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Exploring Strategies for Implementing Data Governance Practices

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Walden University

College of Management and Technology

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Ashley Cave

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2017

Abstract

Exploring Strategies for Implementing Data Governance Practices

by

Ashley Elizabeth Cave

MS, Walden University, 2015

MA, American Military University, 2012

BBA, Shenandoah University, 2005

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Information Technology

Walden University

October 2017

Abstract

Data governance reaches across the field of information technology and is increasingly important for big data efforts, regulatory compliance, and ensuring data integrity. The purpose of this qualitative case study was to explore strategies for implementing data governance practices. This study was guided by institutional theory as the conceptual framework. The study's population consisted of informatics specialists from a small hospital, which is also a research institution in the Washington, DC, metropolitan area. This study's data collection included semi structured, in-depth individual interviews (n = 10), focus groups (n = 3), and the analysis of organizational documents (n = 19). By using methodological triangulation and by member checking with interviewees and focus group members, efforts were taken to increase the validity of this study's findings. Through thematic analysis, 5 major themes emerged from the study: structured oversight with committees and boards, effective and strategic communications, compliance with regulations, obtaining stakeholder buy-in, and benchmarking and standardization. The results of this study may benefit informatics specialists to better strategize future implementations of data governance and information management practices. By implementing effective data governance practices, organizations will be able to successfully manage and govern their data. These findings may contribute to social change by ensuring better protection of protected health information and personally identifiable information.

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Dedication

I would like to dedicate this research study to my family and friends who have stood by me throughout the duration of my doctoral journey. Thank you for your time, support, and encouragement while I took courses, conducted this study, and prepared this final publication.

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This doctoral study would not have been possible without all of the ongoing support that I received. I would like to begin by thanking my wonderful committee chairperson, Dr. Jon McKeeby, who is the ‘best mentor ever’! I would like to thank lead DIT professor, Dr. Steven Case, who served as my second committee member and has provided me with support since the very beginning of the DIT program. I would like to thank my URR, Dr. Gail Miles, for her time spent on my committee and in reviewing my work to ensure the best possible final publication. I would also like to thank numerous DIT classmates for discussions and comradery during my time as a doctoral student.

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Section 1: Foundation of the Study

Data governance is increasingly important for maintaining data quality and data integrity. Data governance and information management practices may facilitate compliance with regulations, audits, and laws. The purpose of this study was to explore strategies for implementing data governance practices. In this study, I first explore the topic of data governance and then explore the conceptual framework for the study.

Background of the Problem

Data governance is a central data management function that affects information technology (IT) and all data management initiatives (Thompson, Ravindran, & Nicosia, 2015). Data governance practices include functions that detail data management activities over the data lifecycle (Tallon, 2013). Data governance is increasingly important given the expansive amounts of data that are now created daily. Data retain their worth as a high-value asset when their integrity remains intact. Data governance exists to ensure data integrity and the appropriate protection of data (Egelstaff & Wells, 2013). Organizations that adopt data governance practices are indicating that their data is a valuable resource and that access to their data needs to be protected (Egelstaff & Wells, 2013). Data will continue to be one of the most valuable assets within an organization.

As data represent a high-value asset for organizations, it is important to have more knowledge surrounding data governance to better strategize implementing data governance practices. Without these strategies, data governance may not be well implemented. If data governance is not clear, an organization will not know who is responsible for data quality, data access, or data availability (Dahlberg & Nokkala, 2015).

Further, data governance requires an organizational approach with specified roles and responsibilities to aid in decision-making (Hovenga & Grain, 2013). Data governance requires input and agreement from internal and external stakeholders (Hovenga & Grain, 2013). Strategizing the design of data governance implementations has become a necessity.

Problem Statement

Due to the circumstances of data and information in most organizations, data governance is now a high priority (Earley, 2014). Presently, 85% of Fortune 500 organizations are unable to effectively use their data, and a structured approach to data governance policy and strategy is a critical factor for project success (Kemp, 2014). Up to 80% of data at large public hospitals is required for reporting obligations to secure funding, and effective data governance helps ensure that it is correctly captured, reported and understood (Andronis & Moysey, 2013). The general IT problem is that there is a lack of knowledge for implementing data governance. The specific IT problem is that informatics specialists often lack strategies for implementing data governance practices within organizations.

Purpose Statement

The purpose of this qualitative exploratory single case study was to explore the strategies used by informatics specialists for implementing data governance practices within an organization. The population of this study was informatics specialists who had knowledge and experience surrounding strategies that could be used for implementing data governance practices within a small hospital setting that is both a research institute

and a medical institution. The geographical location of the study was the Washington, DC, metropolitan area of the United States. This study may assist organizational leaders considering the implementation or maturation of information management or data governance practices by providing them with realized strategies that may be used as a set of best practices. This study has implications for positive social change, in that application of the findings may promote improved strategies that could lead to the better protection of societal data including protected health information (PHI) and personally identifiable information (PII).

Nature of the Study

I used a qualitative research methodology in this study. Qualitative researchers can provide rich, thorough descriptions regarding topics of study as they naturally occur (Sousa, 2014). The qualitative research design was appropriate for this study because I sought to explore what can be learned from an organization that has implemented data governance practices. On the other end of the research spectrum are quantitative research methodologies. Quantitative research design problems are based on a previous researcher's beliefs that questions are relevant and able to be answered (Macur, 2013). There was not yet enough understandable research regarding this topic; therefore, I sought to gain a deeper understanding of the phenomenon.

Mixed-methods research uses both quantitative and quantitative methods within the same study. Venkatesh, Brown, and Bala (2013) suggested that if a mixed-methods approaches help researchers find possible answers to research questions, and if typical barriers associated with conducting quantitative studies are not a problem, then the

researcher should use the mixed-methods research design. However, the mixed-methods approach would not have assisted the effort to answer the research question with the addition of quantitative method of inquiry. Therefore, I deemed the qualitative research methodology best suited to this research study.

In this single case study, I used an exploratory case study design method with the goal of gaining an in-depth understanding the phenomenon of data governance practices. Case study research encompasses in-depth investigations of phenomena that must be studied in their naturally occurring setting (Keutel, Michalik, & Richter, 2014). Another viable research design is phenomenological design. The focus of phenomenological research is describing and clarifying human experiences (Sousa, 2014). However, phenomenological studies focus on how research participants live through, experience, or interpret the research topic. Ethnography is another research design often used for qualitative studies. Ethnography is written representation of a culture (Fayard & Van Maanan, 2015). Typically, the ethnographer observes and participates the culture but does not actively seek to enter or change the situation (Baskerville & Myers, 2015). In this study, I did not intend to study any culture, group, ethnicity, or geographic location. Therefore, the ethnographic approach was not relevant to the goal of this research study. This research study was best conducted using the case study research design.

Research Question

The overarching research question for this study was the following: What strategies do informatics specialists use to implement data governance practices within an organization?

Interview Questions

Demographic Questions

1. What is your current title and role?
2. What role do you play in managing data and information?
3. How many years of experience do you have in this type of role?

Interview Questions

1. What types of data and information do you manage and govern?
2. What has prompted the need for implementations of data and information management and governance practices based upon your experience?
3. What role(s) have you played in the management and governance of data and information?
4. What strategies have you used for implementing data and information management governance and practices?
5. What strategies have you found to be most effective? What strategies have you found to be ineffective?
6. What impact have data and information management practices and regulatory compliance had upon one another based upon your experience?
7. In your experience, what responsibilities do you in your role play in regards to data governance?
8. What factors play a role in the decision of how to implement data and information management and governance practices based upon your experience?

9. What are your experiences surrounding the benefits of implementing data and information management and governance practices?
10. What are your experiences surrounding the challenges of implementing data and information management and governance practices?
11. What external factors or entities play a role in deciding which practices to implement based upon your experience?
12. What other factors or tactics would you like to add for getting the most out of data and information management and governance implementations?

Focus Group Questions

1. What is the role of the Clinical Information Management (CIM) committee?
2. What is your role within the CIM?
3. How does the CIM contribute to the management and governance of data and information?
4. What are you trying to manage or govern as part of CIM?
5. How do data and information management and governance practices serve a purpose after they are implemented?
6. How are challenges to the implementation of data and information management and governance addressed?
7. How do data and information management and governance practices have an effect on outcomes such as funding efforts, compliance with regulations, or perceived legitimacy within the industry?

8. What are examples of data and information management and governance that the CIM has been involved with over the last 12 months?
9. What are examples of practices and processes that are currently implemented?

Conceptual Framework

The conceptual framework for this study was institutional theory. DiMaggio and Powell originated institutional theory in 1983 (DiMaggio & Powell, 1983). Its level of analysis is a cluster, group, or affiliation of individuals, organizations, or organizational subsets, whether formal, informal, or perceived (Mirani, 2014). Institutional theory considers the processes through which structures such as frameworks, practices, or routines are established as guidelines for social behavior within organizations (Lopes & Sá-Soares, 2014). According to institutional theory, organizational decisions are not driven only from organizational goals, but also by social and cultural factors as well as legitimacy concerns (Wang, Tseng, & Yen, 2014). I adopted institutional theory as a lens while conducting this research study to explore strategies for implementing data governance practices.

Institutional theory was relevant to this study because its core components and constructs align closely with those that I explored in the research. My intent was to use institutional theory as a lens to better understand the study. Within institutional theory, the typical main dependent constructs include new institutional adoptions, conformity, change, and isomorphism (Scott, 1987). Institutional theory proposes that practices, processes and procedures are copied across organizations via a process called mimetic

isomorphism (Griffith, Hammersley, & Kadous, 2015). The typical main independent constructs of institutional theory are processes that can establish practices, policies, and norms (DiMaggio & Powell, 1983). For this study, data governance practices follow suit with institutional theory's constructs, because data governance practices or policies are becoming an expected or recommended organizational structure. My interview questions included those that aligned with the constructs and sought to determine whether external and internal factors based on the constructs play a role in implementing data governance practices.

Other recent studies have used institutional theory as their framework, either in relation to governance or in addressing the implementation of practices and/or policies. Gomez and Atun (2013) proposed an approach that links the literature discussing institutional origins to path dependency and institutional theory relating to proto-institutions to outline the differences in processes that shape governance within global health agencies. Gomez and Atun's study was the first to apply institutional theory to explain the differences in outcomes between multilateral donor agencies in global health. Lopes and Sá-Soares (2014) used institutional theory as the theoretical framework in their study to develop strategic recommendations to enhance the adoption of information systems security policies. Lopes and Sá-Soares used institutional theory not only to better understand policy adoptions by government municipalities but also to explain actions that can improve adoptions. These studies are relevant to my study because institutional theory has been effectively applied in governance-related studies as well as other studies

that shed light on implementations or adoptions of practices and strategies that can enhance these implementations.

Definition of Terms

COBIT 5: COBIT is a framework and portfolio of IT projects known as Control Objectives for Information and Related Technology (Prasetyo & Surendro, 2015). COBIT 5 provides guidance for IT professionals and organizational leaders regarding data governance and information management (Suer & Nolan, 2015).

Homogenization: Homogenization occurs when organizations become similar in nature. Organizations will be most homogeneous in structure, process, and behavior (DiMaggio & Powell, 1983). Homogenization occurs with isomorphic processes (DiMaggio & Powell, 1983). Homogenization among organizations also occurs as they are faced with similar internal or external pressures (DiMaggio & Powell, 1983).

Informatics: Informatics is the science of information dealing with information processing, interaction, storage, and retrieval. Informatics refers to data, information, and concepts such as how data are displayed or represented, as well as their relationship to other data (Andronis & Moysey, 2013). Informaticians work to ensure that collected data can be used in the best way for organizational decision-making purposes (Hovenga, 2013).

Isomorphism: Isomorphism suggests that organizational characteristics can be modified to align with environmental characteristics, and that organizations exist within given fields an outcome of influencing factors and pressures, while organizational diversity mimics its industry or environment (DiMaggio & Powell, 1983). Institutional

isomorphism is a beneficial concept to help understand how politics influence modern organizations (DiMaggio & Powell, 1983).

Mimeticism: Mimetic isomorphism occurs when organizations mimic or imitate other organizations seen as successful in their field (Llamas-Sanchez, Garcia-Morales, & Martin-Tapia, 2013). Mimeticism occurs when one structure or process copies or imitates another as one way of increasing perceived legitimacy and can result in either likeness or sameness. *Mimetic isomorphism* also occurs when organizations mimic one another to cope with uncertainty or reduce learning curves (Bharati, Zhang, & Chaudhury, 2014).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are unconscious beliefs or assumptions that are accepted as true and can produce biases of both perception and thoughts (Walsh, 2015). For this study, I made certain assumptions. First, I assumed that for this case study, enough participants would be available within the organization for saturation to be reached. I also assumed that the participants would have sufficient and adequate knowledge surrounding strategies for implementing data governance so that they will be able to answer the interview questions. I assumed that the participants would be a valid representation of the sample population. I also assumed that the participants would fully understand the interview questions and would be able to answer them, and that the questions were relatable to the experiences of the participants. To mitigate any assumptions, I ensured the knowledge and experience of the interviewees as best as I could during the demographics questions prior to the interview questions. Further, because the interview consists of semi structured interview

questions, I ensured that the questions were set up so that they would allow for the participant to be able to give a substantial assessment with their responses. In part, I mitigated this by using open-ended questions rather than yes-or-no questions.

Limitations

Limitations include theoretical or methodological imperfections or other unforeseen constraints of a study that do not cause the researcher to question the validity of the study's findings (Busse, Kach, & Wagner, 2016, p. 8). Limitations are unanticipated, and for my study, limitations included that the study took place at a single organization rather than multiple organizations. Another limitation is that in my case study, data governance, and information management practices were being studied at a health institution. The way that this health organization implements and conducts data governance and information management practices may be different than at other institutions or in other industries. Finally, the maturity level of data governance and information management practices at the organization are different than the maturity level of these practices or policies implemented in other organizations, so the responses to interview questions were representative solely of the organization used in this study.

Delimitations

Delimitations are anticipated constraints that the researcher is aware of when conducting a study and interpreting its findings (Sampson et al., 2014). The boundaries that I have placed surrounding the case study will constrain it to a particular case and sample population. Therefore, the data may not represent all cases or generalizable to a wider population or other industries. The boundary of the geographical location for the

study is another delimitation. Finally, the purpose of this study was to identify strategies for implementing data governance practices within an organization rather than to determine how to implement data governance policy. Therefore, these strategies may vary by organization based on when and how the data governance policies were previously implemented or are currently being implemented. The time that at which my case study was conducted may also be a delimitation.

Significance of the Study

Contribution to Information Technology Practice

Organizations today are faced with managing large amounts of data. The substantial amount of data used for problem solving requires that the outcome of solving issues related to health care plays a role in data governance (Egelstaff & Wells, 2013). This study may contribute to the field of health IT informatics because it will explore strategies that could potentially be used for implementing data governance practices within an organization. This study may provide informatics specialists with an understanding of strategies used to implement data governance practices or policies. These strategies could be seen as a set of guidelines or best practices to be used for such implementations. Therefore, this study may contribute by helping informatics specialists to better understand the phenomenon of data governance and provide more knowledge to the field of informatics with strategies for how to implement effective data governance practices.

Implications for Social Change

Implications affecting positive social change from this study include improved strategies that could lead to better data governance practices, and ultimately better protection of societal data including PHI and PII. Better protecting society's data can lead to the increased protection of society's members. Protecting society's members and their data can have far-reaching effects such as increased privacy and confidentiality. Society can maintain its privacy and confidentiality when organizations better protect and govern data.

With effective data governance, focus on controls around these types of data increases, as required by health regulations such as HIPAA and financial industry regulations such as Sarbanes-Oxley. This study may lead to better regulatory compliance, ensuring that organizations are meeting the set requirements regarding the consideration and protection of data. When data governance practices are effective, this may lead to faster access of data and ensure that only those with appropriate permission are accessing data. When important data need to be accessed for the sake of community safety or national security, having better data governance as a possible outcome of this study may help lead to better protecting the data and ensuring data availability.

Several more positive implications for social change may result from implementing effective data governance practices. Effective data governance could result in fewer health information errors and other data errors, as well as more reliable health records being transferred between physicians and clinics. There may also be shorter wait times for patients to receive initial care, follow-up care, insurance coverage, and more

accurate physician diagnosis with less medical misdiagnosis due to inaccurate data or information in electronic health records. Finally, physicians could have improved access to pre-existing medical data, test results, and other pertinent health related information.

A Review of the Professional and Academic Literature

This purpose of this qualitative single case study was to explore strategies for implementing data governance practices. In my review of the academic literature, I discuss institutional theory as the conceptual framework for this study and then provide a background for data governance while relating the topic to the central research question: What strategies do informatics specialists use to implement data governance practices within an organization? In the following review of the literature, I compose themes that have emerged from the literature regarding the topic of data governance practices and illustrate (a) how data governance has become an applied IT problem worthy of research, (b) how data governance is defined and explained, (c) data governance as it relates to information and data management, (d) data governance practices and tasks related to health care, (e) who data governance stakeholders are, and (f) models and frameworks supporting data governance. Other themes that have arisen throughout the literature regarding data governance that I cover include regulatory compliance, health care sector data governance, and benefits/barriers to data governance.

This review of the academic literature consists of 89 journal articles on data governance and institutional theory as the underlying conceptual framework. I concentrated on articles that were published within 5 years of my anticipated graduation date (i.e., published between 2013 and 2017). I verified the peer-review status of these

articles by using Ulrich's Periodicals Directory. A total of 88% of the 89 articles are peer-reviewed and 90% were published within 4 years of my anticipated graduation in 2017, and I did not include any articles published in 2017. I primarily retrieved these journal articles from the following research databases: EBSCO Discovery Service via the Thoreau Multi-Disciplinary database, IEEE Xplore Digital Library, ProQuest database, and Google Scholar.

Institutional Theory

Institutional theory was a major part of this literature review. DiMaggio and Powell (1983) originated institutional theory to explain how organizations make decisions driven, in part, concerns regarding new organizational adoptions, conformity, change, and isomorphism. DiMaggio and Powell contended that when organizations and institutions implement practices, they may do so to enhance their perceived legitimacy. Evans (2014) added that recent developments in institutional theory explain how legitimacy is sought as a rationale for many organizational changes. By focusing on firms, their environment, and external pressures, institutional theory provides a suitable theory for focusing on how multiple stakeholders of organizational fields can play a role in the adoption or implementation of technologies and practices.

Institutional theory observes the reactions that organizations have to their environment. Oliver (1991) stated that institutional theory offers insight into how organizations react to changes institutional processes and their industry or environment. DiMaggio and Powell (1983) contended that early adopters of organizational changes or adoptions are typically driven by desires to improve performance. DiMaggio and Powell

added that other factors come in to play as well, such as new regulations, the need for the adoption of strategies, or new pressures within the organizational field that results in organizations mimicking one another to become more similar in nature. Oliver noted that institutional theory demonstrates the way that strategic choice may occur after practices that are seen as socially acceptable in the organizational environment. DiMaggio and Powell pointed out that strategies that are reasonable for certain organizations may not be beneficial if adopted by large numbers. Strategies varying from organization to organization is related to the topic of data governance and my study because from reviewing the professional and academic literature, it is clear that there is not a one-size-fits-all approach for implementing data governance practices.

I used institutional theory as the conceptual framework to better understand and examine the problem of informatics specialists often lacking strategies for implementing data governance practices within organizations. Institutional theory was well suited for the study because by using this theory, it is easier to identify and understand how and why the case study organization decided to implement data governance practices based on whether regulations played a role as an external influencing factor. Further new regulations and forces continue to emerge in the field that deal with the security of PHI and PPI. By better understanding and identifying these factors from the viewpoint of institutional theory, I aimed to identify factors from data collection that could be used as strategies toward the research problem and lack of strategies.

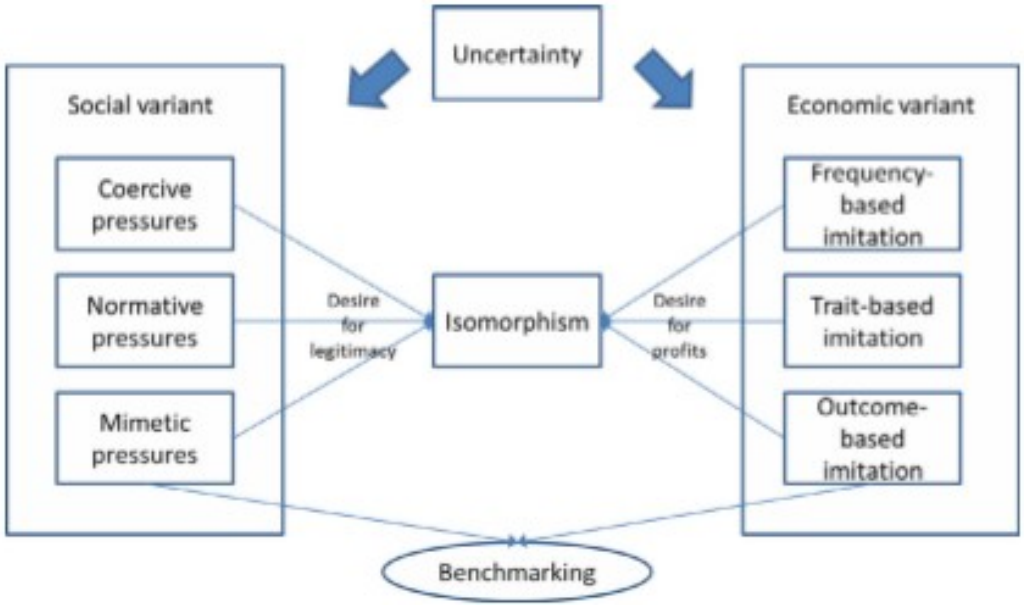

Figure 1. The social and economic variants of institutional theory. Reprinted from "Extending the Use of Institutional Theory in Operations and Supply Chain Management Research," by K. Kauppi, 2013, International Journal of Operations & Production Management, 22(10), p. 1322. Copyright 2013 by Emerald Group Publishing Limited. Reprinted with permission (Appendix B).

Mimetic, coercive, and normative pressures. Environmental pressures have an effect on organizations. Selznick (1948) stated that organizations are adaptive social structures within society and their environment. Kauppi (2013) explained how the two variants of institutional theory are (a) sociological variant when firms are mimicking one another to gain legitimacy, and (b) the economic variant, where mimickers are motivated by economic efficiency. The social variant of institutional theory includes mimetic, coercive, and normative pressures (Kauppi, 2013). DiMaggio and Powell (1983) stated that organizations become similar to one another as they work toward improvements, adapt, and change, and that isomorphic processes lead to the outcome. Organizations respond accordingly to different pressures.

Mimetic pressures are related to organizations and institutionalization. DiMaggio and Powell (1983) asserted that *mimetic isomorphism* comes from the process of homogenization. Oliver (1991) noted that mimetic isomorphism is consistent with imitation. Griffith et al. (2015) explained that the concept of mimetic isomorphism explains how procedures are circulated from organization to organization by being copied from one another. Institutional isomorphism exists where organizations seek institutional legitimacy and, therefore, mimic the behaviors or actions of other organizations. Oliver asserted that isomorphism emphasizes conformity, habit, and standardization more than control or power. The literature illustrates why processes are part of what makes organizations so similar.

Mimetic pressures also stem from unknown circumstances. DiMaggio and Powell (1983) further explained that mimetic isomorphism also comes from uncertainty and pressure. DiMaggio and Powell contended that when organizations face ambiguity or uncertainty, or when they are unclear of their goals, they begin to model themselves after other organizations. In their seminal article, they asked why such a similarity of organizational practices exists while seeking to explain homogeneity. DiMaggio and Powell also note that these competitive and institutional types of isomorphism emphasize market competition and lead to modern organizational practices. DiMaggio and Powell pointed out that organizational fields emerge from activities from more diverse sets of organizations, and then new organizations enter these new industries or fields. The literature explains how new organizational fields are established, and similar practices propagate across organizations that produce similar services.

Coercive pressures are another type of pressure explained by institutional theory. DiMaggio and Powell (1983) noted that *coercive isomorphism* stems from political influences and desires for institutional legitimization. They also explained that coercive isomorphism also stems from pressures exerted on organizations by other organizations and society Bharati et al. (2014) defined coercive isomorphism as the conforming of organizations to external pressures that they face from other institutions or groups on which they depend, such as government or suppliers. DiMaggio and Powell contended that organizational change is sometimes the result of government mandates or new regulations. The concept of coercive isomorphism is especially relevant to my study because formal and informal forces may be experienced by organizations to implement data governance practices or processes, whether they depend on external forces such as funding bodies or regulatory bodies, whether the change stems from a commitment to cultural or societal expectations, or whether the change is insisted upon from external stakeholders such as customers or competition.

Finally, institutional theory describes normative pressures. DiMaggio and Powell (1983) linked *normative isomorphism* with professionalization. They affirmed that organizational professionals will be similar across organizations, and that they are no longer committed to a single organization. DiMaggio and Powell stated that professionals can be exposed to coercive and mimetic pressures the same way that organizations are, so professional power can come from elsewhere, not only from within. They continued to explain how education and training gives legitimation to professionals in an isomorphic manner. According to DiMaggio and Powell, these normative pressures are reasons that

professionals can move around and be hired by organizations within similar industries. They contended that isomorphic processes can continue and evolve without evidence that they result in efficiency for the organization.

Pressures cause organizations to take appropriate courses of action. Bitektine (2015) stated that many governance certification programs and standards have expectations that will ensure organizations' compliance. Bitektine noted that this type of institutionalization also affects evaluators such as those applying regulations or certification standards to organizations. Bitektine noted that in this way, the evaluator can become influential by using normative pressures. Bitektine also noted that the evaluator's judgement can become adopted by other actors and then opinions become valid and can have a cascading effect, which leads to coercion, inducement, and persuasion. The literature thus illustrates how validity can be achieved by persuading a majority and obtaining validation from influential actors in positions associated with regulators and the legal system.

These three types of pressures can be categorized further. Scott (2008) described how coercive, normative, and mimetic processes can be elaborated upon and be either regulative, normative, or cultural-cognitive elements. Scott defined *regulative elements* as those that encompass rule setting and monitoring. Scott described *normative elements* as those that introduce evaluative and obligatory dimensions, while *cultural cognitive elements* highlight social norms. Scott explained how these three elements vary substantially as far as what type of organizational order they support, and that they each have different bases of order and motives for compliance. By using institutional theory as

a lens for my study, I was able to focus more on the regulatory elements of processes that focus on motivations for compliance, as well as focus on the sanctioning activities such as federal regulations that lead organizations towards implementing data governance.

Imitation, isomorphism and homogenization. Institutional theory describes processes by which organizations become similar to one another. DiMaggio and Powell (1983) stated that organizations continue to become more homogenous, while bureaucracy is still the typical organizational structure. They explained that organizations are increasingly homogeneous within a given sector or industry, while they also conform to practices of wider institutions. DiMaggio and Powell described how organizational structures are homogenous because while they may attempt to diversify, they will still have little variation amongst themselves. They noted that a reason for this is that newer organizations model themselves after already existing successful organizations within their same organizational field. Organizations tend to be similar in nature regardless of certain attempts to differentiate themselves.

Organizations become more similar through the process of isomorphism. Oliver (1991) explained that isomorphism deals with mimicry of institutional or organizational models. Oliver discussed how isomorphic organizations conform to one another and become susceptible to internal and external pressures. DiMaggio and Powell (1983) and Oliver (1991) explain that institutional theory focuses imitation of an organization's structure, practices, and processes in response to external pressure. Kauppi (2013) noted that when uncertainly within organizations encourages isomorphism, imitation occurs. Kauppi noted that one method of imitation is benchmarking among organizations which

may not lead to optimal results since practices don't operate equally in all organizations. Kauppi (2013) extended that trait-based imitation deals with mimicking select traits, while frequency-based imitation deals with mimicry of practices employed by many, and outcome-based imitation occurs when organizations enact practices already seen as successful in other organizations. The literature thus explains how the economic variants of institutional theory stem from uncertainty and isomorphism.

Environmental pressures and organizational change. Environmental pressures have can affect and prompt organizational changes. Doshi, Dowell, and Toffel (2013) stated that institutional theory offers a foundation for studying how external pressures may affect organizational behavior. Their study as well as others seek to leverage how institutional theory can be used to explain heterogeneous organizational strategies. Doshi et al. asserted that institutional theory can be used as a framework for understanding why firms respond differently to environmental pressures than others. Bharati et al. explained how institutional theory has also begun to expand past the basis of factors leading to isomorphism and homogeneity, and looks at how change is driven by institutional forces. Organizations can be susceptible to a multitude of pressures that can prompt these changes.

Institutional theory explains how institutionalization occurs. Bharati et al. (2014) stated that institutional theory has typically been used to explain how organizations within an organizational field and within the bounds of their environment face pressure to adapt and conform to shared processes, and how this can influence organizational decision making over time. Scott (1987) explained how institutionalization of processes

occur when actions are repeated over and over, which in turn creates social order and allows us to classify behaviors into categories such as practices, processes, or policies. When these new practices are implemented, they change the organizational behavior and lead towards newly accepted norms within an organization. Scott also explains that institutional frameworks decide what interests are pursued, and institutional factors determine professionals in firms play roles and all seek their own pursuits. As an institutional system, DiMaggio and Powell (1983) asserted that external and internal forces do not necessarily have the same interests in shaping the modern organizational structure. It is by this process of institutionalization that organizational structure becomes a framework.

Environmental agents and actors can also create pressure for organizations. Scott (1987) contended that environment agents can define forms of institutional structure largely by employing politics and like interests. Scott further explained how institutional actors play a role in reconceptualizing political systems in ways that demonstrate the role politics plays in shaping institutional frameworks and organizational forms. Scott eluded to the fact that institutional theory can be as a means by which to examine the determinants of institutional systems. Oliver (1991) contended that institutional theory can also be used to understand how responses are determined to environmental pressures and how certain responses are not considered but have become norms. The literature illustrates the varying ways in which institutional theory can be used to explain pressures from external actors.

Organizational changes occur regardless of motivations or outcomes. DiMaggio and Powell (1983) asserted that organizations' structural changes are not directly related to competition, rather, they occur because of processes that make organizations more similar without necessarily improving efficiency. Kauppi (2013) asserted that organizations ambiguity regarding their practices will seek to imitate other similar firms for legitimacy. My study explored how data governance practices are implemented, what motivations are for these implementations, how industry and similar organizations in the same field help drive these motivations, and how data governance may be adopted and implemented across similar organizations. Kauppi (2013) asserted that organizations use benchmarking as one approach of imitation as associated with institutional theory. My study sought to understand whether data governance is perceived to help organizations achieve their goals and whether data governance outcomes are related to regulatory compliance initiatives by asking related interview questions that relate directly back to institutional theory as the conceptual framework for the research study.

Organizations can be similar in many ways within a given industry. DiMaggio and Powell (1983) spoke to how organizations with similar institutional interests such consumers, suppliers, create an organizational field or industry. My study explored the strategies that organizations use to implement data governance practices and processes, in part to achieve isomorphism and legitimacy in their industry. My single case study took place at a health organization and their health information and data governance processes may be influenced by similar health organizations that fall under the same federal regulations, from the same regulatory agencies related to the protection of health data and

other private data. The organizations in the health care industry demonstrate many of the commonly shared interests explained by the literature.

Stakeholders also play a role in the process of institutionalization. Selznick (1948) noted how the security of all participants and stakeholders of a system become a pressure towards institutionalization. Selznick explained that formal structures are subject to manipulation by the actions of stakeholders as well as the social structure comprised of individual actors in that system. Selznick further explained that organizations are differ yet are alike as adaptive social structures which can be influenced in terms of efficiency and effectiveness. Selznick contended that in larger organizations, deviations from norms turn into unwritten laws or guidelines, and informal associations are established. Selznick explains that institutionalized rules are typically attempts by participants in organizations adapt to the external environment of organizational decisions. Selznick asserted that the relevance of information structures to organizations demonstrate the importance of formal organizations as cooperative systems. Selznick concluded that cooptation as a process of introducing new elements into organizations to avoid threats to stability and legitimization. The literature demonstrates the process by which organizational environments influence and effect changes in policies and processes.

Drivers for change. Institutional theory explains how drivers for change play a significant role. DiMaggio and Powell (1983) explained that sometimes, organizational change can occur as a response to government regulations, such as the adoption of new technologies to conform to new standards or regulations. The outcome of these changes is not necessarily insignificant, and they can alter the organization in the long run.

DiMaggio and Powell argued that other legal technicalities such as budgets, annual report filings, and financial reporting requirements that ensure funds for federal contracts also contribute to shaping organizations. This is related to my study because within the field of data governance, many health care organizations and financial institutions gain funding based upon reporting requirements and compliance with government regulations, which is ultimately demonstrated by the literature on the phenomenon having primarily related back to these two particular organizational fields. Budgetary constraints, reporting requirements, and regulations are all drivers for change.

Another driver for change can be uncertainty. DiMaggio and Powell (1983) spoke to ways uncertainty can also lead to isomorphism. In times of uncertainty, organizations may also feel more apt to imitate other organizations, whether this is through formally defining roles or giving managerial authorities. Firms may adopt aspects of another firm to deal with their own problems if they have been perceived as more legitimate or successful for other organizations. DiMaggio and Powell posited that normative pressures deal with professionalizing workers or their positions. DiMaggio and Powell outlined out that normative pressures and professions are also susceptible to both coercive and mimetic pressures, as are organizations. DiMaggio and Powell asserted that as organizations are affected by isomorphic processes, their effectiveness is enhanced and they may be rewarded for being similar to other organizations in their fields. DiMaggio and Powell further contended that organizational similarity can create ease of transactions between organizations and help for organizational categorization for eligibility for both public and private grants. This relates to my study because it is plausible that similar

organizations within the same industry look to one another for ways in which they should implement policies, practices, or processes to gain funding for hospitals and health care organizations. Pressures and drivers for change are explained by institutional theory and relate to the topic of this research study.

Organizational responses to pressures and drivers of changes are explained by institutional theory. Oliver (1991) contended that organizational capability and motives can be used to help explain organizational responses. Oliver noted that institutional theory has been used to take emphasis away from the possibility that organizations gain power or become dominant based upon organizational decisions. Oliver concluded that institutional theory offers multiple insights into how relations between organizations and their environment as well as how organizations react to organizational processes. Oliver proposed five typical strategic responses by organizations as acquiescence, compromise, avoidance, defiance, or manipulation. Oliver explained that acquiescence is related to imitation and compliance while mimicking institutional models, and how these strategic responses essentially vary from passivity to increasing levels of organizational resistance to new processes. Relationships between like organizations demonstrate the strategic way that processes become norms for organizational frameworks.

Limitations of Institutional Theory. As with many theories, there are some noted limitations of institutional theory. Scott (2008) asserted that he described institutional theory as struggling back in 1987 because of its adolescence, but that today the theory has found more success. Scott posited that institutional theory continues to evolve in its development and use. Scott stated that institutional theory had more

limitations in its earlier days but has reached maturation in recent years, now also being referred to as new institutional theory or neo-institutional theory. In summation, Scott described how the seminal works of the theory overstated the unity, coherence, and independence of frameworks for organizations as organizations would grow and evolve. Scott concluded that institutional theory used to be primarily appropriate for institutions largely shielded from competition, but this has also evolved with more recent research and literature. Institutional theory is now used as a conceptual framework for a variety of research topics and studies.

One noted drawback is that institutional theory sometimes requires another theory to support it for a given study. Bitektine and Haack (2015) added that institutional theories have given little attention to level issues or interactions, even though they are part of the organizational system. Llamas-Sanchez et al. (2013) added that it can be interesting and advisable to integrate different theoretical perspectives along with institutional theory when attempting explain organizational processes or changes, since the shortcomings of one approach can be solved be integrating other views. Evans (2014) reminded us that institutional theory is not a theory for analyzing organizational change, but organizational behaviors such as complex organizational decision making that can prompt change. Zheng, Chen, Huang, and Zhang (2013) added that institutional theory describes how organizational decisions are shaped by external contexts, but not internal contexts of the organization. Scott (2008) noted that after a decade or more, corrections and refinements to the theory were issued to recognize complexity and ambiguity within systems and institutions. Scott also noted that reexaminations of the theory have led to

more of a focus on the process of institutionalization than on norms, assumptions, or limitations. With further developments to institutional theory, it now has a wider applicability than it did prior.

Analysis of rival theories. Rival theories of the conceptual framework that were initially seen as plausible to support the study included structuration theory, agency theory, contingency theory, and stakeholder theory. Mirani (2014) used structuration theory in conjunction with institutional theory to study organizational dynamics behind a company decision to initiate IT services offshoring. Mirani asserted that according to structuration theory, a social system does not possess structure, but exhibits structuring properties such as norms, policies, or procedures and work practices. Therefore, this could have been applicable to my study as far as data governance policies or practices, but I was not focusing on the social system or the way in which it exhibited norms.

Structuration theory goes on to identify main types of structuring properties, but the focus of my study is not to determine the type of structure that may be exhibited – rather, it is determine how to implement actual data governance processes or practices. The focus of my study was also not on how interactions between the agency and organization's other structuring properties helped to shape the decision to implement data governance. Additionally, with structuration theory, the focus is more on the firm as a level of analysis and not so much as the firm as part of an industry. The focus of my study was how other organizations or industry can offer strategies for implementation data governance, and now how the organization itself shaped the decision or

implementation. Finally, the academic literature does not support the idea that need for data governance stems from solely a need to exhibit structure.

Agency theory focuses on principal-agent relationships and problems, where work is delegated and conflicts arise. While studies such as Driffield, Mickiewicz, and Temouri (2014) have used agency theory in conjunction with institutional theory to further their studies by speaking to conflicts that arise surrounding costs, my study did not seek to understand any problems or conflicts that arise. Schnatterly and Johnson (2014) used agency theory alongside institutional theory to investigate whether differences among institutional investors affect investment preferences. Schnatterly and Johnson noted that their study did not yield the preferences by investors that they had anticipated by utilizing agency theory. Schnatterly and Johnson found that there is a need for further integration of agency theory with other perspectives. My qualitative single case study did not look at any conflicts amongst investors or stakeholders as related to the topic of data governance. While suitable theories for conducting research, the aforementioned theories would have lacked in explanatory power for my study and were seen as limited in application when it came to the topic of data governance and my particular study.

Contingency theory was another theory I considered for this study. Waters (2013) explained that the contingency theory has proven to be one of the most valid and reliable measures of an individual's leadership potential. Waters noted that contingency theory can be used to describe leadership styles as well as classify leaders. Waters also stated that situational variables are key factors in identifying leadership style with the

contingency theory of leadership. My study did not seek to utilize situational variables or to focus on the individual. Rather, this study focuses on the firm within an industry. Waters stated that contingency theory can predict what type of situations would prompt individuals to be effective leaders. Waters eluded to the fact that though contingency theory has been often criticized, it still has several strengths such as being able to effectively explain successful leadership. However, I deemed that institutional theory was best suited for my research study.

Stakeholder theory had some interesting affirmations when looking for a conceptual framework. Chakrabarty and Bass (2014) explained that stakeholder theory argues that firms are concurrently responsible to multiple internal and external stakeholders. Chakrabarty and Bass extended that the conflicts faced by internal and external stakeholders influence the boards and firms that they serve. However, Chakrabarty and Bass explained that stakeholder theory does not take into account the possibility that the absence or ineffectiveness of external institutions can strain the ability of the boards to direct firms. The focus of my study was not on how stakeholders exert influence on the organization or how the organization influences the stakeholders. While it is plausible that this rival theory may have been the best suited out of all of these rival theories for conducting my study, the focus of my study was more than just on the boards and firms but also incorporates external pressures such as regulatory bodies and forces. Therefore, I determined that institutional theory was would be best used lens for my research study.

Research Utilizing Institutional Theory

Usage of Institutional Theory in investment decisions & IT adoption. Many research studies have used institutional theory as the conceptual framework. Lim, Saldanha, Malladi, and Melville (2013) conducted a study to examine networks of articles and theories in information systems research to determine which theories were used most. Based on the journals they examined, Lim et al. (2013) found that institutional theory was the fourth most used theory in information systems (IS) research. Bharati et al. (2014) asserted that institutional forces have been frequently used in information systems research as drivers of innovation. Bharati et al. utilized institutional theory to examine institutional pressures in social media assimilation in to identify the limits of institutional pressures. Bharati et al. found that institutional pressures only indirectly influence social media assimilation in their study. Their study was one of the first studies to test the linkage between institutional pressures and IT assimilation. This is relevant to my study because it shows how institutional theory has been used by studies related to information systems research to examine how institutional theory can be used to examine institutional pressures within the realm of the IT field.

New institutional theory has also been used as an extension of institutional theory in some studies. Salge, Kohli, and Barrett (2015) used new institutional theory to identify influencing factors for hospital managers in England when they are making investment decisions. Salge et al. hypothesized that these factors would stem from the hospital's regulative legitimacy due to the critical role that regulation plays in the health care field. Salge et al. found that these hospital managers invest in information systems not only to

find performance solutions but also to achieve continuity, and signal conformity with external norms and expectations. Their study sought to determine the triggers of what drives IS investment decisions was helped by utilizing institutional theory as the framework for examining the mimetics of external pressures. This study is relevant because it shows how influencing factors are related to a hospital's adoption decisions, when regulations come into play. Further, the focus is on the external pressures that influence and drive the decisions surrounding information systems.

Institutional theory has been used to research the adoption of technologies. Messerschmidt and Hinz (2013) used institutional theory as their framework to research obstacles and drivers for adoption of grid computing technologies. Messerschmidt and Hinz found that mimetic pressures and trust played major roles in adoption processes. Pagell, Wiengarten, and Fynes (2013) used institutional theory to explore nation or country, and industry, as two separate institutions, and their effects on the decision to make environmental investments. Pagell et al. found that it's possible that the institution of country will influence not only the level of environmental investments, but all types of investments overall. Pagell et al. concluded that there are significant differences in the level of environmental investments due to institutional of country but also that other external pressures such as regulations and laws play a role as well. These articles are relevant because they show how institutional theory can be used to look at obstacles and drivers of adoptions, as well as how mimetic pressures play a role.

Institutional theory has also been used as a framework for exploring technology adoptions by governments. Zheng, Chen, et al. (2013) conducted a study to investigate

the adoption of government-to-government (G2G) information systems within public administration organizations in China. By utilizing institutional theory, Zheng, Chen, et al. examined how external institutional pressures could sway resource allocation and eventually, investment decisions. The usage of institutional theory allowed Zheng, Chen, et al. to be able to shed light on the G2G adoption by addressing interrelationships and coordination among the organizations. Further, the use of this framework allowed them to be able to focus on the role of external pressures from competitors and other stakeholders. These studies illustrate how external pressures such as regulations and competitors can sway decisions like information systems adoptions.

Some studies have used institutional theory to examine information security. Lopes and Sá-Soares (2014) conducted a study aimed at identifying factors for adopting information systems security (ISS) policies by organizations. Lopes and Sá-Soares used institutional theory as the theoretical framework to better understand the reduced adoption of ISS policies by municipalities in Portugal as well as to determine actions that could help adoption and enhance the institutionalization of the policies. Lopes and Sá-Soares stated that organizations gradually institutionalize organizational practices to face new realities, which cannot be faced using the previously existing organizational practices. Lopes and Sá-Soares refer to institutional theory to examine and classify factors influencing the adoption of ISS policies by organizations while consolidating and proposing these as a set of guidelines or best practices aimed to enhance the institutionalization of ISS policies. Most of these studies are well related to my study because institutional theory was used as a framework to examine information systems

changes by examining external pressures, regulations, competitors, and practices, and by proposing what could be used as a set of guidelines or best practices from the outcomes of the study.

Institutional Theory in practice and policy. Institutional theory has been used as a lens for researching the organizational structure that practices bring to organizations. Lee, Wahid, and Goh (2013) used institutional theory as a base to study perceived drivers of 'go green' practices adoption. Lee et al. considered perceived internal and perceived external pressures such as regulatory, customer, and competitor pressures (coercive and mimetic pressures), as well as normative pressures from employees to their managers. Lee et al. found that thru using institutional theory that organizations sometimes have the desire and need to adopt and adhere to rules and practices created from environmental pressures which were not necessarily the organization's original intent. Lee et al. also found that organizations conform to these pressures to seek legitimacy, and define legitimacy in their own words as the belief that certain behaviors or practices are something everyone in the environment should engage in. Ultimately their study of fast food restaurants in Malaysia that adopted green practices found that several benefits were achieved such as cost savings (efficiency), better firm reputation (legitimacy), sustainability (new norms), and reduced energy consumption.

Multiple studies have used institutional theory to examine the adoption of practices and policies in both the health field and the IT field. Liverani, Hawkins, and Parkhurst (2013) used institutional theory to explore how health policy is a political challenge influenced by institutional structures and other policy decisions. They analyzed

how different institutional mechanisms such as structures, processes, and regulations shaped the use of health evidence. Liverani et al. found that the influence of internal and external donors and organizations as well as other social normal were influences and factors that contributed to decision making in health politics. The proposed case study will examine how institutional mechanisms and external pressures influence organizational structure that uses and governs data and information.

Institutional theory has interestingly been used to tie governance to corporate social responsibility. Young and Thyil (2013) used institutional theory as a framework to study the relationship between corporate governance practices and corporate social responsibilities. Young and Thyil stated that by using institutional theory, they would be able to highlight the comparative and contrasting nature of corporate governance across both developed as well as developing countries. Young and Thyil concluded that implications for policy makers and corporations were that copy-cat (mimicking) approaches to corporate social responsibility are not optimum. By using institutional theory, Young and Thyil were able to conclude that corporate governance really needed to be viewed from the context of each country's institutional and national frameworks. This literature demonstrates the applicability of institutional theory to governance related studies.

Other research has approached institutional theory from broader angles. Cornelissen, Durand, Fiss, Lammers, and Vaara (2015) analyzed how communication be put into the front and center of institutional theory to analyze how communication practices can create a process or approach known as communicative institutionalism.

Cornelissen et al. sought to bring attention to communication in institutions since it is primarily via communication processes with structuring effects that institutions exist and take shape. Cornelissen et al. concluded that institutional theory has become one of the most important theoretical perspectives in management and organizational research, with even further reaching trends. Cornelissen et al. examined how communications could be an effective aspect of institutional theory to address other cognitive based theories or models and sought to introduce new concepts incorporating communication with institutional theory.

Institutional theory has also been used as a framework for studies related to adoptions other that IT adoptions. Kauppi (2013) used institutional theory as a viewpoint to examine isomorphism and the adoption of strategies and practices surrounding management operations and supply chains. Kauppi stated that institutional theory could offer important insights into adoption of tools and practices within operations management (OM) and supply chain management (SCM). Kauppi concluded in his findings from these existing studies that external institutional pressures do not always lead to efficient outcomes in adoption decisions. Kauppi's assimilation of papers illustrated how institutions conform to pressures and influences. This is important and relevant because my study sought to examine how data governance decisions are made based upon pressures or influences.

Institutional theory in regulatory functions. A number of studies have used institutional theory to examine regulatory functions. Baker, Bedard, and Prat dit Hauret (2014) asserted in his study that the effects of Sarbanes-Oxley on the U.S. regulatory

structure has created improvements for auditing quality, and that from the perspective of new institutional theory, can be seen as an example of coercive isomorphism since changes to the structure of regulations were imposed by forces external to the auditing profession. Therefore, Baker et al. used institutional theory to examine the regulation of statutory auditing and to discuss how statutory auditing regulation has evolved using this perspective. Baker et al. also examined the process in which France and Canada changed their auditory regulatory structures in a process of institutional mimeticism which symbolically copied the structures created in the USA. Baker et al. found that in France, it was important to enact a law which created a regulatory structure having similarities to the regulatory structure in the U.S. pursuant to the Sarbanes-Oxley Act. Baker, et al. were able to contended that a highly institutionalized field exerts pressures on regulatory structures and regulatory bodies due to the power of the state and other external forces which influence the regulatory structures into adopting practices consistent with expectations.

Some studies have examined how institutional theory is a relevant framework to examine auditory functions and new ventures. Elbardan, Ali, and Ghoneim (2015) investigated how internal auditory functions respond to both the introduction of enterprise resource planning (ERP) systems as well as corporate governance external pressures. Their study which focused on internal ERP pressures and the external pressures of governance found that these two institutional logics affected internal audit change in order for the organizations to maintain legitimacy. Lovvorn and Chen (2013) also used institutional theory to examine and discuss how new ventures are affected by

institutional forces to select organizational structures as well as to better understand how these new ventures gain legitimacy where no organizational structure has existed prior. Lovvorn and Chen posited that institutional theory offers compelling theoretical arguments for how these new ventures choose which type of structure to enact, whether it is based upon an established organizational field, or whether it is a structure of a newly emerging organizational field that they are trying to match.

Institutional theory has been used across multiple fields to study topics such as governance, IT, banking, and accounting. Griffith et al. (2015) applied institutional theory to study how institutional pressures can shape the practice of accounting and complex audit estimates. Griffith et al. asserted that U.S. and international standards as well as external pressures add to the uncertainty of fair valuations. By using institutional theory, Griffith et al. interpreted this process to gain and provide insight into the underlying causes of these difficulties and impediments to determine whether there are changes that could help to resolve them. Griffith et al. found that institutional theory further suggests that firms apply the verification frame to audits of estimates, even though it is not optimal for the task but because it's been legitimized by other audit tasks. Griffith et al. found that their study was highly supported by many of the key suggestions and propositions of institutional theory. The study by Griffith et al. was important because it showed how institutional theory can be used to examine and interpret processes and determine what impediments or barriers to practices or processes may be. Griffith et al.'s study is also important because by using institutional theory, they were

able to examine how influencing factors such as regulations play a role as an external pressure when researching changes to processes.

Much research utilizes institutional theory to analyze newly established or proposed regulations and legislation. Petracci and Rammal (2014) used institutional theory to highlight the role the Italian government can play in developing the regulative elements that facilitate the establishment of the Islamic Financial Services (IFS) sector. Petracci and Rammal were able to better understand the role of the state and the central bank in attempting to regulate the sector, by utilizing institutional theory. Petracci and Rammal emphasized that the regulative element of institutional theory and the role it plays in establishing normative social obligations and expectations in regards to the IFS sector. These regulatory elements are better understood with institutional theory.

The literature describes how institutional theory has been used to address boards and committees. Terjesen and Sealy (2016) used institutional theory to gain insights into board gender quotas and the implications for practice and policy by analyzing the considerations of motivations, legitimacy, and outcomes as related to ethical concerns regarding quotas. Terjesen and Sealy applied institutional theory by gaining insights as to whether new regulations such as board quota legislations are motivated by integrity or compliance and to determine how organizations would respond to this type of institutional pressure. Terjesen and Sealy asserted that the quota process usually involves individuals that claim legitimacy for processes and by identifying institutional pressures to try to normalize the claims they are making. Terjesen and Sealy used institutional to answer questions such as whether post-quote female directors were perceived as

legitimate and determine what the definition of an effective quota outcome was, while noting that board gender quota outcomes can be influenced by stakeholder groups as well as firms themselves. Terjesen and Sealy therefore applied institutional theory to examine motivations, implementations, and legitimacy concerns.

Many studies have often used institutional theory to examine external pressures. Doshi, Dowell, and Toffell (2013) employ institutional theory to study mandatory information disclosure regulations as external pressures which organizations respond to. Doshi et al. surmised that greater improvement would be seen in establishments subject to these greater internal and external pressures. Doshi et al. found that institutional theory helped to illuminate that for policymakers, designing information disclosure programs depends in part on the industrial organization of its target population. Wang, Che, Fan, and Gu (2014) also apply institutional theory to study accounting information disclosure quality. Wang, Che, et al. hypothesized that the more institutional pressures for the company, the higher the quality of its economy accounting information disclosure. Wang, Che, et al. found that ownership governance and institutional pressures were the main determinants in enterprise circular economy accounting information discloser quality in China. Wang, Che, et al. found add that these companies have higher information disclosure due to ownership concentration, shareholding of institutional investors, mandatory disclosure, capital structure, and asset size as internal and external pressures.

Behavior and motivations within an organizational culture can also be analyzed using institutional theory. Kim and Kim (2015) conducted a study to investigate institutional, motivation, and resource factors that influence health scientists' data-

sharing behaviors. Kim and Kim's framework employed institutional theory and sought to determine factors that affect researchers' sharing behaviors as they are associated with funding requirements and funding agencies. Findings suggested that regulative pressures were significant when it came to data sharing behavior, as well as motivational factors. Kim and Kim also concluded that data governance policies would be beneficial to exceed privacy risks on the path to well-stablished data-sharing practices. Wang et al. (2014) employed institutional theory to evaluate knowledge sharing in firms. Wang et al.'s results refer to the increased influence of institutional norms on employee knowledge sharing. Stewart (2012) asserted that case study research has a long history in governance related research while playing a significant role in the growing field. These studies used institutional theory in regulatory functions tie to my study because some of my interview questions also seek to understand how the phenomena of data governance affects or is affected by regulatory functions.

Data Governance

Data Governance as an applied IT problem. Data governance has become applied IT problem worthy of research to aid professional practice. If an organization has an IT infrastructure and has data, it needs data governance (Gregory, 2011). Egelstaff and Wells (2013) asserted that historically the roots of data governance extend back to the earliest days of the organizational application of computing. Mahanti (2014) and Demarquet (2016) contended that that data governance encompasses the people, processes, and IT required to create a consistent and proper handling of an organization's data across the entire organization. Andronis and Moysey (2013) maintained that IT

provides the tools and skills necessary for the management of data in data governance initiatives. Egelstaff and Wells stated that data governance involves IT, security techniques, and a code of practice for information security management. Tallon (2013) added that data governance practices are necessary to understand and mitigating risk factors to data and information. From these authors it is evident that data governance spans across the field of IT.

Data governance also has social implications. According to Tallon (2013), data governance practices have a social and, in some cases, legal responsibility to safeguard personal data that, if compromised, could threaten personal privacy. Ping-Ju, Wu, Straub, and Liang (2015) asserted that effective governance practices can lead to easier and better decision making and better strategic alignment between IT and organizational performance. Nahar, Imam, Tickle, and Garcia-Alonso (2013) spoke to the need for data governance in medical informatics where there is a lack of available data and lack of standard practices. Finally, Gregory (2011) noted that the effects of poor data governance include risk of data theft and loss, risk from breaches of data privacy and/or regulatory compliance, as well as the risk of damage from poor data quality. We can see that the literature has noted many benefits of solid data governance while realizing the effects of poor data governance.

The literature describes how data governance is beneficial in many areas of an organization. Burniston (2015) asserted that data governance not only helps with meeting compliance requirements; it can help organizations gain a deeper insight into the behavior of their customers to make critical business decisions. Reeves and Bowen (2013) stated

that the need for effective data governance is ubiquitous across all clinical, financial, and operational information systems. Fruehauf et al. (2016) added that as health care, industrial and governmental institutions confront the new era of big data and data warehousing solutions, the need for a sound data governance strategy is paramount. Hay (2015) advanced that data governance is needed to ensure the accuracy of information that is presented to end users. Reeves and Bowen contended that data governance deliverables for health care specifically, include data governance programs that deliver strategy, organization, technology and architecture, investigation and monitoring, policies, as well as procedures. These authors portrayed the increased need for data governance in businesses and organizations going forward.

There are common reasons why data governance implementations can be unsuccessful. Hay (2015) noted that when governance initiatives fail, it's been weak connections between data stewards who own the domain of information, business users who consume it daily, and IT staff who manage it. In addition, awareness, or lack thereof, of the technology that is used to manage and maintain electronic data has a major influence on a subject matter expert's ability to develop a data governance strategy (Begg & Caira, 2012). Thompson et al. (2015) explained that members of the public often assume that the authorities are well equipped to handle personal data; however, due to implementation errors and lack of data governance, this is not always the case. Nahar et al. (2013) added that problems persist in the medical domain due to a lack of effective data governance, and that inaccurate data is even costlier in this domain than others with the consequences of misdiagnosis and erroneous decisions. It is evident that

misunderstandings surrounding data governance can lead to unfortunate implications spanning organizational fields and industries.

Data governance poses implications for many organizations. Watson and McGivern (2016) asserted that some organizations approach data governance as the correct thing to do while some organizations such as those less affected by federal regulations may be still resisting it, seemingly waiting for regulators to intervene or for unforeseen negative events them to do the right thing regarding data governance. Watson and McGivern stated that what is clear is that data governance is more than just the right thing to do, and that the costs of not doing data governance could be even more costly when doing business. Watson and McGivern concluded that the costs of data governance can seem high until you consider the implications of having bad data. Organizations must decide what flavor of data governance best suits them and design a strategy.

Data governance defined and explained. Data governance is far reaching across organizations. Begg and Caira (2012) and Egelstaff and Wells (2013) acknowledged that the definition of data governance continues to change and evolve throughout organizations and enterprises. Demarquet (2016) maintained that data governance includes all the processes necessary to maintain and change data. Reeves and Bowen (2013) defined data governance as the exercise of authority and control over the management of data assets across an entire enterprise. Suer and Nolan (2015) purported that according to the COBIT 5 model, data governance encompasses the following four elements: clear information ownership, timely, correct information, clear enterprise

architecture and efficiency, and compliance and security. From the literature we can see that data governance has to do with more than just data alone.

Data governance is essentially an overarching approach to IT data management functions. Gregory (2011) defined data governance as the business practices that define and manage strategies for people, processes and technologies to ensure that valuable data assets are formally protected and managed throughout the organization. Bruhn (2014) stated that data governance can also establish checks to ensure that data collected supports an organization's priorities, while Thompson et al. (2015) agreed that the activities undertaken through a data governance initiative provide checks and balances. Tallon (2013) agreed that finding data governance practices that maintain a balance between value creation and risk exposure is a new organizational imperative. Thompson et al. advanced that in short, data governance is simply the government of data and focuses exclusively on the management of data assets. As you can see, data governance covers the spectrum of people, processes, and technologies that come into contact data as a high value asset in organizations.

There are multiple facets of data governance within the IT realm. Mahanti (2014) argued that data governance embodies a convergence of data quality, data management, data policies, business process management, and risk management surrounding the handling of data in an organization. Mahanti posited that data governance designates accountability for information quality in the form of data owners and data stewards. Mahanti further explained that data governance tracks and enforces conformance to data policies, standards, architecture, and procedures. He contended that data governance

helps maintain and manage high-quality data by enforcing data quality standards, policies, and procedures, across business functions and establishing ownership of data. Mahanti purported that data governance makes sure the business is involved appropriately, issue resolution processes include both technical and business stakeholders, and metrics are pushed directly to the relevant data stewards and owners. These authors portrayed the strong need for multiple data stewards and ownership roles surrounding data governance.

Implementing data governance requires a design that fits the organizational culture. Egelstaff and Wells (2013) argued that data governance needs to be developed as a unique attribute of each organization. Data governance best practices continue to evolve. Tallon (2013) asserted that policies that strike a balance between acceptable and affordable risks are the key to an effective data governance regimen. Swoyer (2016), Tallon (2013), Chapple (2013), Tallon, Short, and Harkins (2013), Watson and McGivern (2016), as well as Reeves and Bowen (2013) posited that a one-size-fits-all approach to data governance is not going to work. Tallon (2013) advanced that a one-size-fits-all approach is unlikely to succeed, and that organizations should choose from a broad list of possible data governance practices modified for their particular industry and circumstances. These authors agree that data governance must be a unique effort within organizations and that it cannot be ubiquitous across organizations.

Data governance extends throughout IT and the organization. Thompson et al. (2015) added that data governance operates at multiple levels within the organization. Thompson et al. noted that data governance responsibilities are shared across business

units to aid in shared decision making. Andronis and Moysey (2013) further agreed that data governance in fact extends through into the operational domain of the organization since it is in that context that the business data is created. Andronis and Moysey contended that every organization is different and the appetite for data governance will vary accordingly. The long and short of it is that there is no single best method or approach to data governance. It is evident that data governance affects multiple levels within an organization and that there are many levels of decision making that are related to data governance efforts.

Data governance is often closely linked to data management, information management, and risk management in the literature. Kerle (2015) asserted that data governance is essentially a best practice for managing risk information. Burniston (2015) further explained that data governance is a core element of risk management, as data governance activities can facilitate organizational growth through improved decision making. Burniston (2015) extended that data governance involves data integrity, data accuracy, and data stewards to handle data, as well as enterprise data management to ensure the reliability and validity of data. Pinfield, Cox, and Smith (2014) added that data governance is a concept that involves multiple activities carried out by various actors addressing a range of drivers and influenced by a large set of factors. Pinfield et al. explained that with data management, components include strategies, policies, guidelines, processes, technologies, and services. These authors outline that data governance can assist in risk management efforts and that data governance efforts are related to other policies and guidelines in IT.

Data governance as related to data management or information management. Data governance can cover information and data management. People have differing understandings of what data governance involves (Gregory, 2011). As noted earlier, data governance is considered a central data management function in that its influence is felt within all of IT and data management disciplines (Thompson et al. 2015). Gregory (2011) stated that while for some people data governance is about security or quality, and for others it is about privacy and compliance with regulations, it actually covers all of these factors and beyond. Egelstaff and Wells (2013) articulated that having the capacity to solve problems and at the same time be consistent to the demands of data governance means that many organizations and individuals will have to mature their current approaches to data management and decision making. In the academic literature, there is prevalent evidence that the terms data governance, data management, and information management are oftentimes used interchangeably. Data governance has been referred to as data management, information management, and also a component of overarching information management policies. Furthermore, academic literature describes data governance as overarching and encompassing of data management activities. We can see that some organizations may refer to their data governance efforts as data management or information management depending on the organization and the industry.

The term data governance typically encompasses data management efforts. Mahanti (2014) stated that data governance embodies data management. Dahlberg and Nokkala (2015) added that data governance is well related to daily data management

functions. Further, Dahlberg and Nokkala's suggested framework for data governance is based off of the Data Management Body of Knowledge (DMBOK) regarding data management functions. Johnson (2015) declared that the obvious starting point is defining data management policies over which data governance structures can oversee adherence. Andronis and Moysey (2013) pointed out that data governance roles include executive sponsors setting the strategic direction for data management, policies, standards, and practices. Data or information management strategies and data governance strategies can be seen as one in the same when it comes to setting policies and guidelines.

Many organizations are not sure how to go about data governance or do not know what it entails. Andronis and Moysey (2013) asserted that recognition of the importance of data to core business processes and outcomes has increased, but when it comes to information management, or more specifically, data governance, many organizations are not sure how to approach it, where to start, how much is enough, or how to make it stick. Tallon (2013) pointed out that as data changes over time, data governance practices may also need to be changed, therefore data governance and information management are more and more strategic. Academic literature advances that at least in the industry of health care, the old term of medical records has now become health information management (HIM) which embodies all of health care's data initiatives. Hovenga and Grain (2013) asserted that in health informatics they refer to information, data, as well as the term concepts. Hovenga and Grain also noted that in addition to routinely collected clinical data, there are many other widely distributed sources of health related information using a variety of vocabularies or terminologies. Hovenga and Grain

described how health informaticians tend not to classify themselves into the information and communication technology occupational category as sometimes this only occupies 50% of their roles. Hovenga and Grain concluded that some of these roles are very clinically oriented while others can be more relevant to information management. These authors demonstrated that data governance is more commonly referred to as information management or health information management in the health care industry.

Data governance within the health care industry can involve numerous aspects of data and information management. Hovenga and Grain (2013) noted that information systems are generating large amounts of data in the health care industry and this requires that data governance principles are applied. Hovenga and Grain referred to data and information interchangeably and assert that real time clinical data and information have the ability to lessen the amount of time for knowledge sharing. Hovenga and Grain referred to the term big health data as usable information that can be presented and analyzed immediately while being essential for new knowledge. Hovenga and Grain explained that health data is particularly complex since information is derived from multiple complicated health systems. Further, Hovenga and Grain explained that data governance needs to identify how to integrate health data assets to produce high quality information safe to use in clinical decision making. Hovenga and Grain asserted that the scope of data governance includes the specification of data elements, the relationship to other information, and the way it is represented. Hovenga and Grain explained that concepts are things represented by data contexts, which when seen with other data provides information about individuals in health care, so detail is required to ensure

clarify when descripting information in patient's health records and in the health care field. Hovenga and Grain described data as taking many forms in the health care industry to include clinical information representation which encompasses what is processed in health information systems. Hovenga and Grain eluded to the fact that data and data elements are part of health information management in health care systems and that they are at the core of data governance.

Data governance practices and tasks related to health care. Data governance practices can vary within health organization and involve multiple stakeholders**.** Tallon (2013) noted that a study of data governance practices at 30 large US organizations including Intel, Visa, Google, Johns Hopkins Medicine, AT&T, the American Red Cross, Limited Brands, Alaska Air, AstraZeneca, and Nissan uncovered evidence of three types of data governance: structural practices, operational practices, and relational practices (See Table 1). Tallon (2013) explained that structural practices classify IT stakeholders and their roles or such as data ownership and creating benchmarks data governance. Tallon (2013) explained that operational practices include the way that organizations perform data governance practices including migration efforts, access rights, and more. Tallon (2013) further explained that relational practices define and formalize how roles relate amongst management and data stakeholders for education and planning efforts. We can see that the types of data governance practices described affect many key IT stakeholders and players.

Table 1

Data Governance Practices

Structural practices
• User involvement in policy setting and evaluation
• Steering committees or other means to assess data value and costs
• Creation of data ownership/stewardship rights and responsibilities
Operational practices (span all stages of the information life cycle)
• Enact retention policies/possible autodeletion or archiving of data
• Determine backup and recovery practices and parameters
• Establish and monitor access rights
• Set service level for protection of different types of information
• Establish chargeback procedures to recover operating costs
• Monitor risk factors that contribute to value-at-risk
• Migrate data between storage tiers based on defined criteria
• Plan and provision storage capacity
• Establish e-discovery and archival procedures
Relational practices
• Educate users and non-IT managers regarding storage utilization and costs
• Develop communications regarding policy effectiveness and user needs

Note. Reprinted from "Corporate Governance of Big Data: Perspectives on Value, Risk, and Cost," by P. Tallon, 2013, Computer by IEEE Computer Society, http://dx.doi.org/10.1109/mc.2013.155. Copyright 2013 by IEEE Computer Society. Reprinted with permission (Appendix B).

The role of many health care workers has changed given expansive amounts of data and information. Gibson, Dixon, and Abrams (2015) stated that health information management provides in-depth knowledge for the data governance initiatives and standardization. Gibson, Dixon, et al. asserted that clearly defined boundaries are disappearing when it comes to activities surrounding data and information managed by HIM and health informaticists. Abrams, and Crook (2015) asserted that the role of HIM professionals is expanding and that HIM professionals ensure quality health data is

available, effective data collection and coding, as data categorization. It is evident that in the health information management arena, there is a need for standard practices that clearly encompass all types of data and the usage of that data.

Many HIM workers have adapted to the needs of health information management and data governance in the health care industry. Gibson, Abrams, et al. explained that HIM professionals are skilled in data analysis, information management, and practices needed for maintenance and management of the information lifecycle throughout its maintenance, protection, access, use, retention, and final disposal or destruction. Gibson, Abrams, et al. contented that essential health information must be available for doctors, and HIM professionals play a key role in managing the information. Gibson, Abrams, et al. explained that HIM professionals adapt to the increased use of health IT and that their roles have expanded towards health informatics and information governance principles. Gibson, Abrams, et al. described how HIM professionals are skilled in change and project management, data analytics, and electronic health information systems. Finally, Gibson, Abrams, et al. defined the HIM skillset of strengths as the management and maintenance of health data and information processes, outlining new information management technologies, working with information technologists, and other practices.

Organizational tasks can help support data governance initiatives. Nahar et al. (2013) noted that data cleansing should be seen as an essential task from a data governance perspective. Organizations collect and store multiple types of data. Hovenga (2013) asserted that a key issue today is the need to harmonize all data collected to support better use. Harmonizing data collection specifications as such is a significant data

governance task. Hovenga (2013) contended that the multiple data collections within health care systems warrants tasks that can support data quality and synchronization. Creating standards across data collections such as national health dictionaries provide valuable tools which require effective data governance. It is the role of health information managers, informaticians and governors to ensure that all data collected can be sorted and linked in a variety of ways to produce the best data deliverables for all purposes and decision makers (Hovenga, 2013). Standardization and best practices in data governance could prove to be essential within a health care system.

It is important for organizations to decide how to manage and maintain data that is required for reporting and other essential purposes. It is through data and information that are collected and maintained, that health care problems are solved (Egelstaff & Wells, 2013). Hovenga and Grain (2013) discussed other health care related data governance tasks as determining and enforcing rules regarding how to best relate disparate data to commonly understood concepts, identifying how to integrate data sets to produce high quality information for use in sound decision making, and ensuring that data is useful, up to date, and relevant for policy. Hovenga and Grain explained that data governance requires the specification of data to support required consistency and comparability effort. Hovenga and Grain argued that data governance practices also include the approval of new or modified data sets, data elements such as metadata, and accompanying data standards. Hovenga and Grain contended that creating data risk management as a key factor of data governance processes is also necessary. Hovenga and Grain (2013) posited that data governance tasks and practices include ensuring that data

collection, processing, and analysis is done in the most efficient manager and that data is available for effective use. Data governance involves ensuring that data is reliable, usable, and effective for management to be able to make sound decisions.

Data governance roles and stakeholders. Multiple stakeholders play a role in data governance implementations. Hovenga and Grain (2013) asserted that data governance must have input and agreement from all stakeholders. Rubino and Vitolla (2014) highlighted the importance of understanding the roles and responsibilities related to all processes as a requirement for effective governance. Rubino and Vitolla added that the roles and responsibilities must be properly defined, allocated, and formalized. Ferguson (2013) states that the position of the Chief Information Officer (CIO) or other senior IS executives within the organizational hierarchy provides an indication of the power of the IT function within the organization. Ragan (2013) agreed and adds that many organizations have an individual with the title of Chief Information Officer (CIO), but that in today's organizations, the CIO cannot be solely responsible for governing all information issues. Watson and McGivern (2016) further agreed and suggested that data governance should report to the CEO or CFO, as is the case in many best practices corporations. Gibson, Abrams, et al. explained that the expertise of HIM professionals that work with data governance have job roles such as the Director of Health Information Management, Manager of Health Information Management, Health Information Management Specialist, and Health Data Analyst. All roles related to data governance within an organization should be decided during the design of data governance implementations.

All roles as related to data governance within an organization should be clearly defined. Felici, Koulouris, and Pearson (2013) discussed the need for roles and responsibilities to be clearly defined for data governance within cloud environments as well. Felici et al. (2013) explained that the data governance roles and responsibilities will continue to change as data moves to cloud type environments or virtualized environments where providers and consumers work interact, and other stakeholders are involved. Furthermore, Hay (2015) eluded to the fact that ultimately everyone must be involved, engaged, and participative to ensure that data is entered correctly and can therefore be trusted. From this literature we can divulge that there are many key players in data governance regardless of the type of environment that the data is housed in.

Some studies related to governance initiatives have analyzed governance boards as governance stakeholder groups within organizations. Stewart (2012) studied how governance processes might be strengthened depending on governance boards and their member characteristics. Stewart's study hypothesized how governance implementation arrangements may be more representative and responsive to ideas, experiences, and interests when a board is all inclusive and contains actors, members, or stakeholders from vertical constituents such as across state and non-stage agencies, rather than more horizontal alignments of all interagency stakeholders. Trope, Power, Polley, and Morley (2007) expanded upon this and assert that the role of boards of directors now extends to ensuring a company's data is actively managed through data governance. Turel (2014) conducted a study on board-level inclusion in overall IT governance that can lead to increased organizational performance. Having clearly designated roles for organizational

officials that ensure effective data governance can ensure adequate management of such efforts.

Other studies have analyzed the need for governance committees as part of the organizational hierarchy. Grossman and Siegel (2014) recommended the use of governance committees. Thompson et al. (2015) stated that depending on the scale of the organization, a dedicated data governance office may also be established. While there is much literature on IT governance, corporate governance, enterprise governance, and information governance, it is certainly important to make the distinctions amongst the interrelated types of governance. Tallon, Ramirez, and Short (2014) broke down the literature in regards to IT and information governance, while framing IT governance as being over the actual IT artifacts, and key findings showing that information governance encompasses more of data principles, access, describing key players involved, and being dependent upon business strategies. Tallon, Ramirez, et al. (2014) asserted that information governance has more to do with decision maker roles, tasks, and responsibilities. Data governance requires clearly outlined players and stakeholders as well as what their roles encompass in regards to data governance and information management.

Data governance models and frameworks. Organizations looking to implement data governance must first look at their needs for data governance practices. Begg and Caira's (2012) research revealed that the optimal use of data governance frameworks requires that those with authority and responsibility over enterprise data must have knowledge and some understanding of the terminology that describes data, data-related

issues, and data-based technology and this requirement may not be met for many subject matter experts. Egelstaff and Wells (2013) noted that to meet requirements and conform to rules specified to protect data from misuse, that this frequently requires users to change their practices around their business and adopt new practices consistent with their data governance framework. Rubino and Vitolla (2014) agreed that some of the same best practices can assist in achieving overall corporate and IT governance. Organizational best practices should certainly be considered when deciding requirements for data governance practices.

Several data governance frameworks exist and can be used as an underlying framework for such implementations. Egelstaff and Wells (2013) pointed out that the US Department of Defense (DoD) has been a major sponsor for the development of data governance frameworks and worked with numerous organizations to implement such frameworks. Egelstaff and Wells pointed out how the DoD worked with universities such as MIT and Harvard, as well as companies such as IBM and Honeywell to come up with both formal and informal governance frameworks. Egelstaff and Wells noted that many of the frameworks were built around data dictionaries and data directories (DD/D) which ensure data is stored and constant for all programs that require a view of the data. In other words, the DoD frameworks had great implications for data consistency. Data governance models and frameworks can be useful when adopting new data governance practices.

No single data governance framework is going to be the solution for all organizations. Egelstaff and Wells (2013) stated that one important observation related to

data governance is that there has been no single universal data governance framework developed. Many companies such as IBM have come up with reasons and techniques for data governance but also still recognize that organizations must develop their own strategy towards data governance (Egelstaff & Wells, 2013). However, there is a lack of information provided for implementing data governance, which my study hopes to address. Egelstaff and Wells conclude that efforts to establish data governance frameworks for national health data record keeping are still in their early stages. Organizations should look at industry best practices and guidelines related to data governance implementations.

Other data governance models have been used for understanding organizational data. Gregory (2011) noted that the Data Governance Maturity Model (DGMM) can also be essential to planning a strategy for implementing data governance. Gregory explained how the DGMM model is invaluable for giving a precise measure of data governance today as well as in the future. Gregory focused on the fact that organizations of any size can use this powerful maturity model to understand their current data capability which was first developed for IT governance. As the amount of regulations increase, organizations need to incorporate more resources to the data governance than they have prior (Gregory, 2011). Gregory (2011) pointed out that it is a long term process to improve an organization's data governance maturity level and that it encompasses all of the characteristics of the different stages shown in Figure 2 below. The path to data governance optimal maturity can be a long process.

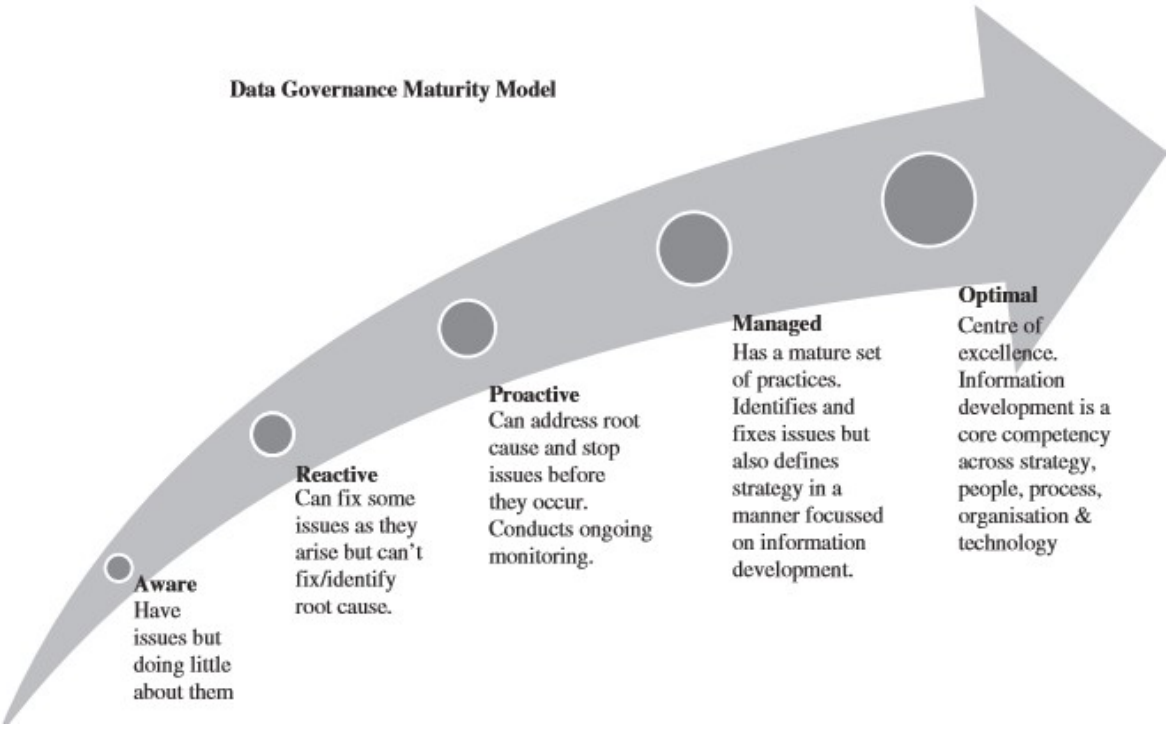

Figure 2. The data governance maturity model. Reprinted from "Data Governance: Protecting and unleashing the value of your customer data assets." by Adrian Gregory, 2011, Journal of Direct, Data, and Digital Marketing Practice, 12(3), p. 239. Copyright 2011 by Macmillan Publishers LTD. Reprinted with Permission (Appendix B).

It is recommended to start data governance initiatives by looking at data governance best practices. Both Suer and Nolan (2015) and Demarquet (2016) offered suggested sets of best practices for data governance. Suer and Nolan note that after CIO's have established processes and technology, they need to make sure information and data owners can make decisions about data definition, data classification, data security and control, and data integrity. Suer and Nolan (2015) pointed out that enterprises need to standardize a data architecture that creates a single integration layer among all data sources. As part of their data governance best practices recommendations, Suer and Nolan recommended to start with an information strategy, people, processes, and

technology, in that order without trying to do it all at once. They also recommend implementing data governance strategies one initiative at a time.

It is important to note why these data governance models and frameworks were not chosen for the conceptual framework that this study is grounded upon. These models and frameworks are few, and they lack in-depth information surrounding the phenomena of data governance. Some of these best practices initiatives, maturity models, and data governance models and frameworks are the best known in the industry however they lack substance, strategies for implementation, direction for organizations wanting to adopt data governance, and they focus on smaller key aspects of data governance such as its maturity, risk transparency, or data consistency. Institutional theory as the chosen conceptual framework for this study will allow me a greater lens by which to view all aspects of the phenomena of data governance while focusing on identifying strategies that can be used for its overall implementation. Hopefully the identification of such strategies may themselves be used in the future by organizations looking for a set of best practices, strategies, and guidelines for data governance implementations.

Much of the literature also addresses risk management when it comes to data governance frameworks. Tadewald (2014) suggested a model in which governance, risk, and compliance (GRC) are under the same umbrella with interrelated activities. Meanwhile, Suer and Nolan (2015) recommended using COBIT 5 model for delivering information and data governance, and some of the enablers listed under the COBIT 5 model also include management and transparency of risk. From this, you can see the similarities of models suggesting that risk and compliance tie in with data governance.

Egelstaff and Wells (2013) added that frameworks such as the Information Technology Infrastructure Library (ITIL) and COBIT do data governance and much more. As Suer and Nolan pointed out, using COBIT 5 to deliver information and data governance has organizations begin by defining their information data system while holding IT accountable for fostering the definition of, as well as the ownership of, information data, and their systems.

Data governance models and frameworks can serve as a basis for regulatory compliance and more. Devos and Van de Ginste (2015) spoke to COBIT 5 being valid and useful for governance, specifically overarching IT governance, and list the five key principles of this framework as: meeting stakeholder needs, covering the enterprise end-to-end, applying a single, integrated framework, enabling a holistic approach, and separating governance from management. Tadewald (2014) contended that many organizations are implementing frameworks that cover both governance and risk as an enterprise management approach. Silic and Back (2013) posited that essentially, this type of an approach to governance frameworks provide support when it comes to regulations, legal aspects, as well as environmental risk. Utilizing a model or framework can prove valuable when it comes to having a hierarchy of responsibilities and an approach that can meet the needs as far as transparency and meeting regulations.

Data governance models related to the health care industry show what data stewards are involved. Andronis and Moysey (2013) provided a high level model for data governance (see Figure 3). Andronis and Moysey stated that a model for data governance must first provide a strategic context in which data is considered, then ensure allocation

of ownership so that it is both manageable and aligned in a way that allows each data owner to be key user of the data domain for which they are responsible. Andronis and Moysey discussed how a governance model must include effective engagement with IT as well as confine its focus and influence to the data domain. Andronis and Moysey stated that a high level model for data governance must include the following characteristics: executive sponsorship, data owners for given data domains, a governance lead, governance working teams that align with data domains, the inclusion of data stewardship for day-to-day responsibilities, as well as the inclusion of support functions including IT to play the integral technical role and manage the data for the enterprise. This model provides a basis for hierarchical roles in a data governance design.

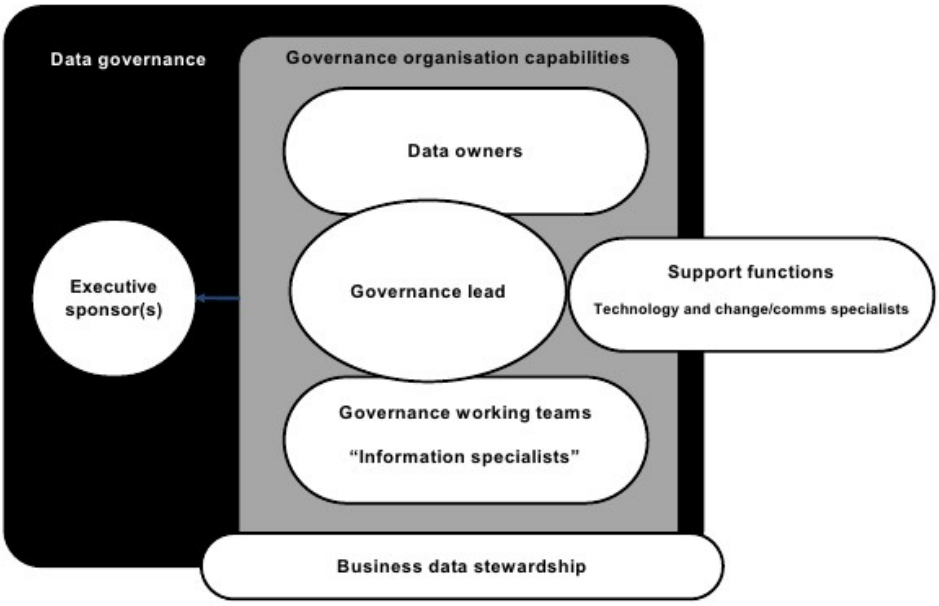

Figure 5: High level model for data governance

Figure 3. A high level model for data governance. Reprinted from "Data Governance for Health Care Providers," by K. Andronis & K. Moysey, 2013, Studies in Health Technology & Informatics, 193, p. 307. Copyright 2013 by the authors and IOS Press. Reprinted with Permission from both (Appendix B).

Some frameworks can be used for more than just data governance. Dahlberg and Nokkala (2015) found that respondents consider data governance to be highly significant and provided clear support for the development of data governance in general as and for proposing a data governance framework. Dahlberg and Nokkala first looked at corporate governance and IT governance as a path to then being able to better understand data governance. They then propose a framework for the governance of digital data. Dahlberg and Nokkala assert that data governance is well related to essential daily data management functions. Dahlberg and Nokkala concluded with a suggested framework for data governance that is based upon more of a corporate governance perspective. That framework is based off of the Data Management Body of Knowledge (DMBOK) as well as the ISO/ISE 38500 standards. This framework is related to data governance as well as many facets of data management and corporate governance.

Certain models demonstrate how to share data across industries. Bertot, Gorham, Jaeger, Sarin, and Choi (2014) discussed the need for a big and open data governance model that should consider privacy, data reuse, data accuracy, archiving and preservation, data curation, support of libraries, the development of sustainable data platforms and architecture, the development of data standards, as well as the encouragement of data sharing policies across sectors. Bertot et al.'s (2014) study suggested that future research should consider all of these aspects and develop a big and open data governance model for the purpose of supporting the great need for sharing data across industries and sectors, and the need for greater collaboration regarding data. This author stresses the importance

of big and open data governance models for all industries and sectors that can be used in a knowledge sharing type of fashion.

One of the underlying needs for data governance stems from the vast amounts of unstructured data that exist. Das and Kumar's (2013) study sought to propose frameworks for dealing with underlying issues such as unstructured data, to also demonstrate the need for data mining and data analytics as part of an overall strategy. They state that traditional data management processes cannot cope with the heterogeneity and variable nature of large data sets. Das and Kumar posited that data management practices cannot keep up with the amounts of variable data in big data nowadays, so suggest a framework to support data-intensive applications. Das and Kumar's proposed framework utilizes the analysis of unconventional data sets which may benefit from being stored in non-relational databases better suited for unstructured data. Das and Kumar's study provided insights into how to manage and process data sets more effectively.

Regulatory compliance. Regulatory compliance continues to play an increasing role in data governance. Watson and McGivern (2016) contended that given the ever-increasing reliance on data; the explosion in the amount of available data, regulators' increasing focus on the accuracy, protection, and validity of data, and how data can be used to improve organizational performance, data governance is receiving increased attention in boardrooms. Thompson et al. (2015) stated that compliance should be easier than non-compliance. Gregory (2011) stated that with the increase in regulation, organizations will undoubtedly need to apply more resources than ever before to data governance. Hovenga (2013) asserted that regulatory requirements are typically

associated with risk management. Kerle (2015) agreed and adds that higher quality risk reporting as a product of data governance is not only a regulatory requirement but that it is also a source of competitive advantage. Swoyer (2016) interjected that regulators and auditors are going to have to learn to grow into a 'not strictly black and white' understanding of governance because as governance grows and changes, this will also require changes in policy at the board and corporate levels. There continue to be more new regulations and data governance is at the helm of meeting these types of requirements.

There is much talk in the literature surrounding regulations and compliance with data related initiatives. Watson and McGivern (2016) explained that compliance reporting requirements for the banking sector include the Basel Committee on Banking Supervision 239, while the health care industry may be more concerned with regulations like HIPAA. According to Bennett (2016), the Basel Committee on Banking Supervision's 239 is a set of principles for risk data aggregation reporting that defines requirements for financial institutions to demonstrate mature governance of data. Burniston (2015) posited that for good reason, many financial institutions historically have approached data governance from the perspective of meeting regulatory obligations. Bennett agreed and added that the first step in complying with the new requirements is to have a data governance environment in place. Fruehauf, Al-Khalifa, and Coniker (2016) also highlighted the need for compliance to mandates such as the Sarbanes-Oxley (SOX) Act. Compliance and meeting mandates surrounding data governance are an important

part of not only the banking sector but also other sectors confronted by regulations and mandates.

Organizations that own data must pay attention to who owns data and how it is regulated. Douglass, Allard, Tenopir, Wu, and Frame (2014) asserted that at a minimum, government organizations must have regulatory data on hand, even if it is not accessible. In their study, Douglass, et al. found that government scientists are at least meeting the minimum regulations when it comes to collecting data and keeping records of collected data. Johnson (2015) explained that asset owners are the ones directly responsible to regulators so all regulatory data and information to support data governance need to be presented to the asset owners. Washington (2014) observed that mandatory disclosure contains detailed private information to assist in law enforcement and regulation. Johnson (2015) asserted that regulatory reporting has a track record of being subject to steep fines for erroneous reporting. Johnson added that regulatory reporting is referred to as evidence-based reporting and must be complete, accurate, appropriate, and timely. It is important to clearly denote who is responsible for reporting on data and who supports regulatory data besides business owners.

Health care sector data governance. Data governance is ever important in the health care arena. Andronis and Moysey (2013) expressed that for health care, the effect of data governance can be directly exposed to front line personnel, patients and other internal and external stakeholders – it is not just a back office function or broad background policy. Reeves and Bowen (2013) supplemented that in the health care environment, data governance includes monitoring and enforcing the security of critical

health information. Reeves and Bowen emphasized that the role of health information management (HIM) professionals has expanded in recent years to where with electronic patient records and much digital health information, these informatics professionals must now work hand in hand with IT to mitigate risks. Data management and data governance efforts affect multiple levels within health care organizations.

The design of data governance hierarchies is discussed in the literature. Andronis and Moysey (2013) portrayed the main interactions of a data governance model for a large health care provider (see Figure 4) which has an executive sponsor (such as a CIO) with overall authority and responsibility for data governance. Andronis and Moysey pointed out that data owners are line managers can include health information managers, business managers and other front line managers. Andronis and Moysey also showed how governance working teams and support functions support data governance. Further, Andronis and Moysey stated that business stewardship represents the shop floor management, overseeing the data steward community creating and handling data in the course of conducting business-as-usual processes, while support services and IT provide the tools and skills necessary to support the capture and management of data.

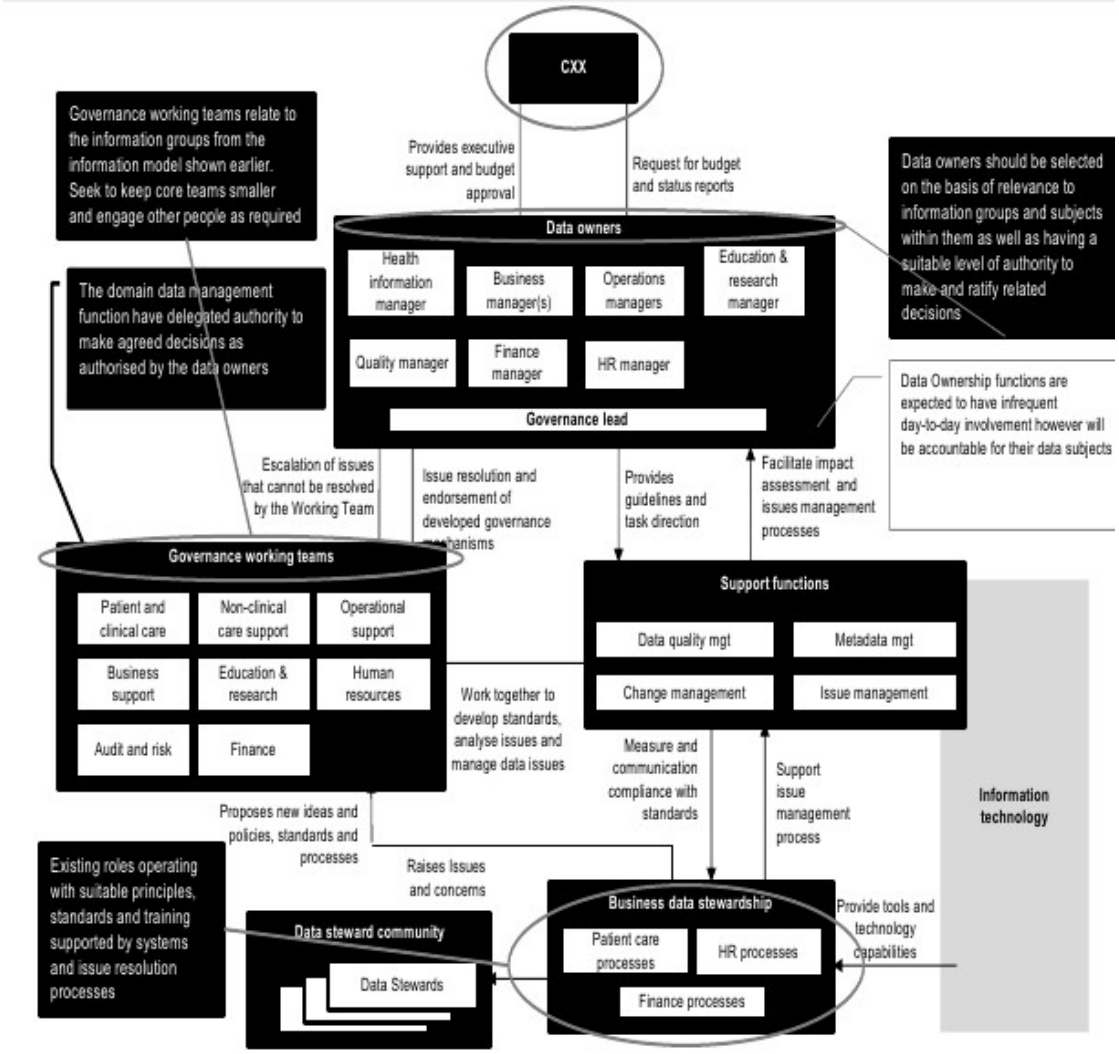

Figure 4. Main interactions of the data governance model elements for a large health care provider. Reprinted from "Data Governance for Health Care Providers," by K. Andronis & K. Moysey, 2013, Studies in Health Technology & Informatics, 193, p. 309. Copyright 2013 by the authors and IOS Press. Reprinted with Permission from both (Appendix B).

Data governance in health care organizations is related to effective decision making. Hovenga (2013) asserted that all functions such as IT and informatics rely on adequate and relevant information to improve the likelihood of good decision making surrounding their roles. Hovenga spoke to the necessity of having data governance for health care organizations since being able to produce correct data in a timely manner is

oftentimes directly associated with methods of funding no matter where the source of the funding may come from. Hovenga noted that health care funding can be complex, and organizations need data governance no matter where their funding comes from to produce accurate data. Hovenga noted it would help if data governance were adopted not only at organizational levels but at national levels as well. Further, Hovenga asserted that health services like patient transport, scheduling, purchasing, telecommunications, and other services are increasingly supported by IT as well as data so the information provided for these health care processes needs to be supported by relevant data exchange and accurate data sharing.

Data governance consists of other aspects such as data quality. Nahar et al. (2013) outlined the need for data governance in the research domain of medical research and further address the problems and issues related to the lack of data governance for data mining. Nahar et al. also pointed out that data errors and inaccurate data are even costlier in the medical domain and expand upon the need for data cleansing as an essential step towards data governance initiatives to identify and correct erroneous data inputs in patient health records and other areas. Nahar et al. noted that data governance deals with managing information in the health domain and focuses on the need for standard data governance practices especially within the field of medical informatics. Nahar et al. pointed out that medical practitioners use differing standards for data collection even at the regional level which proves challenging in the area of medical diagnosis when missing information, data formatting issues, and data duplication occur.

Data governance is essential to promote the effective offering of services such as health care. Krishnamurthy and Desouza (2014) further noted that public agencies are facing challenges in terms of developing new data governance and managing issues related to data analytics. Krishnamurthy and Desouza stated that this is needed for public agencies to gain important information and make decisions based on relevant data. Gomez and Atun (2013) conducted a study on four cases and their governance process related to the public health field. Gomez and Atun's study highlighted the need for governance in the global health area of research to keep up with citizens' health needs, civil societal health concerns, and health care services. It appears evident that the need for data governance is important for protecting societal data, allowing for adequate data analytics, and improving health services.

Benefits and barriers of data governance. The literature discusses benefits of effective data governance. Gregory (2011) maintained that benefits of good data governance include being able to cross-sell and up-sell to customers while also maximizing the value of an organization's IT data assets. Mohanapriya, Bharathi, Aravinth, Gowrishankar, and Ramkumar (2014) added that benefits of big data governance such as heterogeneous data integration, more security and privacy, increased data validity and data protection, as well as faster delivery. Kemp (2014) agreed and adds that central to the success of big data projects are strategy, policy, and process aspects of big data governance. Ping-Ju et al. (2015) and Kerle (2015) agreed that data governance and higher quality risk reporting can lead to better decision making. It is clear that there are many benefits as an outcome of data governance.

Data governance can be beneficial in other ways as well. Prasetyo and Surendro (2015) noted the benefit of data governance playing a significant role in aligning a company's business, as well as being used to solve a variety of business issues related to data and information. Kerle (2015) also added that poor data quality is oftentimes a product of poor governance, so in turn, better governance would lead to more effective data quality, risk management, reporting. Mahanti (2014) conducted a study on data quality and discovered 10 critical success factors with 35 variables, and with data governance being the most important factor towards data profiling and the journey towards improving data quality. Improved data quality is certainly one of the more prominent benefits of data governance.

It is important for stakeholders to assess their data governance regimens. Reeves and Bowen (2013) explained that when developing a data governance model, a successful business case is crucial to securing buy-in from executive management and organizational stakeholders. Leaders will want to understand the ROI for the organization which may be difficult and present a challenge. Reeves and Bowen explained that at least for the health care industry, the cost to implement a data governance program varies greatly depending on an organization's level of sophistication with health information privacy and data management. Reeves and Bowen suggested that trying to quantify both tangible as well as intangible assets, with examples being accost of patient safety errors, cost of malpractices cases incurred from information failure, cost of rework in data collection, cost of business lost due to information failure, and delays in accounts receivable if requested information is delayed or unavailable. Reeves and Bowen further

demonstrated how organizations might measure the value of a data governance program by the 'Confidence in Data-Dependent Assumptions' (CIDDA = G x M x TS) where G is confidence that data is good enough for its intended purpose, M is the confidence that data means what you think it does, and TS is the confidence that you know where the data comes from and trust its source. Reeves and Bowen postulated that this can be used by organizations to assign their own values and goals to the formula.

Many factors can either facilitate or hinder data governance implementations. Tallon (2013) established that various and organizational factors can affect the implementation of data governance practices which aid organizations in managing the risks and costs associated with big data. Tallon noted that enablers or inhibitors (see Table 2) can either accelerate or prevent data governance implementations. Tallon stated that organizations with solid strategies are typically more prepared to implement data governance policies, while inhibitors include legacy systems that require separate systems that require maintenance. Further, Tallon mentioned that industry regulations can influence and pressure organizations into considering effective systems and policies rather than risk noncompliance.

Table 2

Data Governance Enablers and Inhibitors

Enablers	Inhibitors
Organizational factors	
Highly focused business strategy	Complex mix of products and services
Aligned IT and business strategy	Strategic misalignment
Centralized IT and organization structure	Decentralized IT and organization structure
Industry factors	
Regulations	Regulations vary by region (US, EU, and so on)
Predictable rate of data growth	Absence of industry-wide data standards
Technological factors	
Culture of promoting strategic use of IT	Packrat culture (data hoarding)
IT standardization	Legacy IT systems (weak integration)

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Inhibitors of data governance can lead to unsuccessful implementations. Rubin, Lynch, Escaravage, and Lerner (2014) found that CIO's say that poor data governance is the most critical factor holding up agencies in their efforts to pursue big data. According to Earley (2014), process owners who are evaluated based on a specific outcome might not have the budget or time to consider the bigger enterprise picture. Earley asserted that it is this short-term, narrow focus that causes issues and impediments fur future expansion of capabilities. Fruehauf et al. (2016) posited that in addition, the implementation of data governance frameworks often suffer a high rate of implementation failures. Effective and efficient data governance requires forethought, strategization, and a bigger picture that focuses on future capabilities in the midst of successful implementations.

Transition and Summary

Institutional theory by DiMaggio and Powell tries to explain how organizations and institutions become similar by adopting similar norms, practices, and rules. This is applicable to all types of organizations and institutes and reveals how practices become guidelines for organizational behavior. The theory focused on the process by which these practices become normalized or implemented. The theory considers many types of internal and external pressures that influence the adoption of practices and policies. This theory is well suited for research related to the adoption and implementation of institutional and organization practices, procedures, and policies.

This section discussed the topic of data governance practices within organizations. By utilizing institutional theory as the underlying conceptual framework for exploring the topic of data governance, it provided a suitable lens by which to view data governance practices and perceived benefits of implementing these practices within the case study organization. The review of the literature focused on explanations of data governance, data governance tasks and practices, roles and stakeholders, data governance models and frameworks, regulatory compliance, health care sector data governance, and benefits and barriers to data governance. The following section discusses further aspects of the study such as methodology and design for the study.

Section 2: The Project

In this section, I will provide information on the participants, sample, and research methodology while providing justification for decisions made in the study. I will also address ethics and steps that I took to mitigate such factors. Finally, I will describe the approach for data collection and data analysis while discussing reliability and validity.

Purpose Statement

In this qualitative exploratory single case study, I explored strategies used by informatics specialists for implementing data governance practices within an organization. The population of the study was informatics specialists within a small hospital setting that acts as both a research institute and a medical institution. The sample population has knowledge and experience with strategies that can be used for implementing data governance practices. The geographical location of the study was the Washington, DC, metropolitan area of the United States. The outcomes of this study may assist organizations when considering the implementation or maturation of data governance practices by providing them with realized strategies that could be used as a set of best practices. The study's implications for affecting positive social change include improved strategies that could lead to the better protection of data, including both PHI and PII.

Role of the Researcher

My role in this qualitative study was to design and conduct the study, collect data, analyze the findings, and present the findings in an unbiased way. As the researcher in

this study, I carefully identified, defined, and considered many aspects of the case itself. This entailed conceptualizing (a) what constitutes the bounded system of the case is, (b) the bounds of what it includes and excludes, and (c) what the case is (see Rule & John, 2015). It is necessary to understand data, think of data in a typical context and then considering the larger picture to interpret the context of the data (Ahrens & Khalifa, 2013). During data collection and analysis, I was the primary data collection instrument and I sought to mitigate any personal bias so that data collection is not hampered or skewed.

It is important that researchers are clear about their location in, and relations with, the field to show how the study may have been influenced by the researchers themselves (Ahrens & Khalifa, 2013). I do not have any experience in data governance directly; therefore, I considered myself personally unbiased with regard to the study. Before beginning this research, I had little knowledge regarding the topic of data governance. I have not previously worked at the location where conducted this case study, nor do I know any of the participants in either a personal or professional manner. This research topic and case study were chosen out of my own interest in delving deeper into the topic to learn more about it.

I reviewed the *Belmont Report* provided by the U.S. Department of Health and Human Services. The *Belmont Report* describes ethical principles and guidelines for protecting human subjects while conducting research (U.S. Department of Health & Human Services, 1979). As a researcher, I ensured that all human participants were treated ethically and protected before, during, and after conducting my study. I conducted

ethical research by treating participants in an ethical manner, respecting them, and taking steps to ensure their well-being by minimizing any harm to the participants. I have also completed the National Institute of Health (NIH) Office of Extramural Research web-based training course on protecting human research participants (certificate located in Appendix A). I ensured that all participants were made aware that their names would be kept confidential and their identities would remain anonymous. Within the focus group settings, I spoke to the participants to inform them that they should keep the names of other focus group members to themselves and not share these names with anyone. All participants signed confidentiality agreements and they were reminded to keep all information from the interviews and focus groups to themselves in efforts towards maintaining participant confidentiality and protect identities.

To mitigate bias in this study, I recorded all of the interviews, transcribed them, and conducted member checking to ensure I had not inserted bias. Bias is a deviation from the truth in data collection, analysis, interpretation or publication which may cause false conclusions (Šimundić, 2013). Further, I used open-ended interview questions which were reviewed by my committee and peers to ensure that the questions themselves did not contain bias. I also ensured that my participants were representative of the population and that bias had not occurred during participant selection. Generally, a research question needs to be considered with much attention and all efforts should be made to ensure that a sample is as closely matched to the population, as possible (Šimundić, 2013). For this study, I study used institutional theory as the conceptual framework. Conceptual frameworks that help researchers navigate these multiple

relationships between theory and case study are thus needed (Rule & John, 2015). How one addresses and mitigates a personal worldview during data collection and analysis is a key component for the study (Fusch & Ness, 2015). I took steps to ensure that bias is mitigated throughout the course of this case study.

For this study, I interviewed individual participants from the sample population and conducted three focus groups, followed by document analysis as the third method of data collection. As Castillo-Montoya (2016) noted, an interview protocol can be used to aid in the development of an inquiry-based conversation. I used separate interview protocols for both the in-depth interviews and the focus groups for this study (see Appendix D). Castillo-Montoya noted that the overall organization of questions (beginning, transitional, key, and closing questions) can shape the interview protocol toward an inquiry-based conversation. I asked demographics questions before the individual interview questions and the semi structured approach allowed me to add transitional or follow-up questions. The purpose of obtaining feedback on the interview protocol is to enhance its reliability and trustworthiness a research instrument (Castillo-Montoya, 2016). I sought feedback on my interview protocol from my committee and peers prior to finalization.

Participants

For this qualitative case study, I drew eligible participants are from the population of informatics specialists within a large hospital setting that serves as both a research institute as well as a medical institution in the Washington, DC, metropolitan area. Aside from selecting a research topic and appropriate research design, no other research task is

more fundamental to creating credible research than obtaining an adequate sample (Marshall, Cardon, Poddar, & Fontenot, 2013). Eligibility requirements include participant knowledge and experience regarding strategies for implementing data governance practices. Each participants' role, job title, and/or position were under the umbrella of an "informatics specialist" who works directly with data informatics.

The primary participants for individual in-depth interviews consisted of health information management staff members and health IT specialists who work within the Health Information Management (HIM) Department. The eligible participants for this study adhere to the processes/practices surrounding data and information as they have experience working with data governance practices. I vetted participants using pre-interview demographics questions to determine their title, role, and amount of experience with data management practices. The responses from these participants' individual in-depth interviews allowed them to share their detailed experiences surrounding what data governance encompasses at their organization and how these practices were implemented, as well as what strategies are effective and what strategies are not. My contact at the case study organization provided the names and contact information for 10 persons that met this eligibility criteria. I interviewed all 10 members of the population that met the eligibility criteria.

As my secondary source of data, I conducted three focus groups. The participants for the three focus groups were members of the clinical information management (CIM) committee at the organization. This committee is made up of informatics business data users from the organization. This committee is a multidisciplinary committee that

provides oversight on the quality of clinical information and documentation and recommends policy regarding the management of health information. My contact at the case study organization stated that the CIM committee has 24 members. I held three focus groups total. For the first focus group, I had three participants and invited all of the remaining 21 committee members to the second focus group. For the second focus group, I had three more participants and then I invited the remaining 18 members to a third and final focus group. For the focus group, six members of the committee participated and this focus group had the best attendance. The participants in the focus groups were asked to share their responses regarding additional experiences surrounding the multidisciplinary oversight that the CIM provides to data governance and information management at the organization, as well as outcomes of implementing data governance practices. As focus groups serve a different purpose than the individual interviews, I gained richer and further in-depth responses based on the knowledge and experience from the members of the committee which provides oversight surrounding the phenomenon being studied.

The practical reality of research is that most studies require a provisional decision on sample size at the initial design stage (Robinson, 2014). However a priori sample specification need not imply inflexibility instead of setting a fixed number, researchers can identify an approximate sample size range can be given, with a minimum and a maximum (Robinson, 2014). The size of a sample used for a qualitative project is influenced by both theoretical and practical considerations (Robinson, 2014). The quality of the study would increase until data saturation is reached but diminish afterward

(Marshall et al., 2013). I continued to interview eligible participants within the bounds of the case study until data saturation was reached, which occurred after all participants were interviewed. The concept of data saturation involves utilizing new participants in the study until data replication or redundancy emerge in the data collected (Marshall et al., 2013). As data saturation as achieved, I did not need to conduct any secondary interviews

Social, cultural and political power relations may pose challenges for gaining access to participants on the ground, facilitating dialogue and reporting findings (Lehtomäki et al., 2014). Qualitative researchers have reached consensus in that researchers should develop rapport, or friendly interactions with participants, to increase access to the field (Rinke & Mawhinney, 2014). My strategy was to maintain already established e-mail communication with my primary point of contact at the organization who agreed to act as a coordinator to help put me in touch with staff members once I began data collection began. I obtained a letter of cooperation from the case study organization and placed in the appendix. To gain access to these participants, I obtained their e-mail addresses so that I could send them items such as scheduling appointments. I drove to the location of the organization to conduct interviews in person. I worked out times for interviews that fit the participants' schedules and traveled to the case study organization on days that were best suited for encountering the participants of this case study. I adjusted my schedule accordingly to ensure successful data collection.

Strategies that I used to establish a working relationship with my participants included ensuring that they were informed of the purpose of the study, establishing their

trust, giving them the option of non-participation, ensuring their confidentiality, and treating them ethically and with respect. Qualitative researchers should draw on their areas of symmetry to facilitate the development of rapport with participants (Rinke & Mawhinney, 2014). I asked semi structured interview questions in an open-ended and nonbiased manner so that the participants did not feel as if there were any right or wrong answers. The boundaries of rapport depend on the context of the research, the needs of participants, and the comfort of researchers in adopting various roles (Rinke & Mawhinney, 2014). I obtained the informed consent of the participants for their inclusion in my study and continued to work with them in a professional manner. I worked to ensure the confidentiality of all participants to protect their identities.

The participants aligned with the overarching research question for the study, which was: What strategies do informatics specialists use to implement data governance practices within organizations? Successful interviews start with careful planning that considers the focus of the research question (Doody & Noonan, 2013). The process involves identifying a broad area in which the researcher hopes to hear from the participants, then thinking about the topics that the interview will cover (Doody & Noonan, 2013). These members of the organization were able to provide knowledge and information surrounding data governance and answered interview questions that informed my study.

Research Method and Design

In this section, I will address the research method and design for this qualitative case study. Determining which research method is most appropriate is contingent on

several aspects including the research questions, objectives, and topic (Al Zefeiti & Mohamad, 2015). The challenge for the researchers is to effectively align phenomenon, research question, and method so that the study can contribute to the broader literature (Worrell, Di Gangi, & Bush, 2013). The research methodology should match the underlying questions being asked, and qualitative methods are the best fit for particular types of research questions (Garcia & Gluesing, 2013). Because work contexts change and the complexity of large-scale organization change increases, qualitative research methods provide an ideal approach to understanding these new work contexts (Garcia & Gluesing, 2013). Specifically, qualitative inquiry allows for the consideration of complex multi-stakeholder organizing, of how work practices and organizational structures and cultures evolve, and of how organizations design and implement such changes to meet new challenges (Garcia & Gluesing, 2013). Qualitative methods can help reveal the inherent dynamics in change processes (Garcia & Gluesing, 2013). I took steps to ensure that my research method and design align with the underlying research question for the study.

Method

I considered quantitative, qualitative, and mixed-methods approaches as viable research methods for conducting my research study. Qualitative research grounds the researcher in both the literature and the lifeworlds surrounding the phenomenon under study (Cibangu, 2013). By exploring the literature and lifeworlds surrounding data governance, my study may provide more knowledge, understanding, and meaning surrounding the phenomenon of data governance. Qualitative research is valued for its

differences to quantitative research, rather than being perceived as having methodological shortcomings in comparison (Houghton, Casey, Shaw, & Murphy, 2013). I used a qualitative research method as a viable method for conducting a deep and rich study surrounding my topic of data governance. Small qualitative studies can provide a more personal understanding of the phenomenon, and the results may contribute valuable knowledge to the community (Seligman, 2013). Researchers prefer qualitative research when there is a need to explore new phenomena and usually less information on such phenomena is available (Imran & Yusoff, 2015). By conducting a qualitative research study, I was able to gather data based on the experiences and knowledge of informatics specialists, while also further understanding the meaning of data governance.

For this research study, I considered the possibility of using qualitative, quantitative or mixed-method approaches, but I deemed the quantitative and mixed-methods approaches unsuitable for the research question or intent of my study. Qualitative research usually produces more epistemological results, whereas the quantitative is more focused on the ontological investigations (Imran & Yusoff, 2015). Quantitative research allows data to be collected that focuses on precise and objective measurements that use numerical and statistical analysis to support or refute a hypothesis (Campbell, 2014). Practitioners of quantitative research assume that their participants interpret the meanings of questions in the same fashion when they are analyzing their data (Barnham, 2015). I intended for my study to add to the field of knowledge surrounding my topic rather than focusing on interrelationships between groups, or using measurements or statistics to test a hypothesis, as are part of a quantitative study. I also

wanted to be able to delve deep into the data to distinguish amongst all of the perspectives surrounding the phenomena of data governance.

I considered mixed-methods research for this research study. Mixed-methods research involves using qualitative and quantitative data in the same research study (Halcomb & Hickman, 2015). Mixed-method research is defined as the process of scientific investigations employing both qualitative and quantitative methods of research either sequential or concurrent way of administrating research (Imran & Yusoff, 2015). Different typologies of mixed methods research design have been developed, depending on the ways qualitative and quantitative data collection and analysis are mixed (Spillman, 2014). I deemed the mixed-methods approach was inappropriate for my study as there no quantitative or statistical aspects to be measured. The mixed-method approach wouldn't have supported the exploration of my topic or my research question the way that a qualitative study would inform and support the study. The aspect of the mixed-method approach that makes it inappropriate for my study is the inclusion of the quantitative method which would not assist in answering the research question. By utilizing solely a qualitative approach, I was able to inform the topic as well as the research question.

Research Design

For this research, I used the case study design. Case studies help researchers develop generalizable concepts and models which underpin the theoretical debate, add to existing knowledge and inform the research agenda (Johnston, 2014). A qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources (Baxter & Jack, 2008). While case studies can be

intristic, instrumental, or collective. Instrumental case studies provide insights into an issue or are used to refine a theory, and collective case studies comprise several instrumental case studies (Baskarada, 2014). This study used a single instrumental case study design. I chose the single instrumental case study design because the case is secondary to understanding another main issue, which is the lack of strategies for implementing data governance practices. This context provides a natural opportunity for an instrumental case study in a receptive organization (Ilott, Gerrish, Pownall, Eltringham, & Booth, 2013). The organization used for this study employs informatics specialists that will be particularly knowledgeable regarding implementing data information management and governance practices.

As for the case study design, I conducted semi structured interviews, conducted 3 focus groups, and did documentation analysis as a tertiary method of data collection towards methodological triangulation. Due to the use of focus groups from a committee, this single case study has an embedded subunit. The ability to look at subunits that are situated within a larger case is powerful when you consider that data can be analyzed within the subunits separately, between the different subunits, or across all of the subunits (Baxter & Jack, 2008). The ability to engage in such rich analysis only serves to better illuminate the case (Baxter & Jack, 2008). Finally, I used thematic analysis to identify themes across data collection methods during data analysis.

Case studies can be explanatory, exploratory, or descriptive. This study was exploratory in nature. Exploratory case studies allow a systematic insight of events, information analysis and presentation of qualitative results (Esyutina, Fearon, &

Leatherbarrow, 2013). For this study the exploratory method was applied because as a researcher, I sought to further understand the topic matter rather than predict outcomes of any phenomenon or issue. An exploratory case study should be used when the aim is to understand how a phenomenon takes place (De Massis & Kotlar, 2014). Exploratory case studies are typically employed to gain an understanding of how organizational dynamics or social processes work (De Massis & Kotlar, 2014).

This study was based on the qualitative single exploratory case study method to gain a deeper understanding of data governance practices and knowledge surrounding their implementation to be able to contribute valuable knowledge of implementation strategies. Given the strength of the case study building approach as well as the evidence and prior literature, it is a research technique that is well suited to gaining insights and understanding into people's attitudes and opinions that cannot be achieved through quantitative data (Seligman, 2013). Interpretivist research methods incorporate focus groups, interviews and research diaries or journals as methods for recording as much data as possible to increase the study's validity by providing a rich and in-depth data set (Seligman, 2013). By using a qualitative single exploratory case study method, I was able to delve deeper into the understandings and knowledge of informatics specialists within this single organization while still analyzing multiple sources of data from interviews, focus groups, and documentation.

Ethnographic research was considered for this research study. Ethnographies allow the researcher to collect data by observation of members of a cultural group in their natural setting within a specified period (Campbell, 2014). My study did not intend to

study members of a cultural group over a specified time frame. It is critical for a researcher to have temporal awareness when conducting ethnographic research because include observations over time and the researcher much interpret the meanings that are conveyed during the observations. (Dawson, 2014). My research was not focused on interpreting observed meanings identified over timeframes. Focused ethnographic studies involve the researcher spending time in one or more settings and gaining insights from interactions between participants (Nightingale, Sinha, & Swallow, 2014). Mixed-methods research was inappropriate for this study because I was not interested in gaining insights based upon interactions between participants or spending time observing particular settings.

Phenomenology is another research design that can be used when conducting research studies. Phenomenology a way of describing phenomena as they appear to the person experiencing the phenomena (Tuohy, Cooney, Dowling, Murphy, & Sixmith, 2013). Describing the phenomena of data governance as it appears to persons experiencing the phenomena is not the goal of my study. Phenomenological research focuses on events that are perceived by others to determine what components make those events surrounding a phenomenon unique (Pietkiewicz & Smith, 2014). My study was not focused on how others perceive or discuss the particular components of data governance, rather, their experiences with strategies for implementing data governance practices. In phenomenological studies, the aim is not managing all presuppositions regarding the phenomena, but managing those that prevent the appearance of the phenomena we are seeking (Finlay, 2014). My study was not aimed towards exploring

how data governance is perceived or how it appears to participants. My study is not best suited for conducting a phenomenological study.

When data saturation occurred after interviewing all participants, I did not need to collect any new data to inform my research study. Data saturation occurs when the researcher is no longer hearing or seeing new information (Graham-Dickerson et al., 2013). I reached data saturation as no new information, themes, or codes continued to rise because I had interviewed all eligible participants. Achieving theoretical data saturation involves many details regarding cases that ensure a phenomenon was studied in-depth and examined fully (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015). Data saturation involves adequate sampling and repeated review of interview transcripts that results in exploratory analysis and understanding of the topic (Cope, 2014). As part of data saturation I used member checking, keeping in mind that member checking only ensures data saturation with each individual participant. For the individual interviews there were 10 informatics specialists that I interviewed. For the focus groups, there are 24 members of the Clinical Information Management committee. Three members showed up to the first focus group, three more to the second focus group, and six members to the third focus group.

Population and Sampling

This qualitative case study's population consists of informatics specialists within a small hospital setting which serves as a research institute and a medical institution. The organization used for the purposes of this case study is located in the Washington, D.C. metropolitan area. The population for the study has knowledge and experience

surrounding data governance and information management practices. The population for the individual in-depth interviews consisted of the 10 informatics specialists that work primarily within the health information management division of the organization and consist of health information management staff members and health IT Specialists working in the HIM Department. The population for the three focus groups consisted of the 24 members of the CIM committee at the organization.

Within this organization and department, I have a primary point of contact that agreed to help coordinate efforts for me to interview members of the population. Interviews are almost always conducted within an interactive setting in the field of research and academics (Malli & Sackl-Sharif, 2015). The interviews were conducted on-site at the case study organization. The face-to-face interview setting allows for the standardization of data gathering procedures (Carvalho et al, 2014). The individual interview setting included face-to-face interviews which were conducted during 60-minute scheduled timeslots in accordance with the interview protocol included in the appendix. The focus groups lasted approximately 60-90 minutes each. A different set of interview questions was used for the individual interviews and the focus groups. There is a short amount of time to build a relationship with participants during interviews (Voldnes, Grønhaug, & Sogn-Grundvåg, 2014). To build trust and ensure the privacy during interviews, the participants were reminded not to disclose the names of others participating in interviews or focus groups that they may be aware of. The participants were also asked to sign consent forms which discussed privacy and anonymity before interviews were conducted. I also ensured that interviews took place in a private

conference room free of any distractions for the purpose of privacy and ensuring that the participants were in a comfortable situation.

A census sample can be obtained through an organization with high access to the target population (Whittingham, Barnes, & Dawson, 2016). The census method of obtaining the study participants can also be used when the target population is small enough that data can be collected from the entire population (Mose, Shukla, & Mbabazize, 2015). For this study, I used the census sampling approach to gain all perspectives of all participants that met the participant eligibility criteria. I had access to the whole target population so that I could collect data from all of the members of the population. My intent was to interview all members of the population. Lucas (2014) notes that census-taking is one strategy for respondent selection that can be adopted when conducting in-depth interviews. Lucas (2014) also notes that when studying the entire population, anything that the researcher learns from the data is perfectly generalizable to that population. By utilizing the census sampling method I was be able to conduct in-depth interviews to explore the perspectives surrounding the phenomena of data governance practices. By using the census sampling method, my intention was to gain a deep understanding of the experiences of all of the eligible members of the population while increasing the possibility of transferability and generalizability to the larger population.

For sampling strategies, the researcher must to ask questions to determine the most suitable sampling method for the study is, the appropriateness of participants and the sample population, and consider data saturation (Elo et al., 2014). I opened the

interviews to all eligible participants. The eligibility of criteria for the study's in-depth interview participants includes being a member of the HIM Department and being a health information specialist or health IT specialist. The eligibility criteria also required possessing knowledge and experience surrounding strategies that can be used for implementing data information management and governance practices. Further, the in-depth interview participants' role, title, or position was under the overarching umbrella of informatics specialists that work directly with data informatics at the organization. Their experience included knowledge of data management and governance practices and experience with these practices. The eligibility of all participants was further vetted with demographics questions that were asked prior to the interview questions.

For the focus groups, the population consisted of 24 members of the overarching CIM committee that provides oversight for the rest of the organization regarding data governance and information management policies. The relevance of characteristics of the selected sample population relates directly back to the problem statement and the research question for this study. The sample must be appropriate and comprise participants who best represent or have knowledge of the research topic (Elo et al., 2014). It is also valuable to give clear descriptions of the culture, context, selection, and characteristics of participants (Elo et al., 2014). The eligibility for the focus group members is that they are members of the CIM committee at the organization. The eligibility criteria also included possessing knowledge and experience surrounding strategies that can be used for implementing data information management and governance practices. The focus groups were open to all 24 members of the CIM

committee. For this study I accepted all members who volunteered to participate in the focus groups. To ensure participant eligibility and the appropriateness of the sample, I identified and described the sample population while detailing their characteristics so that transferability could be achieved if the study were to be replicated.

I sought to achieve data saturation within this study. Qualitative case studies often require a number of interviews to be conducted until data saturation occurs (Aucamp & Swart, 2015). Whereas quantitative sampling methods use a power analysis to estimate the number of participants to improve confidence in the strength of the study results, qualitative studies use data saturation to reach the number of participants required for the qualitative study (Carman et al., 2015). As part of data saturation, I interviewed all available and eligible participants until there were no new participants left and therefore no new data to present itself for the purposes of the study. The population consisted of 10 participants for individual interviews, and three focus groups which had three, three, and six members respectively. I allowed all members of the CIM committee to volunteer to participate in the study. One cannot assume data saturation has been reached just because one has exhausted the resources (Fusch & Ness, 2015). Qualitative research involves interviewing participants until no new data are obtained which achieves data saturation (Carman et al., 2015). Saturation has also become widely recognized as a guide or indicator that sufficient data collection has been achieved (Gentles, Charles, Ploeg, & McKibbon, 2015). I was able to collect sufficient data and achieve data saturation for the purposes of this study.

I incorporated methodological triangulation to ensure data saturation with all three methods of data collection for this study. There is a direct link between data triangulation and data saturation; the one ensures the other (Fusch & Ness, 2015). For my efforts towards triangulation, I collected multiple types of data with the interviews, three focus groups, and document analysis. By employing multiple sources of data to show triangulation, I was then able to achieve data saturation. I gained more data from a variety of external sources which was then able to be cross-analyzed during data analysis. Methodological triangulation ensures that that data is rich in depth (Fusch & Ness, 2015). Rich data leads to better data quality as well as increased data quantity, and I was able to collect a rich data set which let to methodological triangulation.

Ethical Research

For this qualitative case study, I conducted the research in an ethical and honest manner that intended to minimize harm to all participants. All participants were provided a form detailing the informed consent process and serving as a confidentiality agreement by e-mail. Obtaining consent is by no means simple; researchers must not only enroll participants in their study, but also convey to them their rights as human subjects, the scientific question under investigation, the study methodology, and the potential harms and benefits (Nishimura et al., 2013). The informed consent process also informs the participants of voluntary disclosure, voluntary participation, and discuss confidentiality. I ensured that the confidentiality of all participants was protected. For the focus groups, members were asked not to discuss the names of other participants of their group outside of the group setting as part of the informed consent forms that they signed. The informed

consent process acts as an ethical standard as well as a legal one. The researcher should be honest with all participants in the informed consent process and ethically disclose all necessary information regarding the study and their participation. Once a participant signs a consent form, he or she agrees to participate based on the terms of the contract, which emphasize the voluntary nature of the study and the freedom to withdraw at any point during the study (Hadidi, Lindquist, Treat-Jacobson, & Swanson, 2013). I received e-mails from participants providing consent and both myself as well as the participants have copies of the e-mails with signed consent.

It is fundamental that no harm must come to participants as a result of their participation in research (Vanclay, Baines, & Taylor, 2013). At the very least, the researcher must do their utmost to protect participants from any harm, and to ensure under the principle of informed consent that the participant is fully appraised of all possible risks from participation (Vanclay et al., 2013). I took steps to ensure that participants were treated equally and fairly while being asked a semi structured set of interview questions. I followed interview protocols when conducting all interviews and focus groups for this study. By enhancing the reliability of interview protocols, researchers can increase the quality of data they obtain from research interviews (Castillo-Montoya, 2016). I ensured that the interview protocol aligned with the research question and sought feedback on the interview protocols before using them. The purpose of obtaining feedback on the interview protocol is to enhance its reliability and trustworthiness as a research instrument (Castillo-Montoya, 2016).

For this study, participation was not required and all participants had the option to withdraw from the study at any time. One of the main principles of an ethically sound study is the "right to withdraw" (Hadidi et al., 2013). This principle states that the research participants should always have the right to withdraw at any time and during any stage of the study and should not be pressured or coerced in any way to prevent them from withdrawing (Hadidi et al., 2013). I informed all participants of their right to withdraw from participation in this study at any time even if they had initially agreed to participate. Participants from either the interviews or the focus groups were allowed to withdraw verbally or in written form without any repercussions from either the organization or the researcher. Should any participant decide to withdraw from the study, I would have continued to interviewing all available participants from the population. When members of focus groups provided consent but were unable to attend the focus groups, I continued by conducting a smaller focus group with the rest of the members who had consented. There were no monetary incentives provided for participation in this study.

Data from this case study will be maintained in a safe place for 5 years to protect the rights of all participants. Maintaining this data is also required by the university. Because of the confidentiality of data, care must be taken to ensure that the data are stored securely and safe from unauthorized access (Vanclay et al., 2013). I will keep the data in a locked filing cabinet for the 5 years. I will be the only one with a key and access to the filing cabinet. Upon the completion of the 5 year period, I will destroy and discard all of the data.

Institutional review boards are charged with overseeing that human studies research is conducted in accordance with federal and state regulations and with their own policies and procedures, with the goal of minimizing risks to participants and maximizing the quality of the research data (Cseko & Tremaine, 2013). I gained approval from the Walden Institutional Review Board (IRB) prior to contacting any participants or collecting any data. Research involving human subjects requires oversight by IRBs to ensure safety and privacy of subjects (Stang, 2015). I also took the NIH training course for conducting research while protecting human subjects (see Appendix A). Further, I read *The Belmont Report* guidelines for the ethical protection of human participants (U.S. Department of Health and Human Services, 1979).

The name of the organization used for this case study was omitted from this study to protect the organization's confidentiality and privacy. The names of all participants were also masked to ensure their confidentiality and privacy. I used the pseudonyms such as Interviewee 1, Interviewee 2, and so on for the interview participants. I used pseudonyms such as Member 1, Member 2, and so on for the focus groups. I have used these pseudonyms in data analysis and in documenting my findings from the study. I used the participants' names in my notes so as not to confuse participants with one another, have ensured that they are only accessible by me and are locked away with the rest of the data since the conclusion of the study.

Data Collection

Data can be collected from multiple sources for a qualitative case study. Data collection is the first stage in the research process (Rimando et al., 2015). Data collection,

usually occurring simultaneously with data analysis in qualitative research, is defined as the systematic gathering of data for a particular purpose from various sources, including, interviews, focus groups, observation, existing records, and electronic devices (Rimando et al., 2015). Gaining a deep understanding of a phenomenon requires choosing and applying data-collection techniques carefully and systematically so they yield significant information about underlying details (Neuman, 2014). This section will discuss the data collection methods to be employed in this study.

Instruments

As the researcher for this qualitative case study, I served as the primary data collection instrument. Qualitative study activities rest on the assumption that the researcher is the primary instrument: because of the insightfulness, flexibility, responsiveness, and judgment a human being can bring to the research setting, the researcher is the ideal data-gathering device who can pursue emerging dimensions of a study that are beyond the scope of instruments designed in advance (Neuman, 2014). The other three key data collection instruments for this study include semi structured interviews, focus groups, and documentation analysis. Data triangulation using in-depth individual interviews and focus groups in qualitative inquiry may result in a broader understanding of the phenomenon of interest (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014).

The semi structured interview is usually a combination of both structured and unstructured formats in one interview (Dikko, 2016). I conducted individual in-depth interviews as the primary data collection method for my study that included semi

structured using open-ended questions. The open-ended question also allows for follow up questions and prompts based on the answers given by the participant (Dikko, 2016). The semi structured interviews will be conducted by using an interview protocol which can be found in Appendix D. An interview protocol is a set of rules and guidelines to be used for the conduct of the interviews (Dikko, 2016). By enhancing the reliability of interview protocols, researchers can increase the quality of data they obtain from research interviews (Castillo-Montoya, 2016). I had separate interview protocols for both the individual in-depth interviews and the focus groups (see Appendix D). Qualitative interview protocols are designed to elicit participants' insights about the details of the phenomenon under study (Neuman, 2014). Interview questions began with demographics questions while progressing to questions on the topic of the study. The individual in-depth interviews were conducted in-person at the location of the case study organization. The interviews were recorded with the consent of the participants, and they were transcribed afterwards. Interviews should be recorded and transcribed in full, so that a complete record of the interviews and protocols are available for analysis (Neuman, 2014). I personally transcribed all interviews and focus groups.

Interviews can be conducted with small groups called focus groups, as well as with individuals, and experience suggests that focus group interviews can yield important data when group members build on one another's ideas to generate new insights (Neuman, 2014). Focus groups can lend themselves to a variety of approaches according to the epistemological stance of the researcher (Coule, 2013). For the focus groups, the emphasis was on members of the Clinical Information Management committee to answer

interview questions. A protocol was used for the focus groups and is located in Appendix D. The three focus groups were conducted at the location of the case study organization in a familiar setting to the participants. Using focus groups in naturally occurring settings alongside other qualitative data collection affords insights into the research topic that would not otherwise be available (Brown, 2015). Focus groups in naturally occurring settings also allow an element of participant observation and this observation and context adds to information gained from the focus group discussions (Brown, 2015). Information from the individual interviews and focus groups was triangulated to ensure data saturation is achieved from the sample population.

Document analysis was the third data collection instrument for this study and consisted of analyzing the charter document from the CIM committee, meeting agendas, training documents, Microsoft PowerPoint presentations, and a charter for the clinical documentation control board. Document analysis can be used as data collection method in qualitative research (Yildiz, 2015). Interviews and document analysis provide insight into organizational structures to provide a more subjective process of data collection (Barglowski, Bilecen, & Amelina, 2015). As the tertiary data collection instrument for this case study, I analyzed documents relevant to the phenomenon of data governance and information management practices. Document analysis used along with interviews will allow for a more in-depth data set and allow for gaining a richer understanding (Owen, 2014). By taking a comparative approach, I was able to find similarities from the interview data and the data collected from the focus groups while also drawing on the documentation to gain more relevant information.

To enhance the reliability and validity of the study, member checking was used for the individual interviews. Member checking occurs when interpretations are relayed to research participants to check for perceived accuracy and reactions, thus increasing the overall credibility of a qualitative inquiry (Perrotta, 2015). Using member checking allowed me to verify the accuracy and reliability of my data from interviews and focus groups. To ensure the trustworthiness and creditability of the findings, the researcher can use member checking (Bell, 2015). With every research design, instruments chosen for the collection of data must pass the tests of validity and reliability before they can be considered good measures (Dikko, 2016). In an effort to ensure validity of the interview protocol ahead of time, I practiced the questions to identify any issues present. There were different interview protocols used for the individual in-depth interviews and the focus groups (see Appendix D).

Data Collection Technique

Data collection began once I gained approvals from Walden University's Institutional Review Board. The data collection technique to be used for the interviews was a semi structured approach and audio was recorded using Audacity software as well as a Sony iRecorder for backup. I conducted these individual interviews on-site at the case study organization location. Online resources were not used and the participants did not have to fill anything out on paper once e-mailing initial consent for the consent forms that were sent as e-mail attachments. For the focus groups, the same techniques were employed. I tested the software in advance to ensure it was capable of capturing the audio for a room of persons to and to ensure proper functionality. Data collection occurred in-

person, on-site at the case study organization location. All of the data collected was transcribed afterwards and I personally transcribed this data.

To collect data for the purposes of my tertiary method of data collection, document analysis, I worked with my point of contact at the organization to obtain the relevant documents. I obtained soft copies of the documents via e-mail from my contact and analyzed these documents fully at home.

There can be both advantages and disadvantages to the data collection techniques employed by this case study. Merits and challenges exist to using both in-depth individual interviews and focus groups in a single study (Carter et al., 2014). It took extra time for data collection for my study since I conducted both interviews and focus groups, but this allowed me to acquire a richer data set for the purposes of exploring data governance practices at the organization. The strength of this consecutive method of data collection is the opportunity to triangulate the data and to perform member checking (Carter et al., 2014). It was also advantageous to my study to be able to conduct member checking by telephone after all interviews and focus groups had been conducted.

To lessen the challenges of conducting these types of data collection, I used both use member checking as well as methodological triangulation to ensure credibility for both the interviews and focus groups. Member checking occurs when interpretations are relayed to research participants to check for perceived accuracy and reactions, thus increasing the overall credibility of a qualitative inquiry (Perrotta, 2015). Using member checking helps to verify the accuracy and reliability of my study. To ensure the trustworthiness and creditability of the findings, the researcher can use member checking

(Bell, 2015). I sought to ensure the accuracy of my data collection, organization, and analysis by using member checking. I also took steps to ensure the findings were presented in a credible and reliable way so as to increase the accuracy and reliability of my study.

Member checking was done by telephone with individual focus group members to determine whether findings and major ideas accurately portrayed their experiences. There are analytical implications associated with constructing focus group participants as passive subjects, who hold opinions and preferences that are considered to be objective "facts," best expressed in group situations under the control of the moderator (Coule, 2013). As the moderator, and by using a semi structured approach, I was able to steer the conversation around the phenomenon, while attempting to keep the discussion in an objective state. I ensured that I did not bias the focus groups by swaying the conversation in one direction versus another. The interview protocol for the focus groups (see Appendix D) helped me to stay on task and on topic.

Data Organization Techniques

Organizing the data by dividing it into manageable chunks that can be scrutinized for insights related to the research questions is the next step in analyzing qualitative data (Neuman, 2014). I used a notebook as a reflective journal to write any emerging understandings, thoughts, or observations that I acquired, to help gain insights related to the research question. When using a reflective journal during research, it can help to identify common themes by which to organize the data, as well as identify gestures which voice recorders cannot do (Asante & Meyer-Weitz, 2014). Using a reflective journal

allowed me to note major ideas that emerged during the interviews and focus groups. An effective means to facilitate individual reflection is through a reflective journal (Herrington, Parker, & Boase-Jelinek, 2014). Using a journal allowed me to note my own reflective examinations guided by the research question during the interviews and focus groups that I needed to recall during data analysis. Keeping a reflective journal can help to organize thoughts and ideas which can be reviewed later (Chang & Lin, 2014). In using a reflective journal to note ideas, I was able to better organize my data from the interviews and focus groups that aided in generating the major ideas from the discussion.

Data organization for interviews began with storing recordings on a flash drive. This flash drive is password protected so that only I can access it. The flash drive along with signed consent forms and all other data or documentation related to the study are stored in a locked filing cabinet to which only I have a key. Data on the flash drive was separated into folders to separate the interviews out from the focus groups. The names of the participants and of the organization are not be stored anywhere outside of the flash drive in efforts towards protecting identities and confidentiality. Alphanumeric codes were used to help organize data from each interview without having to use the participants' names. Data collected for this study was secured by passcode on the flash drive and the data will be maintained for 5 years in the locked filing cabinet, upon which the data will then be destroyed.

By using techniques coding, I was able to more easily organize my data into major themes. I coded data from the focus groups by using codes such as Member 1, Member 2, and so on. I coded data from individual interviews by using codes such as

Interviewee 1, Interviewee 2, and so on. By taking a comparative approach and by using data analysis software described below, I was able to correlate my data and organize it in a way beneficial for data analysis. This aided my thematic analysis in finding patterns and pinpointing the themes within the data. The data was entered into the qualitative data analysis software and this software helped me to organize the data collected from all data collection methods. This software helped me to organize my data in a visual way while allowing me to group my data in a manner to allow for comparison.

Data Analysis Technique

The purpose of continually analyzing data from my study is to be able to provide reliable findings to answer my research question. Data analysis in qualitative research does not occur in discrete steps but rather as an iterative, interrelated process (Kerwin-Boudreau & Butler-Kisber, 2016). In addition to integrating multiple sources of data collection, evidence suggests that data analysis can also be enhanced through the use of more than one analytic procedure (Kerwin- Boudreau & Butler-Kisber, 2016). In this study I used the conceptual framework as a viewpoint by which to analyze the data collected for my study. I analyzed the data by identifying major themes as well as by coding and categorizing data so that I could gain a clear picture of the in-depth data that I collected. A thematic analysis examines patterns as themes within nonnumeric qualitative data (Donaldson, Panesar, & Darzi, 2014). I incorporated thematic analysis techniques such as identifying patterns and pinpointing themes from the patterns. By using thematic analysis, I was able to generate my data, analyze the data, code the data, search for the major themes throughout the data, give definition and naming conventions to the major

themes, and then present these findings. I also enhanced data analysis and limit bias by using the member-checked versions of transcriptions from interviews rather than the original transcriptions prior to member checked feedback. I did not insert my own opinions into data analysis. I only used the data that was collected via the data collection methods used for this study.

I used methodological triangulation for this case study, as a data analysis process. Methodological triangulation ensures that that data is rich in depth (Fusch & Ness, 2015). Using methodological triangulation helped me to ensure that my dataset included in-depth data from conducting my study. By triangulating multiple methods of data collection, the researcher is able to obtain an in-depth understanding of the phenomenon in regards to the research question (Denzin, 2012). I collected data from three data sources to gain as much data as I could regarding the phenomenon of data governance practices for this study. Method triangulation is frequently used in qualitative studies and may include interviews and other methods of data collection all regarding the same topic (Carter et al., 2014). This study began with individual interviews, followed by conducting focus groups, and then document analysis. By using methodological triangulation, I was able to triangulate my data from all three data sources to present in my findings.

Data collected in this study was analyzed using NVivo Qualitative Data Analysis Software (QDAS) as a supplementary data analysis tool. The NVivo software can be utilized as an automated data analysis program and can assist in organizing codes (Kulczycki, 2014). This software was helpful and served as a primary repository for storing collected data from all data collection instruments used for this study. This tool

can help to manage the data as well as support a wide variety of methodological approaches. Qualitative data analysis software such as NVivo can aid in the data analysis process to help produce understandable and trusted results (Kaefer, Roper, & Sinha, 2015). By using this tool, I was able to manage and organize the data, analyze the data, and find insights within all of the collected data. The NVivo software allows for a full description and coding of dialogues, and can establish correlations among different participants (Munoz-Luna, 2015). Further, with NVivo, I was able to import my data, identify the themes as well code the data, create word clouds and word trees, use comparison diagrams, and search for the frequency of words while using coding queries.

Codes are brief symbols that represent the major topics present in the data and are developed by the researcher to cover such areas as events, relationships, situations, opinions, etc. (Neuman, 2014). Only when the researcher is satisfied that the coded data set reflects a comprehensive and valid map of the phenomenon under study is the coding complete (Neuman, 2014). Categorizing data helped me to identify major themes and patterns as they emerge. Then, I could connect or correlate the data. Furthermore, writing analytic memos throughout the process of data collection and analysis can help the researcher remain aware of assumptions or biases that might affect data collection and interpretation (Kerwin-Boudreau & Butler-Kisber, 2016). Coding is primarily an interpretive act meant to be the transitional process between data collection and more extensive data analysis (Owen, 2014). By coding my data I could more easily categorize and interpret the data that was collected during all of the data collection processes. By coding and categorizing data, and identifying themes, found any major manifestations

surrounding the topic of data governance as well as find patterns in the data. By using thematic analysis after coding, I identified the themes which are key themes that become major themes across data collection after triangulating the data.

Reliability and Validity

Respect for participants as well as professional probity means that the research procedure must have reliability and validity (Vanclay et al., 2013). To increase the reliability of my study, I used clear protocols, transparent processes, and clearly describe all data collection and analysis instruments and techniques. I presented all findings in as concise and unbiased of a manner as possible. I respected all participants and ensured their confidentiality. Triangulation is one of the strategies designed to increase validity and reliability in qualitative research (Bjorgvinsdottir & Halldorsdottir, 2014). I incorporated three methods of data collection so that I could triangulate the data that I collected. According to Denzin (2012), objective reality cannot be captured and we only what we know through its representations, in our efforts towards triangulation as a strategy towards reliability. Therefore I worked to reliably represent all of the data that I collected as well as my findings to ensure that my study is both reliable and transparent.

Validity in qualitative research means appropriateness of the tools, processes, and data (Leung, 2015). In my study, I ensured that data collection instruments and processes are clearly explained, while remaining consistent throughout my study. Participants give their time on the presumption that the research is legitimate, worthwhile and valid (Vanclay et al., 2013). In this qualitative research study, I sought reliability, validity, and trustworthiness. Trustworthiness has four components: transferability, credibility,

dependability, and confirmability (Schmidlein, Vickers, & Chepyator-Thomson, 2014). To strive towards increasing these measures, there are steps that can be taken so that research can be trusted.

Dependability

Dependability can be established if the research process is logical, traceable and clearly documented (Munn, Porritt, Lockwood, Aromataris, & Pearson, 2014). To address dependability, I used member checking by having participants verify my interpretations of the data collected from the individual in-depth interviews to ensure that they are an accurate depiction of what the participants intended to convey. Member checking occurs when interpretations are relayed to research participants to check for perceived accuracy and reactions, thus increasing the overall credibility of a qualitative inquiry (Perrotta, 2015). Both interviews as well as focus groups were member checked to determine if the findings and major themes accurately portrayed their experiences. Strategies towards dependability include keeping a journal to outline decisions made throughout the research process and to provide a rationale for the methodological and interpretive judgements of the researcher (Houghton et al., 2013). I kept a reflective journal to note emerging findings as well as other information throughout data collection.

Dependability is also based on understanding how the researcher's own philosophy, values, and perspectives have influenced the research process and findings (Cuthbert, 2014). All of my steps during data collection and analysis are clearly documented and traceable. By building solid rapport with my participants, I received honest and nonbiased feedback to all open-ended interview questions. Open-ended

questions provide respondents with the freedom to respond to questions in-depth, and in a way meaningful to them (Gordon, Rodde, Skaro, & Baker, 2015). The methodological quality of qualitative studies is linked to their dependability (Munn, 2014). I took steps to ensure that my study was conducted so that it is dependable and clearly documented.

Creditability

Creditability can be achieved by recruiting and interviewing participants who have experience (Gohery & Meaney, 2013). I worked towards achieving creditability by utilizing only participants in my study who were knowledgeable and experienced with the phenomenon being studied. This helped to establish rigor and accuracy in my study. By being consistent and thorough throughout my study and while interviewing participants, I gained as much information as possible related to the topic and phenomenon of my study. Researchers must ensure they collect sufficient data rather than trust all prior research in the topic area (Alami, 2015). The data collected came from credible participants who met the eligibility criteria to participate in this study, and were within the strict bounds placed upon this qualitative case study. The participants for this study were be credible informaticists within the health care organization. To ensure the trustworthiness and creditability of the findings, the researcher can use member checking and peer examination in the study (Bell, 2015). Member checking was be used for the individual in-depth interviews as well as the focus groups in this study.

Transferability

Transferability involves the transfer of the results from this study to another situation (Schmidlein et al., 2014). By collecting multiple types of data to employ

methodological triangulation and gain an in-depth perspective of the phenomenon, transferability is heightened surrounding the phenomenon as well as the study, even though it is a single case study primarily transferrable only within the single organization therefore limited in transferability overall. The primary objective of qualitative research is to ensure that the data are logical and the findings are trustworthy and transferable (Schmidlein et al., 2014). This remained my primary objective throughout my study. Transferability is a complex issue but findings can be more theoretically transferable to other contexts if rich data provides enough details regarding the case study organization and its competencies (Eriksson, Nummela, & Saarenketo, 2014). Throughout this study I worked to collect rich and in-depth data with three sources of data collection that should give a very in-depth picture surrounding the phenomenon at the case study organization.

Confirmability

Confirmability is how the research remains objective in interpretation of the data (Schmidlein et al., 2014). I worked to remain objective throughout data collection, organization, analysis, and the presentation of my findings. Confirmability is the transparency of the results from the review of the researched, not the researchers (Harding & Fox, 2015). I worked to ensure that my study is objective so that the readers of the study find it is confirmable. Confirmability has not been established when creditability, transferability, and dependability have only been partially established and the process of the research is not clearly traceable (Cuthbert, 2014). By taking steps towards ensuring my study's confirmability, I ensured that the study and the findings are objectively presented. I used member checking to help ensure confirmability that the data

collected is accurate and depicts what the participants actually meant. Research validity and reliability are common concepts in quantitative research but also applicable in qualitative research as both must establish credibility (Olson, McAllister, Grinnel, Walters, & Appun, 2016). As a strategy towards conducting credible research and to ensure data saturation, I interviewed all participants until there were no new participants and no new information being provided and no new major themes emerged.

Transition and Summary

Section 2 restated the purpose statement, and provided information on the participants, sample, and research methodology decisions made in regards to my study. The section also addressed ethics and steps taken by the researcher to mitigate such any potential risks while focusing on reliability and validity of the study. The section also described the approaches taken for data collection, data organization, and data analysis.

In Section 3, I will present the findings from my research study, describe applications for professional practice, address implications for social change, make recommendations for future works, and offer reflections.

Section 3: Application to Professional Practice and Implications for Change

This study's focus was exploring strategies for implementations of data governance practices. In this section, I will present findings from data collection and data analysis, and describe how this study may contribute to research in the field and society. I will also address positive implications for social change. I will then make suggestions for future work and will reflect on the study.

Overview of Study

The purpose of this qualitative, exploratory single case study was to explore strategies that informatics specialists use for implementing data governance practices. The data for this research study came from conducting semi structured interviews and focus groups with informatics specialists, and analyzing organizational documentation. The section begins with a brief overview of why and how the study surrounding data governance practices was conducted, and I then provide a summary of the findings.

Presentation of the Findings

At the beginning of this study, I wanted to answer the following research question: What strategies to informatics specialists use to implement data governance practices? In this section, I will present the findings from my research study and present five major themes that emerged after conducting the study. I used methodological triangulation to analyze the three sources of data, which were semi structured interviews, focus groups, and organizational document analysis. I used member checking to enhance methodological triangulation and to ensure correct representation of the data. The five major themes that emerged from data analysis were as follows: (a) structured oversight

from committees and boards, (b) effective and strategic communications, (c) compliance with regulations, (d) obtaining stakeholder buy-in, and (e) benchmarking and standardization. These five major themes illustrate potential strategies that could be used for implementing data governance practices in organizations.

Theme 1: Structured Oversight With Committees and Boards

One emergent theme from data analysis was the use of boards and committees. This theme encompasses the need for boards and committees to provide structured oversight for implementing data governance and information management practices. For committees to be structured effectively, they need to have equal representation from all departments or groups. The committees can then serve as oversight forums for debating and implementing data governance practices and policies. For the committees and boards to be efficient structures providing organizational oversight, they should consider all varying sides of the policy discussion and ensure alignment with organizational objectives. The hierarchy of the committees and boards must be defined as part of the organizational structure.

All three focus groups as well as all 10 individual interview participants indicated the importance of having structured committee and board oversight for the implementations of data governance and information management practices. The interviewees all stated the effectiveness of the existing committee and board structure which has representation from all institutes at the organization. Members of all three focus groups indicated that the committees and boards at the organization were effective and achieved outcomes with regular meetings and high attendance. Focus Group Member

6 noted that “you have to have representation from all institutes to get really good feedback.” Focus Group Member 9 pointed out that the CIM committee is “multidisciplinary and multiinstitute so there is a good representation of different people who are affected and then making recommendations for policy and guidelines.” Further, all three focus groups relayed the use of working groups and ad hoc groups of committee members who report and relay information up through official channels to subcommittees and higher-level committees on an as-needed basis.

Methodological triangulation was achieved, as 15 of 19 collected organizational documents also supported this theme. The documents included 12 meeting agendas from the CIM committee. The meeting agendas show the structure of the meeting and the topics that would be covered during the CIM committee meetings and who will be speaking to introduce each data governance topic to be discussed. Other documents supporting this theme include the charter document for the CIM committee, the charter document for the clinical documentation control board, and a document entitled “Ranking CIM Improvement Projects” that ranks CIM projects by priority. The two charter documents outline the purpose, roles, and responsibilities of members, outlining who has membership, and addressing meeting frequency as well as what reports will be produced from the board and committee as part of the hierarchical structure of the organization. The document improvement project includes the structured oversight given to data governance initiatives the committees is discussing and debating.

Table 3

Frequency of First Major Theme

Source of data collection	*n*
Interviewees	10
Focus groups	3
Documents	15

Note. Theme 1, structured oversight from committees and boards; *n* = frequency.

The Clinical Documentation Control Board Charter document states that "The Control Board provides a summary overview of clinical documentation development on a (not less than) quarterly bases to the CIM committee determines which requests require input from the CIM committee prior to development." The CIM charter states that "The Committee Chair will submit a report to the Chair of the Medical Board, through the Chair, Clinical Quality Committee at least quarterly, summarizing committee activities and recommendations." Further, part of the purpose of the CIM committee as listed in their charter document is to "provide oversight" and "guide and recommend policy regarding the management of health information" by "providing guidance to the Medical Board regarding information systems functionality, and policy changes required to ensure optimal patient care and research support." Both charter documents refer to the hierarchy of boards and committees.

Recent literature supports the theme of providing structured oversight and ensuring alignment with organizational goals. Kiron (2017) stated that organizational leaders must decide who is responsible for data governance, whether that involves councils or committees composed of leaders from across the organization. Ransbotham (2017) eluded to the fact that organizations will not work without structure in their quest for data governance. Further, Holmes (2016) asserted that governance boards and committees are central to establishing policies and procedures within the organization. My findings are consistent with this recent literature because at the case study organization, there was a clear hierarchical structure of data governance committees and boards that report to one another to provide a clear chain of structure and responsibility for data governance endeavors. For example, the CIM committee reports up to the medical board. In addition to finding a common language, those responsible for data governance must also create definitions of success consistent with organization's overarching data governance strategies (Kiron, 2017). At the case study organization, the CIM committee ensures it adheres to clinical center policy and overarching institutional policy in addition to other policy and regulations. The literature supports and illustrates the need for structure and oversight regarding data governance practice and policy initiatives.

The use of committees and boards can provide structure to the process of implementing data governance practices which is explained by institutional theory as the conceptual framework for this study. Institutional theory aligns well with the findings related to this theme. Chakrabarty and Bass (2014) suggested that institutional theory

allows effective theorizing on how external institutions can affect the ability of boards to provide oversight to organizations. The institutionalization of a legitimacy judgment implies that the stability of the social order is protected by two separate mechanisms: (a) by the institutionalization or an organization, structure, or practices, and (b) the institutionalization of the legitimacy judgment about it (Bitektine & Haack, 2015). Eight interviewees eluded to the fact that the legitimacy at the case study organization comes from committee and board structures and oversight that leads to meeting regulations. Focus Group Members 1 and 5 spoke specifically to how they legitimize themselves as an organization. Gomez and Atun (2013) noted that an institutional approach helps to explain stakeholders and their individual interests leading to the implementation of governance and boards. Having boards and committees allows for accountability and structure, which also allows for effective oversight.

Using committees and boards is an example of using similar hierarchical structures, as an example of mimicry and isomorphism as explained by institutional theory. Individuals sometimes participate and sit on the boards they form, also having similar policy interests that affect subsequent processes, practices, and governance outcomes (Gomez & Atun, 2013). At the case study organization, the lead members who formed the committees also held roles on the committee themselves: Focus Group Member 6 and Focus Group Member 11 both stated that they held a role on the CIM and on lower-level committees reporting up to the CIM. The committees and boards at the case study organization have the same structure and members represent every institute within the case study organization. Bitektine (2015) indicated that actors play an

important role in the legitimacy process in an organization. The findings from the study relate back to the conceptual framework as it refers to actors who play a role in the legitimization of the organizational structure.

There were six data governance related boards and committees at the case study organization, and it was clear which subcommittees reported upward to higher level committees and boards. All interviewees and focus groups duly noted that the CIM committee reports directly to the medical board for all data governance practice and policy recommendations that should go forward. Institutional theory observes organizational structure operating in this fashion and in a hierarchical format representative of stability and legitimacy. Bitektine (2015) described the context of legitimacy and how too critical of legitimacy can create a sense of illegitimacy, whereas a consensus can create the feeling of trust and validity. The way in which the committees and boards at the organization discuss regulatory changes and mandates is very significant with institutional theory which describes this as a manner in which government mandates can actually prompt the use of committees and boards. The hierarchical nature of the structure is also indicative of the way institutional theory describes the formation of bodies that play a role in legitimacy and judgement formation which can be benchmarked by other organizations and social norms.

Literature discussing institutional theory relates back to how committees and boards are formed initially. DiMaggio and Powell (1983) noted that organizational change and structure can come as a direct response to government mandates. These changes in structure can include either formal or informal bodies such as committees,

boards, subcommittees, ad hoc members, and pilot groups. Oliver (1991) explained that mimicry or isomorphism between organization shows through via organizational models. Bharati et al. (2014) explained how institutional theory has been used to show how organizations conform to shared processes to shape organizational decision-making. DiMaggio and Powell described how representation on boards helps give ceremonial influence to organizations, and their structures can be copied throughout their fields. DiMaggio and Powell stated that organizations are most homogenous in structure and process. The literature supports this theme and is relevant to the findings in my study that portray how committee and board structure can be copied from organization to organization, as well as internally with the creation of new committees or boards. This was evident as Focus Group Members 2, 4, 6, 9, and 11 as well as committee agenda organizational documents referred to the creation of new committees and boards at the organization on an as-needed basis.

Committees and boards must provide structured oversight to align with organizational objectives. Tallon (2013) recommends the use of steering committees to assess data value, costs, and oversee compliance with internal policies and legal rules when implementing data governance. Oliver (1991) noted that negotiating practices with institutional stakeholders is a strategic response to institutional processes. In my study, the process of requesting data management changes at the case study organization resulted in policy items for inclusion that were discussed and debated at committee meetings. DiMaggio and Powell (1983) noted that the information sharing amongst professionals helps identify hierarchies and assists the flow of personnel across

organizations. Institutional theory therefore explains why the hierarchical structure of committees and boards is needed for the exchange and flow of information throughout the organization.

Theme 2: Effective and Strategic Communications

Effective and strategic communications was another emergent theme from the data and is necessary when implementing data governance practices. Effective communications begin with defined roles and responsibilities to include a lead change agent when implementing data governance and information management practices. For employees at all levels to understand the strategic communications regarding changes that are coming, written documentation that includes policies and guidelines are needed. Effective communications include the proper dissemination of information and changes to all levels of the organization. Finally, the theme of effective and strategic communications requires education and training for staff and stakeholders so that everyone can understand what is being communicated regarding new or changed practices and how these changes will affect them.

All 10 individual interview participants indicated that defined roles and responsibilities are important so that everyone knows where changes and new implementations are being communicated from. As part of effective communications, the 10 interviewees also indicated that a lead change agent should be established. Interviewee 4 identified that a factor for getting the most out of data governance implementations is to have a main driver, such as someone leading the change who is also on the board or committee. Interviewee 6 noted that a challenge to data governance implementations is

getting everyone to reach a consensus, which can be addressed by having a clear and consistent message disseminated from the lead change agent, boards, and committees.

Six of the individual interviewees indicated that one of the most effective strategies for implementing data governance practices is to provide written documentation that includes policies and guidelines. Communications must be strategic in written form to be effective and also include standard operating procedures that can be accessed by staff. Focus Group Member 2 stated that the CIM committee is trying to "keep a standard of care and documentation regarding patient safety and keep it all cohesive."

Interviewees 1, 2, 3, 5, 7, and 9 indicated that when it comes to communications, the proper dissemination of information is one of the most effective strategies for implementing data governance and information management practices. Documentation that can be referred to is also an aspect of ensuring the effective dissemination of information. Any information that is disseminated regarding changes in practices or implementations of new practices should be consistent, and the same information should be provided to everyone so that the practices are understood at all levels. Interviewee number five noted that it is "important to ensure that everyone sees the big picture" and that everyone understands the reasons for the implementations. Interviewee four noted that the clear dissemination of information regarding data governance practices is an effective strategy for these types of implementations. Focus group member one stated that "the CIM (committee) is a check and balance before we put things out there, that way people have time to absorb the change and disseminate it back to their institutes or

departments, and think about how this is going to affect operations." Focus Group Member 11 confirmed that CIM committee members act as representatives and can disseminate information, give staff notice of changes, and answer questions regarding the data governance practices.

Five interviewees and all three focus groups noted the importance of holding training and education forums with staff at all levels so they know how changes are going to affect them and their daily work. Training is best provided in person, department by department, and even by means of one-on-one training. Training and education surrounding the implementations of data governance practices will allow staff members to understand how the implementations are going to take place and how they will affect their daily work. As part of document analysis, there was an organizational Microsoft PowerPoint presentation that confirms that training and education are provided to users when new data governance practices are implemented. This Microsoft PowerPoint presentation of slides goes over the implementation plan for rolling out the practices, states when the overarching committee endorsed and approved the new implementation, and is in-depth describing the new functionalities.

Table 4

Frequency of Second Major Theme

Source of data collection	*n*
Interviewees	7
Focus groups	3

Documents	1

Note. Theme 2, effective and strategic communications; *n* = frequency.

The literature supports the theme of effective and strategic communications. Bitektine and Haack (2015) asserted that communication is important when it comes to legitimacy judgements by evaluators. This ties my study's findings back to the concept of legitimization which is an underlying concept of institutional theory as the conceptual framework for this study. Bitektine and Haack also stated that communication is an essential element of the legitimacy processes that can influence institutional strategies. The process of gaining institutional legitimacy was illustrated by two focus group members indicating that the case study organization sought to legitimize itself while implementing effective data governance and information management practices and policies.

The literature also supports the findings that link strategic communication to effective decision-making and the clear dissemination of information throughout an organization. Gomez and Atun (2013) found that governing boards are effective when it comes to enhanced governance practices such as decision-making, accountability, and social responsibility. Decision-making transparency is a part of strategic communications. Seven interviewees indicated support for strengthened data governance implementations by indicating that proper clarity and dissemination of information at all levels would aid in effective implementations and in meeting the organization's objectives. Authors in the literature agree with the findings, as Selznick (1948) stated that

in formal organizations, the maintenance of the system includes the stability of the lines of authority and communication. Bitektine and Haack also asserted that the process of institutionalization cannot be understood without attention to communication amongst individuals at all levels. The clear dissemination of information to all levels is an important facet of effective and strategic communications.

The literature aligns with the theme and ties back to my study's findings. The most recent literature suggests that data governance requires communication throughout the organization so that it is part of the organizational culture. To be most beneficial, data governance must be aligned with organizational culture (Ransbotham & Kiron, 2017). Three interviewees indicated that communications needed to align with the objectives and goals of the organization. Good data governance in open cultures may be facilitated by employee empowerment to identify and report issues while in closed cultures, a greater emphasis on oversight may be required to overcome social barriers of communicating information (Milmo, 2016). Effective data governance requires the ability for communication to flow between all levels of the organization.

Higher levels play a key role in sharing information throughout the organization. This was illustrated in my findings because the higher level committees and upper management ensured information was disseminated throughout every institute at the organization. Zheng (2013) stated that it is upper management's role to disseminate, communicate, and integrate information across the organization. Both internal and external communications are hierarchical. Zheng also stated that in public administration organizations, upper management introduces external information and integrates internal

knowledge. The literatures supports my findings because at the case study organization, external organizations in the same industry were considered for the way in which they incorporate new processes into the organization. One interviewee noted that they brought most of their knowledge from another health organization and that they were able to integrate that knowledge into the case study organization.

This theme aligns well with institutional theory as the conceptual framework for the study. Zheng stated that it is through the normative pressures discussed by DiMaggio and Powell (1983) that these pressures embed themselves through internal organizational communications and collaborating organizations. Cornelissen, Durand, Fiss, Lammers, and Vaara (2015) asserted that communication is at the heart of institutional theories and referred to this term as 'communicative institutionalism'. Cornelissen et al. contended that communication at all levels establishes institutions and organizations. Cornelissen et al. stated that institutions are an outcome of ongoing processes of communication between diverse stakeholders. The findings from my study indicate that communications are also at the center of implementing data governance practices. Cornelissen et al. (2015) further stated that it is primarily in and through communication that institutions exist and are given shape. The literature and framework support and agrees with communications that are disseminated properly throughout an organization when it comes to changes in data governance practices. Effective and strategic communications are important for organizational structure at all levels throughout the organization.

Theme 3: Compliance with Regulations

Another theme that emerged during data analysis was the need for compliance with regulations. When implementing data governance and information management practices, the organization must comply with overarching rules and regulations set forth by government agencies, other governing bodies, and funding agencies. Regulations that some health organizations may need to meet include those set forth by FDA guidelines, HIPAA, Sarbanes-Oxley, the Privacy Act, written authorization requirements, financial reporting obligations, as well as guidelines for the protection of patient privacy and patient safety. Oftentimes, it is these regulatory guidelines that drive the implementations of new data governance or information management practices. As regulations change and new regulations are added, practice and policy must conform to updated guidelines and regulations. This means that data governance stakeholders must continually assess and reassess the way in which they are meeting and complying with multiple regulations and guidelines set forth by external bodies.

All ten individual interviewees indicated that regulatory compliance is an important factor when implementing data governance practices. All interviewees noted that compliance with regulations is mandated by agencies that will audit the organizations to ensure proper compliance. One individual interviewee stated that when it comes to data governance and regulatory compliance, “they go hand in hand.” Another interviewee stated that “regulation is a main driver” for implementing new and improved data governance practices that will help to ensure the organization is keeping up with regulations and meeting all guidelines set forth by regulatory bodies. The data collected

from the individual interviews underlines the importance of keeping up with current regulations and policy requirements as an organization.

The data collected from all three of the focus groups also indicated the challenge and the importance of regulatory compliance. Focus Group Member 1 stated that "whether its accreditation standards or human subjects research protection standards, anything that dictates how we should be doing business, all of that gets incorporated into discussions that lead to a decision or a recommendation." Regarding the interview question of how data and information management practices influence outcomes such as funding efforts, regulatory compliance, or perceived legitimacy within the industry, Focus Group Member 5 stated that "it has a huge effect on compliance because if it's done wrong we're going to get dinged." Johnson (2015) noted that regulatory reporting has a track record of being subject to steep fines for erroneous reporting. Focus Group Member 6 stated that her role on the CIM committee is to serve as the liaison between IT components of managing systems as well as the clinical pieces so the CIM is bridging the gaps to ensure accuracy of clinical documentation, ensuring that they are following regulations, and protecting patient safety. The findings from the study illustrate that the theme of regulatory compliance is a requirement and not an option.

Organizational documents that were collected for the purposes of document analysis corroborated the commitment to, and the need for compliance with regulations. The Clinical Documentation Control Board charter document states that one of its responsibilities is to "ensure compliance with regulatory requirements." The CIM

committee charter also states that it will "assure compliance" with regulations. Focus Group Member 10 stated that

> "Part of the work is looking at regulatory factors so when you do have two different groups with strong opinions and some want to go detailed for documentation, sometimes they look at federal standards and other industry standards to make sure they are being practical and not too extreme in data governance recommendations because they won't want to be burdensome, so regulations help guide practice/policy recommendations and are referred to."

The rich data set and the findings from the interviews, focus groups, and organizational document analysis led to methodological triangulation for the theme of compliance with regulations.

Table 5

Frequency of Third Major Theme

Source of data collection	*n*
Interviewees	10
Focus groups	3
Documents	2

Note. Theme 3, compliance with regulations; *n* = frequency.

The literature supports the theme of gaining and maintaining compliance with regulations. Johnson (2015) stated that new regulations have introduced a formal data

governance requirement. Prasetyo and Surendro (2015) noted that committees should ensure that their data governance practices and policies adhere to regulations outside and inside of the organization. Oliver (1991) further noted that negotiating practices with institutional stakeholders is a strategic response to institutional processes. All interviewees stated that stakeholders from across the organization were involved in providing input for changes in data management processes.

There is a need to facilitate with all stakeholders to guarantee proper compliance with regulations, guidelines, and funding agencies. This concept is well aligned with the findings from my study that demonstrate this need. Organizational documents such as PowerPoint presentations used for training illustrate the need to also comply with internal organizational processes and policies while adhering to external regulations. Two of the three focus groups indicated that they look at how other hospitals and health organizations comply with regulations and can compare this to how they themselves are currently meeting regulations. Burniston (2015) outlines how regulators are asking for more and better data in regards to data governance. Compliance with regulations includes not only working with external regulatory bodies, but all internal and external stakeholders involved with the organization.

More recent literatures also supports the theme of gaining compliance with regulations as an effective strategy for implementing data governance practices. Data governances removes uncertainly regarding data sharing (Ransbotham & Kiron, 2017). The issue of data integrity in pharmaceuticals is now becoming a hot topic among regulators and the industry (Milmo, 2016). Consequently, with some of the new

guidelines, the regulators have been straying into new territory by trying to influence corporate cultural strategies and policies (Milmo, 2016). At the case study organization, the focus groups described ways that federal regulators have tried to influence the organization to get it to comply with certain regulations that do not actually have overarching influence over the organization due to the type of hospital it is. Swoyer (2016) indicated that auditors and regulators will need to grow into a less strictly black-and-white understanding of data governance. The literature aligns with the findings from the study and corroborates the need for the continual assessment of how an organizations need to continually comply with regulations.

The theme of regulatory compliance aligns well with institutional theory because institutional theory considers processes by which organizations take shape and establish authoritative guidelines. Oliver (1991) stated that institutional theory emphasizes imitation of organizational structures due to pressures such as regulations. Institutional theory is a solid lens for viewing the way in which regulations can help an organization take shape. At the case study organization, it was evident that regulations and guidelines from external governing bodies and funding agencies affected the way in which organizational structure took shape, as evident by the items discussed and debated in regards to maintaining regulatory compliance.

As institutional theory considers policy making and the formal and informal aspects of government and structures, this helps explain how organizations adopt similar data governance practices to become compliant, and by doing so, achieve organizational isomorphism and legitimacy which are key to institutional theory. Oliver also stated that

organizations can being scrutinized by regulatory agencies by establishing ritualistic processes related to compliance with regulations and guidelines. DiMaggio and Powell (1983) asserted that the hierarchy involves committees to reinforce structure in the organization amid funding sources. DiMaggio and Powell stated that in some circumstances, organizational change is a direct response to government mandate such as regulations. Oliver stated that organizations typically adapt to standards established by the government. Being compliant with regulations and ensuring regulatory compliance from an organizational standpoint helps the organization to obtain and maintain its structure as an institution.

Theme 4: Obtaining Stakeholder Buy-in

Obtaining stakeholder buy-in was a prominent theme that emerged from data analysis. The essence of this theme is that obtaining stakeholder buy-in at all levels of the organization is important when implementing data and information management and governance practices. Obtaining stakeholder buy-in includes reaching agreements and seeking involvement at all levels. Obtaining stakeholder buy-in can include debating issues to gain consensus as well as allowing for feedback from stakeholders. Further, obtaining stakeholder buy-in may also include pilot groups that test new changes in practices before they are released to all parts of the organization so that initial outcomes can be assessed.

Seven interviewees and members in all three focus group expressed the importance of gaining stakeholder buy-in at all levels of the organization. One interviewee indicated that obtaining stakeholder buy-in, including buy-in from

employees, nurses, and doctors was a challenge of data governance and information management implementations. Another interviewee suggested that one factors for getting the most out of data governance is to have buy-in at all levels and for employees at all levels to understand any changes. Five interviewees noted the benefit of gaining buy-in from stakeholders up front in the process of the implementations. Interviewee four described how gaining buy-in from stakeholders and thinking through all the implications are part of addressing the challenges of implementing data governance and information management practices.

Focus Group Member 3 shared that to gain stakeholder buy-in at all levels, the CIM brings representatives from all institutes to the committee meeting to vote on an issue, and that generally by the time the issue has reached the committee, it has gained all necessary stakeholder buy-in. Focus Group Member 5 stated that "gaining buy-in from stakeholders and thinking through all of the implications are part of addressing the challenges." Focus Group Member 11 referenced another non-official prescriber's committee containing physicians and mid-level practitioners who advise the CIM committee regarding issues that physicians are encountering as one method of feedback. Part of obtaining stakeholder buy-in includes answering questions that stakeholders have at all levels. Focus Group Member 9 stated that the CIM committee

> "Creates a well-rounded forum for presentation and discussion of IT management and also clinical and research process to get together so there is not a decision being made in isolation; there is a Chair and an approving body so changes that might affect multiple groups can be brought to this subcommittee, discussed, and

> approved in a fashion where they can go to production and start to be used and brought back to the group for later reporting. It creates a healthy communication and dialogue around changes that affect a lot of groups in the organization."

One individual interviewee also noted the importance of clear dialogue being driven down from the start, so the message remains the same and buy-in is obtainable. This way, all stakeholders are included in discussion, debate, and decision making surrounding implementing data governance and information management practices.

The analysis from organizational documents led to methodological triangulation. The CIM committee charter document asserts that part of the purpose of the committee is to respond to user requests for enhanced functionality as well as to provide performance metrics with real-time feedback to users. The Clinical Documentation Control Board charter document describe that this control board serves as a liaison between the CIM committee and requestors of clinical documentation. One pilot document details how stakeholders at lower levels take part in testing the execution of new or changed data governance and information management practices, and then report back thru their institutes and back up to the committee. An information collection proposal document shows that the critical piece of deciding what education and training needs are required for staff can require additional effort and assistance from several groups across the organization to accurately determine the needs. Finally, an assessment of training needs document for a project state that considerations are reaching staff in a meaningful and lasting way, having a participation requirement, consideration of a potential 'train the trainer' model, on-going training needs, and budgetary restraints. This document shows

that medical staff, nurses, as well as frontline staff to include admissions are all to be included in several ongoing trainings across various topics, and that training materials should include in-person training allowing for Q&A as well as on-line training and printed references. Assessing the progress of early adopters and pilot groups of stakeholders are also helpful for coming up with lessons learned just prior to implementation. These efforts are useful for keeping all stakeholders in informed and trained regarding changes that will take place.

Table 6

Frequency of Fourth Major Theme

Source of data collection	*n*
Interviewees	10
Focus groups	3
Documents	15

Note. Theme 4, obtaining stakeholder buy-in; *n* = frequency.

The literature supports the findings from the theme of obtaining stakeholder buy-in. Hovenga (2013) asserts that data governance requires input and agreement from all stakeholders. Prasetyo and Surendro (2015) explain that one of the purposes of data governance is to ensure that stakeholders gain confidence in the data management initiatives of the organization. Seven interviewees at the case study organization noted the importance of obtaining stakeholder buy-in within the organization to get employees

at all levels on board with changes so that they are effective. The three focus groups indicated that obtaining stakeholder buy-in includes stakeholders such as data governance committees, executive leadership, mid-to-lower management, clinicians and researchers, other end-users, other data stewards, and support teams. At the case study organization, external stakeholders include regulatory bodies, pharmaceutical representatives, knowledge and data sharing organizations, and other hospitals and health organizations. Chapple (2013) stated that achieving data governance goals requires an institutional commitment of resources from a variety of different stakeholders, including their collaboration and involvement. Chapple further explained that data governance changes should be discussed and debated with stakeholders prior to their implementation and that informed stakeholders should receive notice of the implementations in advance before they are rolled out. The findings from the case study organization align with and are supported by this literature because at the case study organization, CIM committee meetings allowed for debate, involvement, reaching consensus, and obtaining feedback. Further, the CIM committee members from every institute would work to inform their respective institutes of changes in advance of any changes or new data governance practices being rolled out.

More recent literature illustrates the need for obtaining stakeholder buy-in for data governance implementations. Regulatory agencies and data governance professionals and stakeholders are patient advocacy representatives that should be a part of data governance discussions and teams (Holmes, 2016). Data governance can no longer be an afterthought, and requires more specialized personnel such as members of clinical

research times that do not traditionally participate in governance efforts (Homes, 2016). This aligns with findings from this theme because as a health care organization, there are varying types of stakeholders that may not normally be considered as stakeholders in data governance type initiatives. Bennett (2016) notes the importance of stakeholder engagement with data governance and data management processes and being able to draw insights from stakeholders. DeMarquet (2016) stated that one of the requirements for strong data governance is having mechanisms where stakeholders can review and approve proposed changes. These forums for feedback were evident at the case study organization because per the CIM meeting agenda documents, changes would be discussed, and then brought up again at future meetings so that CIM committee members could gain feedback on the issues and bring them back to the committee for inclusion in discussions.

The conceptual framework of institutional theory for this study also aligns with the findings from the theme of obtaining stakeholder buy-in. DiMaggio and Powell (1991) and Oliver (1991) noted that to earn legitimacy, organizations attempt to ensure alignment between social norms and new implementations. Implementations of new practices are most influenced by normative pressures of institutional theory and stem from the institutional environment. Institutional theory notes that as new practices are implemented and institutions are legitimized, organizations must have the backing of their stakeholders for it to be deemed as acceptable. From resources to social backing, the buy-in of all stakeholders is important for organizations and collaboration with groups that can grant legitimacy to them. A high level of institutional internalization results in

better relations with stakeholders in attempts to improve and meet social obligations (Llamas-Sanchez et al., 2013). Institutional theory relates to this theme because it describes the process of changes and gaining support for the implementations of new practices. The case study organization seeks to gain acceptance and a stamp of legitimization from differing types of stakeholders, from internal institutes to external commissions and bodies. The network of social relations between all stakeholder groups is also vital for effective implementations of data governance and information management practices as well as cohesion amongst these groups and approval bodies.

Negotiating with institutional stakeholders is an example of bargaining and compromising with stakeholders gain their buy-in as a strategic response to institutional processes under institutional theory. At the case study organization, CIM committee meetings as well as other board and committees compromise to get data governance changes and implementations done so that they do not negatively affect some institutes or burden their normal business processes. Organizations need balance to maintain relations among stakeholders and organizational interests (Oliver, 1991). This theme of obtaining stakeholder buy-in is well understood through institutional theory because as part of obtaining this buy-in, CIM committee members debate and discuss changes in policy and practice to come to a consensus regarding how and what practices or changes should be implemented. Organizations and groups use bargaining and compromising tactics in pursuits of conforming and accommodating institutional rules, norms, and values as part of the organization's efforts in promoting their own interests, aligning data governance endeavors with the conceptual framework for this study.

Institutional theory serves as a relevant conceptual framework and theoretical perspective by which to view legitimizing responses as well as motivations for implementations. The stakeholders buying into the changes and new practice implementations play a key role in aiding the process of legitimization of change. However, stakeholder theory would also be a relevant theory by which to study the motivations of stakeholders throughout the change as well as how stakeholders exert influence and are influenced by change, in future research. Meanwhile, institutional theory offers insights into the normative, mimetic, and coercive pressures of obtaining stakeholder buy-in. For this case study, institutional theory offers a perspective to help understand the theme of obtaining stakeholder buy-in and that goals of compliance are a response to meeting guidelines, gaining legitimacy, and meeting pressures to survive in an industry.

Theme 5: Benchmarking and Standardization

The final theme to emerge from data collection and analysis was benchmarking and standardization. The theme of benchmarking and standardization encompasses organizational benchmarking, industry standardization, and following set industry guidelines and best practices. Benchmarking is used to compare the organization to other organizations in the same field or like industry. Standardization goes hand in hand to ensure that hospitals and health care organizations can interact with other similar organizations based upon standards that they all follow, such as medical codes for diagnosis. By using benchmarking and standardization, hospitals and health care

organizations can incorporate industry best practices to assist them in achieving compliance with guidelines and rules.

Guidelines and rules that health care organizations must remain in compliance with can include the Privacy Act of 1974, accreditation standards, human subject's research protocols, and other guidelines and standards that ensure there is a standard regarding patient care for hospitals and like organizations. Many hospitals and health care institutions must also maintain compliance with HIPAA. Five interviewees noted that by meeting some regulations, they are in essence meeting further requirements that can be overarching and incorporating of other guidelines. The importance of benchmarking and standardization is so that hospitals and health care institutions can collaborate to determine best methods, best practices, and ways to achieve compliance.

Five interviewees and all three focus groups indicated the importance of benchmarking and standardization efforts to well align with industry best practices and efforts of other like organizations. Interviewee 10 stated that

> "The reality is if you're not adherent to the industry standards; if you don't support them, then when it comes to being able to look at how you measure up against other institutions or how you're going to share data with other institutions or do cross-institutional research, you really can't, unless you've already looked at the underlying standards which dictate how the data is organized, the meaning of the data, and how the data is stored."

Interviewee 10 also stated that

> "We reach out to standards organizations all the time. There are standards bodies such as HL7, CDISC, then there's the industry standards like W3C for how to transmit data cross the internet, and there are ever evolving standards for how to encrypt data, but you have to keep track of all these things."

Focus group members from all three focus groups discussed how benchmarking and standardization occur regarding implementing data governance and information management practices at the case study organization. Regarding the focus group question of how data and information management and governance practices serve a purpose after being implemented, Focus Group Member 3 reported that they make sure they keep up with standards that they have to, including meeting standards and policies required by all hospitals. Another focus group member stated that they use a lot of unofficial polling to reach out and see how other hospitals and health care organizations are doing things. This focus group member stated that "there is a lot of expert consultation and informal efforts."

Focus group members in all three focus groups described how they have a whole set of data that is collected and reported regularly. Further, there are hundreds of measures for comparing benchmarks such as quality of data, infection rate, hospital epidemiology service, falls data, infection control, and more. One focus group member stated how the organization also compares itself internally and looks at things like patient safety and clinical documentation, data accuracy, and their repository of data that can be pulled by anyone who wants to ask questions or gather metrics. Focus Group Member 4 explained that they do benchmarking to find out if they are looking at a new process and

that the benchmarking is done with other hospitals, professional organizations, literature, and other hospitals all around the country. Two focus group members spoke directly to incorporating industry best practices as a method towards good data management practice.

The analysis of 19 organizational documents allowed for methodological triangulation of this theme and confirmed its importance. A document titled the Electronic Clinical Documentation Build Process lists one of its guiding principles and mission points as facilitating data sharing and benchmarking with others inside and outside the organization. In one Microsoft PowerPoint presentation for a patient portal upgrade project, there is a slide dedicated to benchmarking and it shows what vendors are used by many surrounding hospitals and health care organizations, what response times are, and other metrics. Another organizational document referred to the way that clinical documentation must be continually reviewed to ensure it meets standards, regulations, and evidence based practice. Three meeting agendas also referred to this process of clinical documentation quality review and standards being discussed at CIM committee meetings.

Table 7

Frequency of Fifth Major Theme

Source of data collection	*n*
Interviewees	5
Focus groups	3

Documents	6

Note. Theme 5, benchmarking and standardization; *n* = frequency.

The literature aligns with the findings from the theme of benchmarking and standardization. Kauppi (2013) asserted that organizations use benchmarking as a primary method of imitation as associated with institutional theory. Oliver (1991) stated that health care organizations typically conform to guidelines set forth by federal agencies. The literature supports my study's findings because all interviewees noted that they must conform to certain federal standards as a federally funded hospital and research organization. Oliver notes that organizations may also be able to influence these guidelines by which they are held accountable as they influence differing levels of constituents. Responses to the organizational environment influence organizational performance as well as criteria that are used to evaluate them (Oliver, 1991). By benchmarking internally as well as externally, the case study organization can report for federal data reporting requirements and influence future regulations that are set forth by governing bodies.

More recent literature further supports the theme of benchmarking and standardization and aligns with the findings. Hay (2015) notes that data governance includes terms being used, ensuring acceptance across the enterprise, and conforming to naming standards and conventions. Holmes (2016) noted that it is increasingly important for health data governance to ensure standards for privacy, security, and appropriate use of personal health information. At the case study organization members in each focus

group discussed how it is easier to share data across health organizations when standards and naming conventions are used. Further, it makes benchmarking easier when you can compare numbers for disease diagnosis and report on these findings using standard terminology. Finally, there are standards for health data to ensure its accuracy, originality, consistency, and availability. Milmo (2016) noted that regulators seem to agree that in the long term, guidelines and standards of data quality will have to be changed for harmonizing data across the world.

This theme also aligns well with institutional theory as the conceptual framework for this study because institutional theory explains why organizations mimic practices of other organizations. Institutional theory shows why some hospitals and health care organizations would mimic other hospitals' processes, practices, and systems, to imitate organizational structure. DiMaggio and Powell (1983) discussed how standard operating procedures and legitimized rules and structures exist both in the government arena as well as outside of it. The case study organization documents standards using standard operating procedures, and other written guidelines and policy documentation. In the three focus groups, members explained that this was to gain standardization and be able to compare how other hospitals are doing things and achieving successful data governance and regulatory compliance. When an organization can compare itself to like organizations offering similar products or services, it can work to make improvements and implement changes where needed.

DiMaggio and Powell discussed that standard performance criteria can be indirectly imposed by subsidiaries as well as subject to reporting and regulations when

organizations are adopting practices compatible with that of parent corporations. Organizations mimic similar organizations in their field that they perceive as more successful (DiMaggio & Powell, 1983). This is demonstrated by the direct efforts of the organization to benchmark and standardize practices, processes, and systems with other hospitals and similar health care organizations. Further, this aids in compliance and having a common language with standards used across the same industry. The federal government routinely denotes standards for industrial fields that require adoption by firms (DiMaggio & Powell, 1983). These benchmarks, standards, guidelines, and norms help to shape the organizational structure and culture.

Applications to Professional Practice

Data governance is increasingly important and presents new challenges that must be addressed by health care organizations that must prioritize data governance implementations and practices (Homes, 2016). The application to professional IT practice from this study may benefit informatics specialists by expanding knowledge of strategies for implementing data governance practices. The results from this study may be used as a set of guidelines or best practices that organizations can used when undertaking such implementations. By implementing effective data governance practices, organizations can also improve data quality, data integrity, and risk management. The strategies illustrated by the findings from this study may improve professional IT practice because the increase understanding and effects that data governance has on an organization, to include enabling organizations to meet laws and requirements set forth by funding agencies and regulatory bodies. Effective data governance can enhance IT outcomes such

as data integrity and overarching data governance policies that provide structure related to IT practice.

The study's findings were significant because they revealed strategies that are currently used by an organization that has implemented data governance that continually implements new or changed practices. Informatics specialists who are currently working with data or who wish to implement data governance practices require strategies and knowledge on how to implement such practices effectively in their organizations. By providing strategies that can be used for implementing data governance practices, internal and external stakeholders can be aware of strategies that have been effective for another health organization that is compliant with applicable laws and regulations in regards to their data. Data from this study provide informatics specialists with a set of guidelines or best practices that serve as knowledge for assessing current strategies or efforts towards adopting, implementing, or maturing their current data governance practices. Findings from this study may also provoke informatics leaders to consider data governance implementations and maturation to improve organizations' data related efforts.

Implications for Social Change

This study's findings add to the existing knowledge of literature by providing information and knowledge on strategies for implementing data governance practices. The study's findings may also serve as a basis for positive social change. The results of this research may also raise awareness in support of implementing effective data governance practices and related policies. The data from the study supports the

conclusions that include the presentation of major themes beneficial for data governance implementations.

This study may be of value to society because its findings show how organizations can place practices and policies around their data to ensure its quality, integrity, and ultimately its protection. The findings show that many of the study's participants and focus group members agree on multiple facets of data governance, to include ensuring the effective dissemination of information and gaining input from all stakeholders. The governance of health information is greatly influenced by clinical data, society, and the organizational environment (Homes, 2016). The growing importance of data governance includes high standards for the appropriate use of health information in hospitals and health research environments.

Stakeholders of data governance for health care organizations include patients and their families. The organizations store protected health information and PII from these patients. Health care organizations cannot implement data governance practices after the fact (Holmes, 2016). Health-related data is now a concern for all health professionals because it is useful for the good of the public and required for the protection of privacy and confidentiality (Holmes, 2016). It is important for health care organizations and other organizations to consider how they can better protect patients, individuals, families, and communities when it comes to data privacy. Health care organizations must ensure participation in data governance initiatives to include clinical representatives, patient advocacy representatives, and regulatory experts that can help provide an in-depth approach to data governance. The outcomes from these implementations can protect and

provide quality data that can be used to help research cures for diseases and other lifesaving initiatives.

There may be far reaching effects based upon the outcomes of this study because organizations may be better equipped to share sensitive data such as national security data when their data is well maintained the data quality and integrity have been preserved. Robust data integrity begins with both management and employees embracing a quality culture and successful implementation of data governance measures (Milmo, 2016). By sharing such types of data, organizations and government agencies alike may have quick response times and better data sets which would allow them to respond to issues. Organizations and IT practitioners as well as stakeholders can benefit from successfully implemented data governance practices that protect many data types and facets of data.

The financial industry which is also faced with many data related regulations may also be influenced by the results from this study. The financial sector has data to protect financial data for all customers and stakeholders. If they implement effective data governance practices and policies, they will be better positioned to protect these types of data which includes keeping those without access to data from being able to access it. From health care organizations to the financial sector and beyond, it is clear that effective and successful data governance is needed to aid in protecting members of society, their personal information, and its integrity. By protecting data, society will have increased privacy, confidentiality, health care service, and beyond.

Recommendations for Action

As the need for data governance increases, organizational leaders and informatics specialists will need knowledge and effective strategies when implementing data governance and information management practices. Data governance designs must provide organizational value to influence organizational behavior (Ransbotham & Kiron, 2017). Strategies that have been shown to be effective from this study's findings include using committees or boards for structure and providing oversight, using strategic communications at all levels, ensuring compliance with regulations and laws, obtaining stakeholder buy-in, and using benchmarking, standardization, and industry best practices while taking a comparative approach and analyzing metrics. When strategies do not exist, informaticists should design implementations using such strategies that may be most effective for their industry and organization. Findings from this study are important to data informatics specialists, health information managers, health IT professionals and specialists, and data governance policymakers.

Steps that can be taken for ensuring effective and successful implementations of data governance include the clear dissemination of information, open forums for feedback, offering training and education, and naming a clear change agent that provides consistent messages regarding changes and the implementation of new practices within the organization. Organizations need overarching data governance policies, procedures, and practices that align well with organizational objectives. Internal and external stakeholders, committee and board chairpersons, mid-to-upper management at all levels

who are involved with data governance, clinical informatics, or health information may benefit from the results of this study.

The case study organization and contacts will receive the results of this study via e-mail so that it may be disseminated to informatics specialists who could share the findings with other colleagues, professional contacts, and others in the broader community of informatics specialists. My goal is that this published final study will be available for public searches when organizations are searching for strategies for data governance implementations. Whenever possible, I intend to give presentations or speeches regarding my findings from this doctoral study research. I also plan to disseminate the results of the study in further scholarly journal publications and by presenting at conferences. It is my intent to share the results of this study with data governance stakeholders in the community of research and professional practice.

Recommendations for Further Study

Recommendations for further study after conducting this research include more research in regards to data governance communications using a communications theory or further research surrounding data governance stakeholders using a stakeholder theory. Future work could also entail delving more into strategies for moving from one maturity level of data governance to a higher level of maturity. Limitations of this study included that it was conducted at a single health care organization. Future work may consider organizations or institutions of other industries such as the financial industry. Researchers may further aid the knowledge base and professional practice of IT by considering multiple case studies in the area of data governance. Finally, a quantitative study showing

effects or outcomes of data governance over time may be beneficial to professional practice.

Reflections

As I reflect upon this study, I see potential for organizations to harness their data and implement effective measures in the form of practices, policies, and procedures to help them innovate IT components like data sharing, data analytics, data mining, and reporting of data metrics. As a researcher, I consider the possibility of inserting bias into a study though I have not worked directly in the field of data governance and had no personal or professional connections to anyone directly involved with this study. From this study, I open myself to further interests regarding data governance and information management to include career roles. I have learned a great deal from the participants of this study and appreciate all of their time and willingness to help with this study. I now believe more than before I began the study, that there are great implications for data governance experts and that there are many challenges that organizations will need to address regarding their data. As a result of this study, I am convinced of the need for data governance efforts and strategies for handing organizational data while also embedding such efforts within an organization's culture and aligning it with organizational goals.

By implementing effective data governance, organizations will have better decision-making capabilities. Some organizations may still resist the need for implementing policies and practices around their data. This may prove to be a mistake, as laws and regulations may end up confirming the necessity of having such practices in place as more laws and regulations are formed to protect data. Current regulations such as

HIPAA and Sarbanes-Oxley have already required that many organizations implement data governance practices that will help to maintain data and ensure its integrity.

Some organizations realize that the need for data governance is paramount and are working to mature their current data governance practices. Depending on the industry, the flavor of data governance may be different. There is not a best approach for implementing data governance, but industry best practices and research in like industries may assist organizations in seeing how data governance is already operational in other organizations and institutions that offer similar products and services or have the same sets of stakeholders. Depending on the organization, certain rules and regulations may require that data governance practices focus on things like patient safety and the maintenance of protected health information or personally identifiable information. To remain compliant with these regulations, it is imperative that data governance practices are continually reviewed, assessed, and updated accordingly.

If organizations can effectively implement data governance by utilizing strategies that have been proven to be successful for other organizations, they can adjust their data governance approach over time and as needed. Data governance will position an organization to be able to foster the identification of data needs going forward and the organization will be well suited to avoid legal issues associated with the protection of sensitive or private data. Data governance and regulations in the field of health care can promote effective data sharing (Ransbotham & Kiron, 2017). Good data governance can be practical and beneficial, with improved data quality being perhaps the most important outcome from data governance.

Summary and Study Conclusions

In my efforts to uncover strategies that could be used when implementing data governance practices, I hope that I have also shed light on the need for data quality, integrity, and security in my research on the topic. The ongoing need for effective policies and practices in the area of data governance means that organizations will need to ensure they use effective strategies when designing data governance implementations. By implementing data governance, organizations can be more innovative, have increased success with big data projects, and be better apt to remain compliant with laws and regulations surrounding the protection of data.

In organizations where large amounts of data are stored, data governance professionals must consider approaches to maintaining their data. However, many organizations and leaders are reluctant to do so unless regulations and such pressures require they take immediate action. Many data governance professionals, organizational leaders, and informaticists require further knowledge about data governance and how to go about such endeavors. The data collected from this study which include interviews, focus groups, organizational document analysis showed many strategies that can be used by organizations when researching the best data governance approach for their organization. Methodological triangulation was used to validate the major themes and findings from this study across the multiple data sources.

The findings from the study, though based at a single health care organization, should have greater applicability to other health care organizations as well as organizations in other industries. By looking at what strategies have been effective for a

health care organization, other organizations can consider how their data governance practices and policies should be designed and consider what institutional pressures may influence what their data governance should look like. The study's findings and conclusions may contribute to social change because they have potential to influence professional practice in a way that allows organizations to better protect societal data and allow better privacy for individuals' information stored across multiple types of systems.

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Appendix A: Human Subject Research Certificate of Completion

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Ashley Cave** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 07/12/2015.

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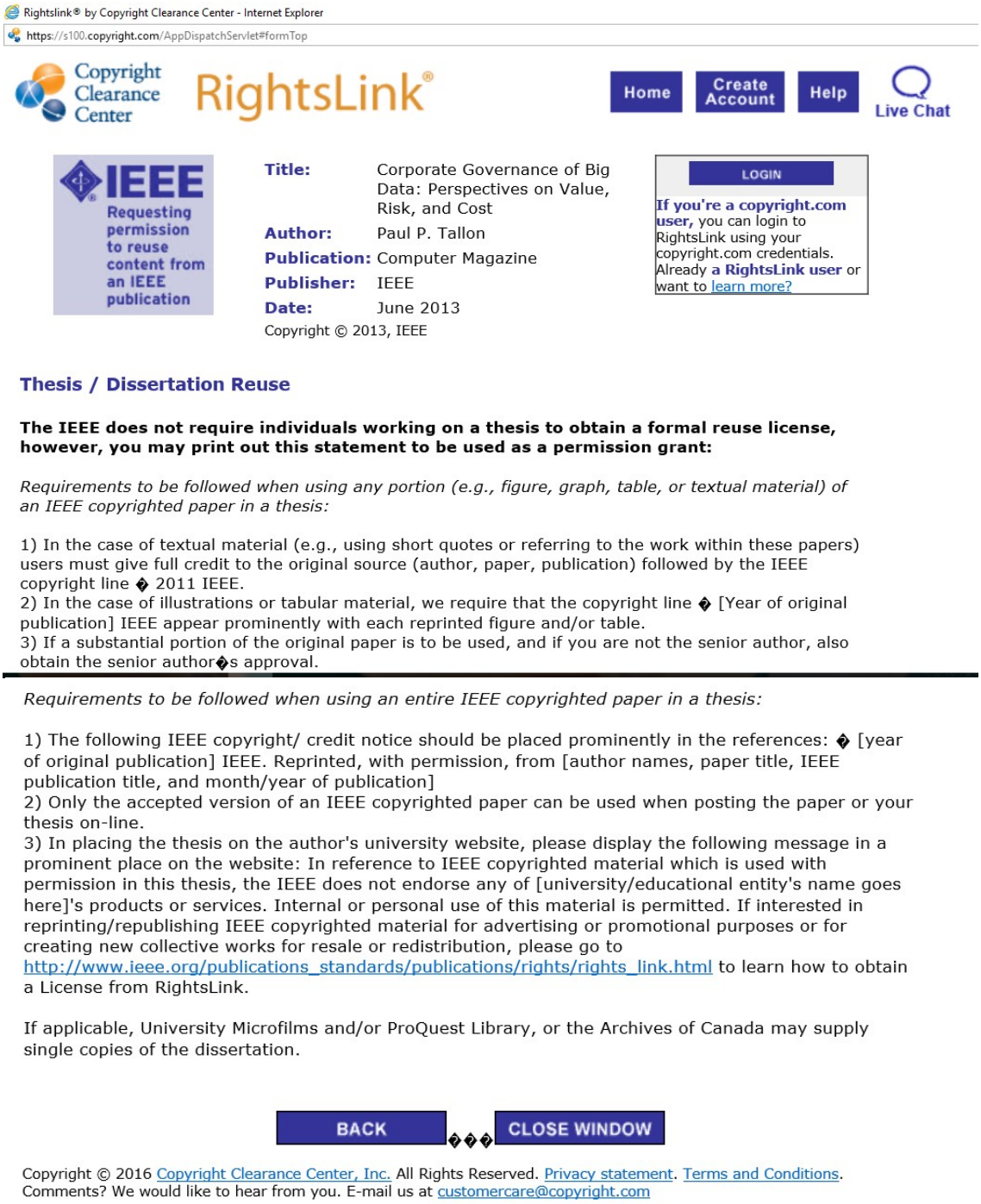

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Appendix C: Introductory E-mail to Participants

Dear Participant:

My name is Ashley E. Cave and I would like to invite you to take part in a research study. I am currently a doctoral student at Walden University and conducting this research study is part the doctoral study phase of my degree program. The data that I collect from interviews will be used to explore strategies for the implementation of data information management and governance practices within the organization. As the primary researcher for this study, I will be interviewing participants with knowledge and experience with data information management and governance practices. The purpose of this e-mail is to inform you about the details regarding participation in the study as well as your rights so that you may make an informed decision regarding participation in this study.

Your participation in this study would be strictly voluntary, and you may withdraw from the study at any time. Should you decide to withdraw, there would be no penalties or repercussions of any kind. Participation in this study will not be paid. I appreciate you taking the time to participate in this study. No interviews will be conducted or any data collected until final approvals have been gained from Walden University's Institutional Review Board.

Kind Regards,

Ashley Cave
Ashley.Cave@WaldenU.edu

Appendix D: Interview Protocols

Interview Protocol for Individual Interviews

1. Introduce myself to the participant(s) and describe my role as a student and researcher
2. Ensure the Informed Consent form has been signed
3. Remind participants of their voluntary participation in the study and right to withdraw at any time
4. Briefly discuss the concept of data governance with the interviewee, so that they understand that within their particular organization, this term is encompassed by their overall information management policy, but yet try to delineate the two terms for them and explain that I am primarily focused on the data information management and governance practices.
5. Remind the participant that all answers should be based upon their current organization.
6. Remind the participant that the interview will be recorded and let the participant know as the audio recording is about to begin
7. Go through all questions beginning with demographic questions in a semi structured fashion, allowing for re-ordering of the questions depending how the interview progresses
8. Thank the participant for their participation in this study

Interview Questions:

Demographic Questions

1. What is your current title and role?
2. What role do you play in managing data and information?
3. How many years of experience do you have in this type of role?

Interview Questions

1. What types of data and information do you manage and govern?
2. What prompts the need for data and information management and governance practices?
3. What roles within the organization play a role in the management and governance of data and information?
4. What are strategies for implementing data and information management governance and practices?
5. What strategies have you found to be most effective? What strategies have you found to be ineffective?
6. What impact do data and information management practices and regulatory compliance have upon one another?
7. In your experience, what responsibilities do you in your role play in regards to data governance?
8. What factors play a role in the decision of how to implement data and information management and governing practices?

9. What are your experiences surrounding the benefits of implementing data and information management and governance practices?
10. What are your experiences surrounding the challenges of implementing data and information management and governance practices?
11. What external factors or entities play a role in deciding which practices to implement?
12. What other factors or tactics would you like to add for getting the most out of data and information management and governance implementations?

Interview Protocol for Focus Groups

1. Introduce myself to the participant(s) and describe my role as a student and researcher
2. Ensure the Informed Consent form has been signed
3. Remind participants of their voluntary participation in the study and right to withdraw at any time
4. Briefly discuss the concept of data governance with the interviewee, so that they understand that within their particular organization, this term is encompassed by their overall information management policy, but yet try to delineate the two terms for them and explain that I am primarily focused on the data information management and governance practices.

5. Remind the participant that the interview will be recorded and let the participant know as the audio recording is about to begin
6. Go through all questions in a semi structured fashion, allowing for re-ordering of the questions depending how the interview progresses
7. Record participant observations such as facial expressions, gestures, or motions in my notes.
8. Thank the participant for their participation in this study

Focus Group Questions

1. What is the role of the Clinical Information Management (CIM) committee?
2. What is your role within the CIM?
3. How does the CIM contribute to the management and governance of data and information?
4. What are you trying to manage or govern as part of CIM?
5. How do data and information management and governance practices serve a purpose after they are implemented?
6. How are challenges to the implementation of data and information management and governance addressed?
7. How do data and information management and governance practices have an effect on outcomes such as funding efforts, compliance with regulations, or perceived legitimacy within the industry?

8. What are examples of data and information management and governance that the CIM has been involved with over the last 12 months?
9. What are examples of practices and processes that that are currently implemented?