface, 2009; Trochim, 2001) among the variables. Another limitation surrounds issues of HIPAA security, privacy, and confidentiality in the context that the federal legislations have the breadth and depth that could not be possibly be covered in a single study effort. In addition, legislation and reform is an ongoing process; hence, this project is confined to a specific timeframe. This realization and the need to complete the research project within a feasible period and at a reasonable cost played a significant role in focusing and curtailing the boundary of the research. Finally, although evidence was collected and analyzed regarding the research questions and hypothesis, the results were derived from a single research study.

Recommendations for Further Research

The research study was focused primarily on healthcare organizations and it does not lay any claim to being a "one-stop shop" for all HIPAA regulated entities. The issues of security, privacy, and confidentiality in the context of federal legislation could not possibly be covered in a single study. Additionally, this study focused on the administrative sector within the healthcare organizations, not the medical professional sector. Thus, other information security researchers have the opportunity to test the applicability of the findings by extending and expanding the focus to other environments, especially within the organization and the HIPAA regulated environment in the United States.

It might be interesting for other researchers to expand their research focus on the effects of the other requirements of HIPAA (1996a) such as implementation of new reform or ERP systems within the healthcare organization. Further, organizations are understandably wary in discussing with outsiders (especially researchers) matters concerning their HIPAA strategies, policies, procedures, and resources; therefore, information concerning these factors is limited. Other interested researchers could possible do a case study or qualitative research to obtain information that is more comprehensive in this industry. The data that was collected reflected primarily hospitals and healthcare organizations with over 501 employees; additional research could be conducted specifically on smaller healthcare organizations.

Implications for Management and Conclusion

This study supports a better understanding of the underlying factors of HIPAA regulations that influence the employee's abilities to communicate within the healthcare organization. These insights should help American healthcare organizations to become

better prepared and more successful with processes, policies, and procedures that minimize bottlenecking in the face of the growing healthcare need and expanding HIPAA requirements. Shifting the extensive focus from HIT and other IT adoptions to the employee's knowledge, the healthcare industry can address both the issues of reducing costs (out-sourcing) and leveraging the supply of highly trained personnel. Ultimately, this focus results in knowledge management that is designed to facilitate knowledge processes and best practices.

Although training is important to the employee, management should be aware of economic shifts, which directly influence the employee causing them to re-evaluate priorities. Management should be innovative in finding ways to appeal to the employee willingness to learning. However, this should be taken a step further, because training without retention of little asset to the organization. Management should conduct testing on information retention and not on the ability to take the same test continuously. This form of testing should not be used to intimidate the employee but to indicate gaps where management can make improvements.

The findings from the employees' perceptions suggest that HIPAA might not be a specific barrier to knowledge sharing, but the organizational climate and environment might be factors that are more influential. Since the organizational climate and environment have been found to be more influential, management should develop processes that increase the accessibility and empower the employee. Increasing accessibility would include the strategic location of break rooms, encouraging the employee to take breaks and holding group meetings. By empowering employees, the manager would allow them to make decisions about their jobs, take responsibility for their results, and recognize them for their contributions. This might be much easier to

implement at smaller organizations.

Further, the results imply that knowledge-sharing processes at larger organizations are still governed by hierarchical structure and less by an interactive or upward feedback process. Management should see their position as getting the employee to accomplish desired goals using available resources efficiently and effectively and less on the controlling aspect. As a facilitator, management will enable processes to occur, encourage employees to find their solutions and embrace a collaborative environment.

This confirms part of the researcher's argument that employee knowledge (intraorganization) is not being used effectively as an asset to make decisions in the healthcare organization. Healthcare organizations should consider the possibilities of knowledge assets not only from a knowledge sharing, communication, and skill attributes position, but also from a possibility of a competitive advantage and innovation.

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APPENDIX A

Reliability Measures for Study Constructs

Table A1

Cronbach's Alpha Values for Individual Items of Knowledge Sharing,
Organizational Climate, Sharing Environment, and HIPAA Compliance

Item	Knowledge Sharing Alpha if deleted	Organizational Climate Alpha if deleted	Sharing Environment Alpha if deleted	HIPAA Compliance Alpha if deleted
Q7	.86	--	--	--
Q8	.86	--	--	--
Q9	.85	--	--	--
Q11	.85	--	--	--
Q12	.85	--	--	--
Q16	.85	--	--	--
Q21	.85	--	--	--
Q22	--	.93	--	--
Q23	--	.94	--	--
Q24	--	.93	--	--
Q25	--	.93	--	--
Q26	--	.93	--	--
Q27	--	.93	--	--
Q28	--	.93	--	--
Q29	--	.94	--	--
Q5	--	--	.82	--
Q6	--	--	.82	--
Q10	--	--	.82	--
Q17	--	--	.81	--
Q18	--	--	.81	--
Q19	--	--	.82	--
Q20	--	--	.81	--
Q31	--	--	.84	--
Q30	--	--	--	.83
Q32	--	--	--	.83
Q33	--	--	--	.81
Q34	--	--	--	.81
Q35	--	--	--	.80
Q36	--	--	--	.83
Q37	--	--	--	.86

Table A2

Knowledge Sharing Interitem Correlations

	Knowledge Sharing					
Item	Q8	Q9	Q11	Q12	Q16	Q21
Q7	.83	.35	.29	.45	.41	.33
Q8	—	.37	.33	.52	.45	.34
Q9	—	—	.76	.51	.61	.66
Q11	—	—	—	.64	.61	.74
Q12	—	—	—	—	.50	.52
Q16	—	—	—	—	—	.65

Table A3

Organizational Climate Interitem Correlations

	Organizational Climate						
Item	Q23	Q24	Q25	Q26	Q27	Q28	Q29
Q22	.66	.77	.75	.71	.73	.73	.63
Q23	—	.66	.59	.62	.67	.60	.55
Q24	—	—	.79	.68	.72	.74	.49
Q25	—	—	—	.67	.74	.67	.50
Q26	—	—	—	—	.76	.63	.54
Q27	—	—	—	—	—	.77	.63
Q28	—	—	—	—	—	—	.66

Table A4

Sharing Environment Interitem Correlations

Item	Sharing Environment							
	Q5	Q6	Q10	Q17	Q18	Q19	Q20	Q31
Q5	—	.54	.42	.39	.42	.35	.39	.29
Q6	—	—	.38	.44	.32	.36	.42	.10
Q10	—	—	—	.42	.39	.34	.53	.24
Q17	—	—	—	—	.57	.35	.49	.34
Q18	—	—	—	—	—	.57	.49	.40
Q19	—	—	—	—	—	—	.54	.24
Q20	—	—	—	—	—	—	—	.25

Table A5

HIPAA Compliance Interitem Correlations

Item	HIPAA Compliance					
	Q30	Q32	Q33	Q34	Q35	Q36
Q30	.39	.52	.70	.55	.34	.16
Q32	—	.49	.49	.46	.34	.38
Q33	—	—	.66	.71	.42	.31
Q34	—	—	—	.69	.38	.24
Q35	—	—	—	—	.56	.33
Q36	—	—	—	—	—	.35

APPENDIX B

Frequency Distributions of Survey Questions

Table B1

Frequency Distribution of Responses to Knowledge Sharing Questions for Entire Sample

| | Knowledge Sharing | | | | | | | | | |
| | Never | | Rarely | | Neutral | | Often | | Always | |
Question	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
7	29	13.7	15	7.1	62	29.2	69	32.5	37	17.5
8	24	11.3	26	12.3	55	25.9	63	29.7	44	20.8
9	2	.9	6	2.8	33	15.6	91	42.9	80	37.7
11	4	1.9	6	2.8	31	14.6	100	47.2	71	33.5
12	13	6.1	9	4.2	41	19.3	82	38.7	67	31.6
16	1	.5	3	1.4	37	17.5	81	38.2	90	42.5
21	4	1.9	5	2.4	34	16.0	90	42.5	79	37.3

Note. n=212.

Table B2

Frequency Distribution of Responses to Organizational Climate Questions for Entire Sample

| | Organizational Climate | | | | | | | | | |
| | Never | | Rarely | | Neutral | | Often | | Always | |
Questions	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
22	1	.5	4	1.9	33	15.6	78	36.8	96	45.3
23	3	1.4	3	1.4	46	21.7	79	37.3	81	38.2
24	1	.5	4	1.9	35	16.5	71	33.5	101	47.6

	Organizational Climate									
	Never		Rarely		Neutral		Often		Always	
Questions	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
25	0	.0	4	1.9	29	13.7	75	35.4	104	49.1
26	0	.0	3	1.4	37	17.5	85	40.1	87	41.0
27	0	.0	3	1.4	29	13.7	91	42.9	89	42.0
28	0	.0	4	1.9	34	16.0	79	37.3	95	44.8
29	1	.5	10	4.7	57	26.9	69	32.5	75	35.4

Note. n=212.

Table B3

Frequency Distribution and Percentage Measures of Responses to Sharing Environment Questions for Entire Sample

	Sharing Environment									
	Never		Rarely		Neutral		Often		Always	
Questions	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
5	17	8.0	27	12.7	52	24.5	79	37.3	37	17.5
6	28	13.2	48	22.6	69	32.5	49	23.1	18	8.5
10	18	8.5	20	9.4	57	26.9	67	31.6	50	23.6
17	15	7.1	27	12.7	59	27.8	71	33.5	40	18.9
18	11	5.2	14	6.6	47	22.2	81	38.2	59	27.8
19	27	12.7	19	9.0	42	19.8	62	29.2	62	29.2
20	16	7.5	18	8.5	68	32.1	76	35.8	34	16.0
31	6	2.8	8	3.8	39	18.4	59	27.8	100	47.2

Note. n=212.

Table B4

Frequency Distribution of Responses to HIPAA Compliance Questions for Entire Sample

	HIPAA Compliance									
	Never		**Rarely**		**Neutral**		**Often**		**Always**	
Questions	*n*	**%**	*n*	**%**	*n*	**%**	*n*	**%**	*n*	**%**
30	4	1.9	3	1.4	30	14.2	39	18.4	136	64.2
32	8	3.8	16	7.5	56	26.4	56	26.4	76	35.8
33	7	3.3	11	5.2	54	25.5	51	24.1	89	42.0
34	1	.5	3	1.4	30	14.2	57	26.9	121	57.1
35	9	4.2	5	2.4	56	26.4	56	26.4	86	40.6
36	12	5.7	17	8.0	75	35.4	56	26.4	52	24.5
37	15	7.1	26	12.3	65	30.7	67	31.6	39	18.4

Note. n=212.

APPENDIX C

Ranked-Ordered Measures of Central Tendency of Survey Questions

Table C1

Rank Ordered Central Tendency of Questions Comprising Knowledge Sharing Scale

Knowledge Sharing Questions	M	SD
16. I am willing to share my knowledge with other team members.	4.21	.81
9. I am willing to share new ideas.	4.14	.85
21. I am willing to talk with fellow employees about new ideas.	4.11	.89
11. I contribute and share my knowledge with coworkers.	4.08	.87
12. I am willing to discuss healthcare information gained with coworkers.	3.85	1.10
8. My manager encourages the sharing of healthcare information among team members.	3.36	1.26
7. My manager shares his/her healthcare information with me.	3.33	1.24

Note. n = 212.

Table C2

Rank Ordered Central Tendency of Questions Comprising Organizational Climate

Organizational Climate Questions	M	SD
25. It is important to work at an organization whose organizational climate encourages employee feedback.	4.32	.78
24. It is important to work at an organization whose organizational climate encourages learning, innovation, and contributions.	4.26	.83
27. It is important to work at an organization that attempts to improve training environments to enhance learning.	4.25	.74
28. It is important to work at an organization that provides sufficient equipment to enhance learning.	4.25	.79
22. It is important to work at an organization in which the management enhances a learning environment.	4.25	.82
26. It is important to work at an organization whose organizational climate encourages adapting and changing to accommodate the environment.	4.21	.78
23. It is important to work at an organization in which the organizational climate encourages the sharing of healthcare information.	4.09	.88
29. It is important to work at an organization that provides dedicated trainers.	3.98	.93

Note. n = 212.

Table C3

Rank Ordered Central Tendency of Questions Comprising Sharing Environment

Sharing Environment Questions	M	SD
31. My organization has general IT security.	4.13	1.03
18. At my organization, a designated place is provided to conduct meetings.	3.77	1.09
19. At my organization, a designated place is provided to gather for coffee breaks.	3.53	1.34
10. My manager helps me find solutions to difficult problems.	3.52	1.19
17. My organization extensively invests in technology to promote the sharing of healthcare information.	3.44	1.14
20. My organization provides opportunities for employees to share their healthcare information.	3.44	1.09
5. Employees have the opportunity to attend conferences or training programs to acquire knowledge.	3.43	1.16
6. Employees have the opportunity to be rotated around projects to learn and share new healthcare information.	2.91	1.15

Note. n = 212.

Table C4

Rank Ordered Central Tendency of Questions Comprising HIPAA Compliance

HIPAA Compliance Questions	M	SD
30. HIPAA compliance is important to my organization.	4.42	.92
34. There is a deliberate effort by my organization to maintain compliance.	4.39	.82
35. There is continuous training on HIPAA process and requirements.	3.97	1.07
33. My organization publishes the new HIPAA policies.	3.96	1.09
32. My organization's operations and technology environments have been affected by HIPAA.	3.83	1.11
36. Training processes directly affects my current job function.	3.56	1.12
37. HIPAA rules present a challenge to sharing healthcare information with other departments.	3.42	1.14

Note. n = 212.

Appendix D

Questionnaire and Instructions

My name is Beryl Prescott. I am a doctoral candidate at UMUC. I am requesting your help to assist me in understanding how information is shared at your organization.

There is no right or wrong answer. Please respond based on your own judgment, regardless of what you think others expect. Please try to answer all of the questions. Your responses will be held in strict confidence. If at any time you wish to withdraw from the study, you may close your Web browser and no responses will be recorded.

Thank you for assisting me in completing my academic goal.

Page 1 – **Heading**

To answer the questions, select the appropriate response button. However, if you are presented with a text box format, please fill in your response in the space provided. Some questions will require answers similar to the scales, while other questions will require different responses. Please try to be as accurate as possible.

There are no right or wrong answers. Please respond based on your own judgment, regardless of what you think others expect. Please try to answer all of the questions. Your responses will be anonymous and held in strict confidence.

Page 1 – **Question 1** – Choice – One Answer (Bullets)

Industry:

   ❍ Public
   ❍ Private
   ❍ Non Profit
   ❍ Other

Page 1 – **Question 2** – Choice – One Answer (Bullets)

Position Level:

   ❍ Executive
   ❍ Manager
   ❍ Technical Staff
   ❍ Support Staff
   ❍ Other, please specify

Page 1 – **Question 3** – Choice – One Answer (Bullets)

Size of healthcare organization:

- ○ Under 50 employees
- ○ 51 to 100
- ○ 101 to 500
- ○ Over 501

Page 1 – **Question 4** – Choice – One Answer (Bullets)

Healthcare Facility:

- ○ Hospitals
- ○ Clinics
- ○ Hospice
- ○ Physicians Office
- ○ Dental Office
- ○ Rehabilitation
- ○ Nursing Home
- ○ Other

Page 1 – **Question 5** – Open Ended – One or More Lines with Prompt

How long have you been working in the healthcare industry?

✎ years

Page 1 – **Question 6** – Open Ended – One or More Lines with Prompt

How long have you been in this position?

✎ years

Page 1 – **Question 7** – Choice – One Answer (Bullets)

Age:

- ○ under 20
- ○ 20 to 29
- ○ 30 to 39
- ○ 40 to 49
- ○ Over 50

Page 1 – **Question 8** – Choice – One Answer (Bullets)

Gender:

- ○ Female
- ○ Male

Page 2 – **Question 9** – Rating Scale – Matrix

For the following statements, please indicate the frequency with which each circumstance occurs by selecting one of the following: never occurs, rarely occurs, often occurs, or always occurs.

	Never	Rarely	Neutral	Often	Always
Communication in my organization can be challenging.	☐	☐	☐	☐	☐
Delays in healthcare information sharing affects my work.	☐	☐	☐	☐	☐
My job requires that I share healthcare information with coworkers.	☐	☐	☐	☐	☐
My job depends on healthcare information from other departments or sources.	☐	☐	☐	☐	☐
Employees have the opportunity to attend conferences or training programs to acquire knowledge.	☐	☐	☐	☐	☐
Employees have the opportunity to be rotated around projects to learn and share new healthcare information.	☐	☐	☐	☐	☐
My manager shares his/her healthcare information with me.	☐	☐	☐	☐	☐
My manager encourages the sharing of healthcare information among team members.	☐	☐	☐	☐	☐
I am willing to share new ideas.	☐	☐	☐	☐	☐
My manager helps me to find a solution to difficult problems.	☐	☐	☐	☐	☐
I contribute and share my knowledge with coworkers.	☐	☐	☐	☐	☐
I am willing to discuss healthcare information gained with coworkers.	☐	☐	☐	☐	☐
I feel loss of power when I share my knowledge.	☐	☐	☐	☐	☐

Page 2 – **Question 10** – Rating Scale – Matrix

For the following statements, please indicate the frequency with which each circumstance occurs by selecting one of the following: not at all, little, neutral, much, or very much.

	Not at all	Little	Neutral	Much	Very Much
I share my healthcare information with coworkers who have helped me in the past.	☐	☐	☐	☐	☐
My interaction with coworkers affects the sharing of my knowledge with them.	☐	☐	☐	☐	☐

	Not at all	Little	Neutral	Much	Very Much
I am willing to share my knowledge with other team members.	☐	☐	☐	☐	☐
My organization extensively invests in technology to promote the sharing of healthcare information.	☐	☐	☐	☐	☐
At my organization, a designated place is provided to conduct meetings.	☐	☐	☐	☐	☐
At my organization, a designated place is provided to gather for coffee breaks.	☐	☐	☐	☐	☐
My organization provides opportunities for employees to share their healthcare information.	☐	☐	☐	☐	☐
I am willing to talk with fellow employees about new ideas.	☐	☐	☐	☐	☐

Page 2 – **Question 11** – Rating Scale – Matrix

Please indicate how strongly you agree or disagree with each statement by selecting the appropriate rating value.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is important to work at an organization in which the management enhances a learning environment.	☐	☐	☐	☐	☐
It is important to work at an organization in which the organizational climate encourages the sharing of healthcare information.	☐	☐	☐	☐	☐
It is important to work at an organization whose organizational climate encourages learning, innovation, and contributions.	☐	☐	☐	☐	☐
It is important to work at an organization whose organizational climate encourages employee feedback.	☐	☐	☐	☐	☐
It is important to work at an organization whose organizational climate encourages adapting and changing to accommodate the environment.	☐	☐	☐	☐	☐
It is important to work at an organization whose organizational attempts to improve training environments to enhance learning.	☐	☐	☐	☐	☐
It is important to work at an organization that provides sufficient equipment to enhance learning.	☐	☐	☐	☐	☐
It is important to work at an organization that provides dedicated trainers.	☐	☐	☐	☐	☐

Page 2 – **Question 12** – Rating Scale – Matrix

Please indicate how strongly you agree or disagree with each statement by selecting the appropriate rating value.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
HIPAA compliance is important to my organization.	☐	☐	☐	☐	☐
My organization has general IT security.	☐	☐	☐	☐	☐
My organization's operations and technology environments been have affected by HIPAA.	☐	☐	☐	☐	☐
My organization publishes the new HIPAA policies.	☐	☐	☐	☐	☐
There is a deliberate effort by my organization to maintain compliance	☐	☐	☐	☐	☐
There is continuous training on HIPAA process and requirements	☐	☐	☐	☐	☐
Training processes directly affects my current job function.	☐	☐	☐	☐	☐
HIPAA rules presents a challenge to sharing healthcare information with other departments	☐	☐	☐	☐	☐
Healthcare information is shared mainly through email.	☐	☐	☐	☐	☐
Healthcare information is shared mainly through fax transmittals.	☐	☐	☐	☐	☐

Thank You Page

Thank you very much for your participation!

APPENDIX E

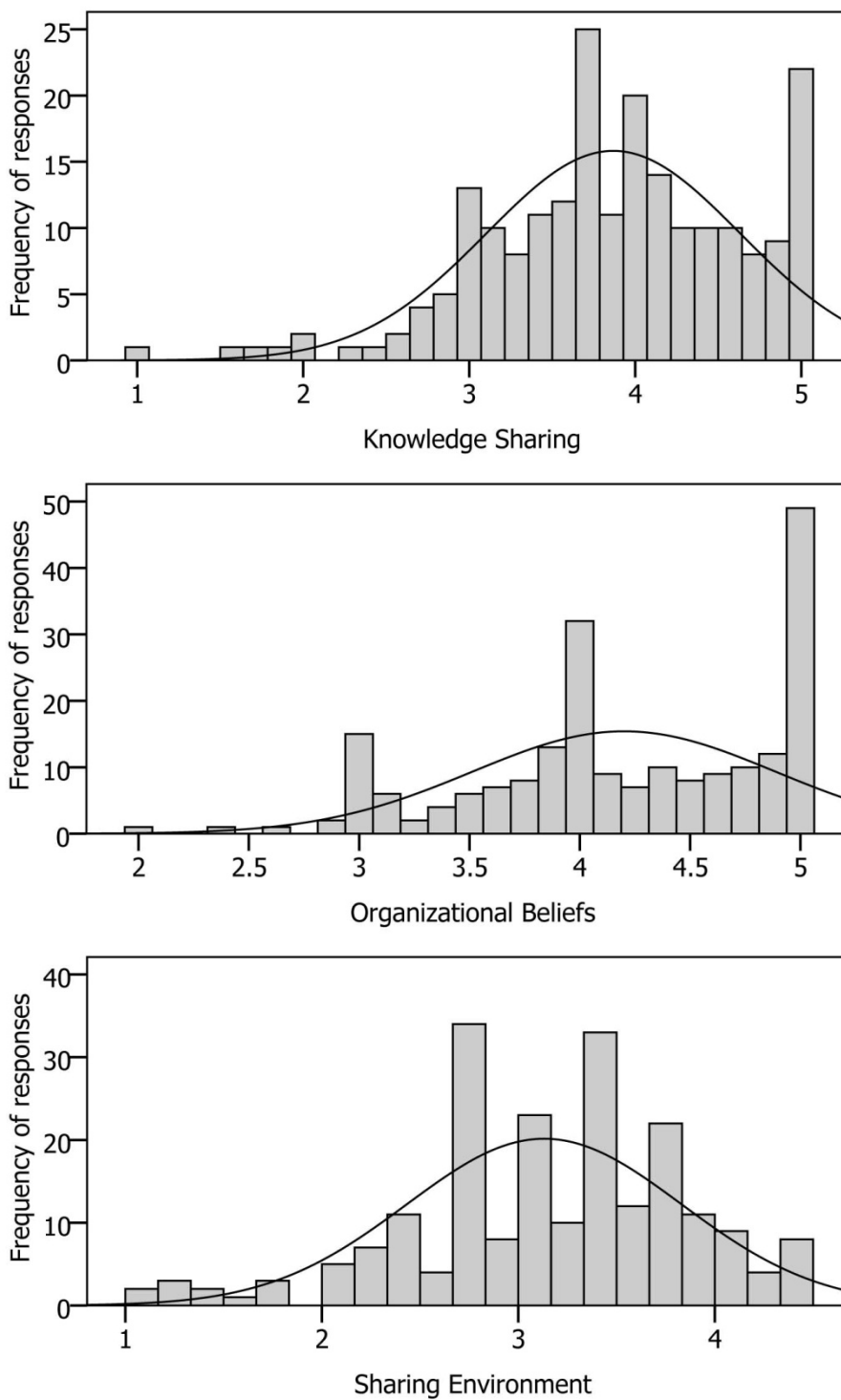**Examining the Regression Assumptions**

Figure E1. Frequency distribution of Knowledge Sharing, Organizational Beliefs, and Sharing Environment.
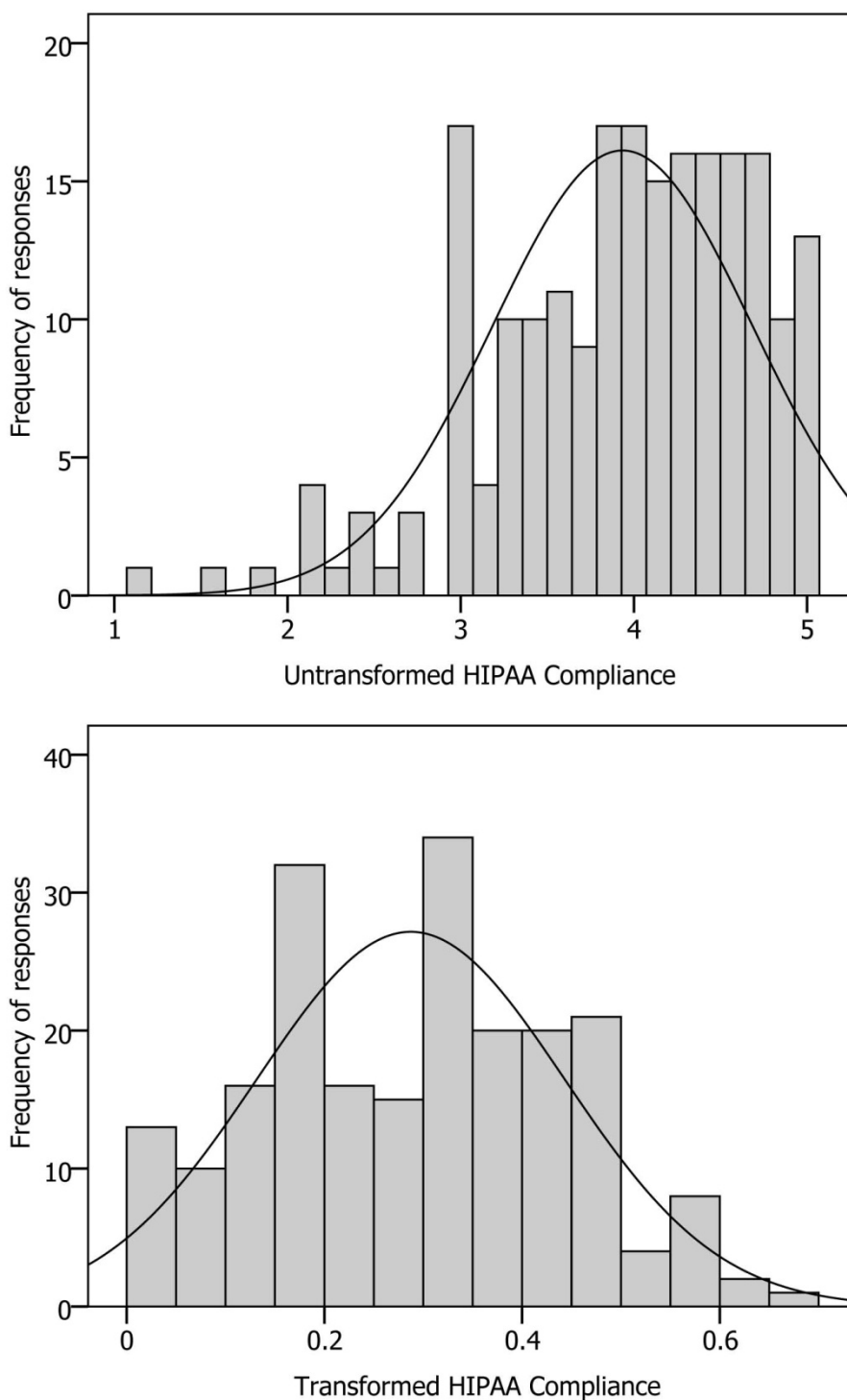
Figure E2. Frequency distribution of untransformed HIPAA Compliance and Log 10 transformed HIPAA Compliance.
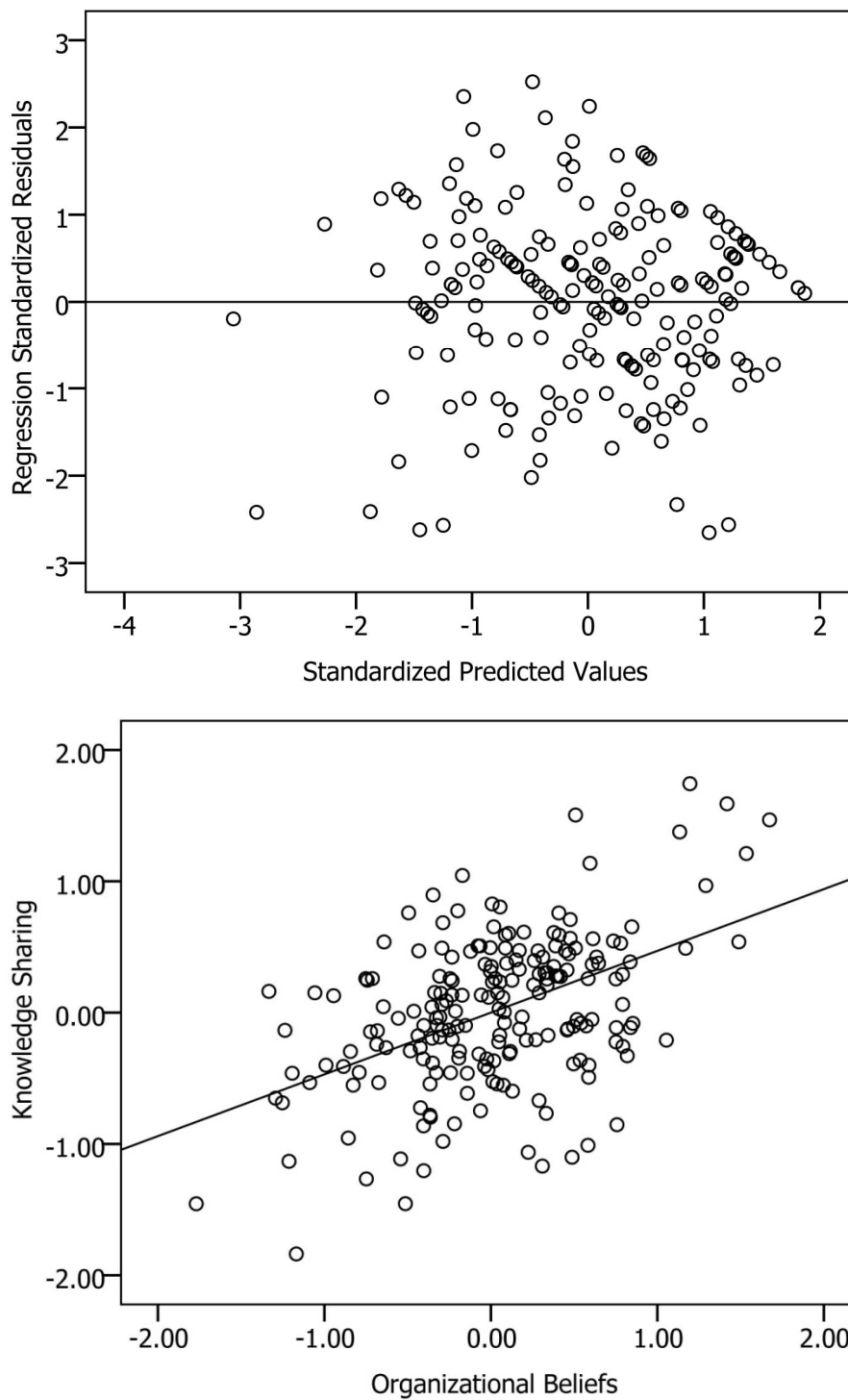
Figure E3. Scatterplot of standardized predicted values against standardized residuals and scatterplot of residuals for the independent variable organizational climate.
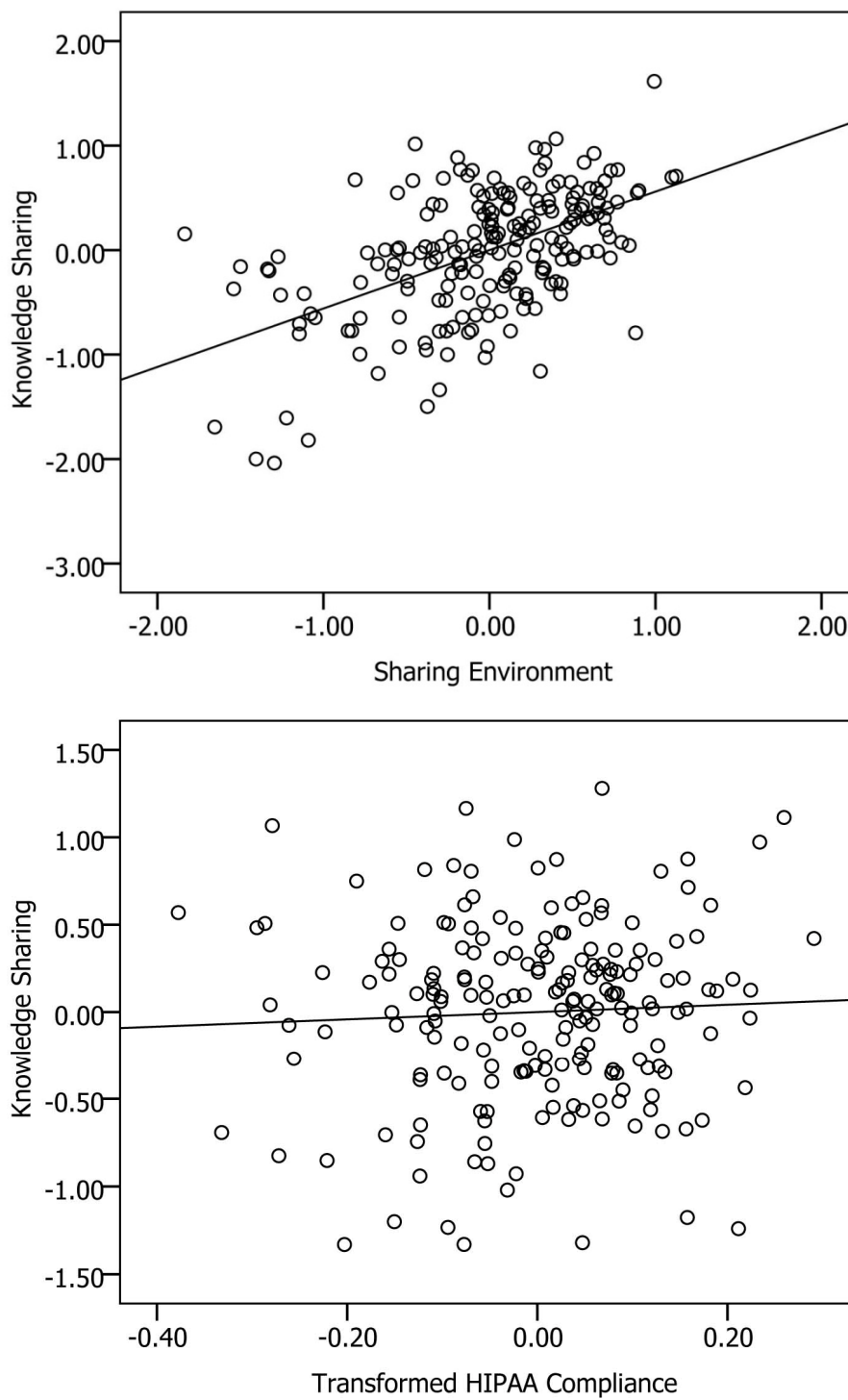
Figure E4. Scatterplot of residuals for the independent variable sharing environment and scatterplot of residuals for the independent variable HIPAA compliance.