ORGANIZATIONAL STRUCTURE EFFECT ON COMMUNICATION EFFICIENCY FOR MANAGEMENT INFORMATION SYSTEM SUPPORTED ORGANIZATIONS: A DELPHI STUDY

by

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Abstract

The purpose of the study was to examine the effects a bureaucratic organizational structure has on communication capability of management information systems to develop a new organizational design alternative. The study used a qualitative method with supporting quantitative data to collect information from a set of participants. A Delphi study was used to allow 15 experts in the field to share their knowledge and beliefs using collective intelligence to achieve consensus during a three round process. The results identified traditional organizational structures create vertical and horizontal boundaries impeding communication. The findings determined the critical aspects to improve communication through the reduction of boundaries was direct leadership support for a centralized management information system team with clear responsibility, accountability and authority to facilitate organizational communication. The recommendation was an organizational design composed of an Integrated Product Organization at the leadership level with membership at the sub-team level utilizing Cross-Integrated Teams. The benefit is an organizational design with a centralized team for common solution to mitigate horizontal boundaries and working level support to mitigate vertical boundaries. The recommendation may improve organizational communication to facilitate organizational success for leaders.

Dedication

This work is dedicated to my mother for never saying, “You cannot.” To my father for always saying, “You can.” To my brothers for constantly saying, “You should.” To my wife for steadily saying, “You will.” And to my sons for continually reminding me why.

Acknowledgments

There are many who guided me on my journey, but I would first like to acknowledge my mentor and committee members. My mentor, Dr. Linda de Charon, for being my rock, keeping my focus, being my coach, and then repeating each of those when I wavered. My committee members, Dr. Leona Lobell who taught me and held me accountable to scholarly writing and Dr. Mervyn Cadwallader for providing the inspiration and support for my initial problem statement. Moreover, to all for countless hours spent reviewing numerous versions of my proposal and dissertation.

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Lastly, and mostly to my family. My dog Morgan, keeping constant vigil by my side all those late nights. My boys Xander and Maddox, although you will not remember your sacrifice, many nights and weekends were spent typing and reading when we could have been playing. Especially to my wife Heather, for supporting me when things were worse, celebrating with me when things were better, and making me fall in love with her a little more each day. Especially for her support taking care of the family, the rotation of the earth, and everything in between so we could complete the journey.

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Chapter 1: Introduction

Organizations can be divided into two major categories: either occurring naturally or through conscious design (Child & McGrath, 2001; Wheatley & Kellner-Rogers, 1996). Humans instinctively form the natural foundation of organizational structures to best accommodate the needs of the individuals and the community (Wheatley & Kellner-Rogers, 1996). Contrary to the natural structures, bureaucratic models of the industrial age were used to identify the management of product flow through organizational design and create rigid organizational structures to achieve the most effective results (Child & McGrath, 2001). The same bureaucratic traditional structures continue to dominate postmodern businesses (Child & McGrath, 2001). The ingrained method of designing unnatural organizations around a bureaucratic structure has an effect on communication.

Organizational communication is heavily influenced by bureaucratic organizational design (Meyer, 2010). Creation of organizational boundaries within a rigid organizational structure impedes the horizontal communication abilities of people within the organization (Johnston, Reed, Lawrence, & Onken, 2007). Morris's (2007) research showed the industry average of project failure is 60-82%, and one of the three major causes was the lack of effective communication. Open and clear communication across the organization is critical for program success (Morris, 2007). The ability of people in organizations to communicate is directly related to working groups who design and support information systems (Iverson & Vukotich, 2009). The purpose of the qualitative Delphi study with supporting quantitative data was to examine and better understand the current effects and the limitations on communication in traditional hierarchal organizations with relation to groups applying, supporting, or creating

management information systems (MIS) to identify potential organizational design alternatives.

Sub-groups, like MIS and cross-functional teams, are organizational structures used to countermand the negative aspects of bureaucratic structures on communication (De Haes & Van Grembergen, 2008; Windischer, Grote, Mathier, Martins, & Glardon, 2009). MIS has a direct influence on communication to the whole organization (Iverson & Vukotich, 2009). The focus of the current research study on MIS groups within organizations was to elicit results showing the perceived influence of effective communication to organizational structure. MIS describes the information technology communication solutions enabling alignment between information and individuals within the organization (De Haes & Van Grembergen, 2008). In contrast, bureaucratic organizational structures produce boundaries, sometimes defined as distances between roles, which cause alignment issues working against the purpose of MIS (Gibson, Cooper, & Conger, 2009). The origin of alternate organizational designs, like cross-functional teams, is a business response to the recognized inefficiencies of traditional organizational structure boundaries and the effect on communication performance and alignment (Windischer et al., 2009). Jayasingam, Ansari, and Jantan (2010) and Johnston et al. (2007) pointed out a literature gap exists concerning communication within organizations. For example, groups supporting MIS communication and the cross-functional groups designed to address the communication inefficiencies have been under-researched (Jayasingam et al., 2010; Johnston et al., 2007). The focus of the current research study was to identify affects of organizational design and structure on groups who create, manage, and use MIS to influence the organization's communication

capability and potential alternatives for the future. Chapter 1 is composed of the following 12 sections: (a) background of the problem, (b) statement of the problem, (c) purpose of the current research study, (d) significance of the current research study, (e) nature of the current research study, (f) research questions, (g) theoretical framework, (h) definition of terms, (i) assumptions, (j) scope and limitations, (k) delimitations, and a (l) summary.

Background of the Problem

Organizational structure has been rigid in physical design for 150 years (Child & McGrath, 2001). The need to be adaptable, advance communication capability through organizational design, and improve overall organizational performance identifies a potential for an alternate viewpoint to fit organizational communication requirements (Gibson, Cooper, & Conger, 2009). Organizational leaders need to be able to lead the diversity of people within organizations by not constraining the individuals via fixed distances of reporting up through the organization and thereby limiting communication across the organization (Gibson et al., 2009). See Figure 1 where the dark lines show fixed distances of top-down/bottom-up communication and the impeded horizontal communication, or distance between roles represented by the communication block arrows. Reporting within organizations embodies the capabilities of MIS people, tools, and processes designed for organizational communication.

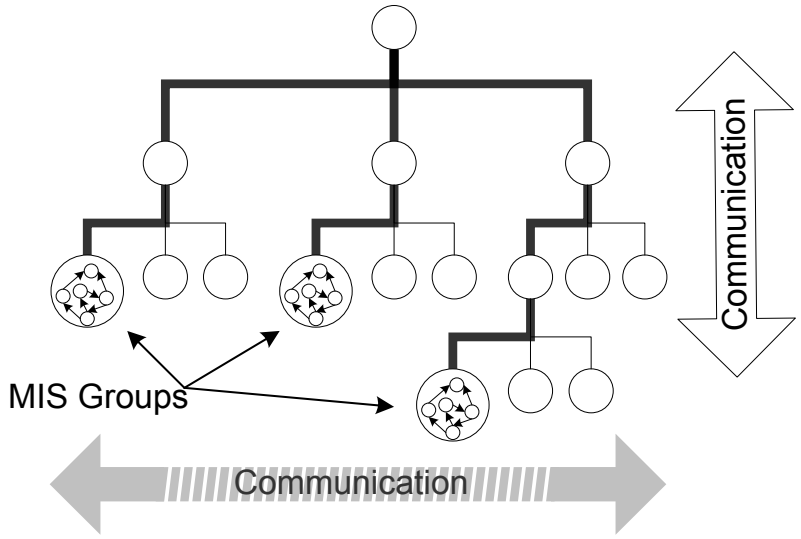

Figure 1. The interrelationship between the design of organizational structure, MIS groups, and communication capabilities.

MIS were designed to assist management by creating consolidated information methods to improve communication decision-making across the organization (De Haes & Van Grembergen, 2008). Organizations utilizing or supporting MIS to improve the capability of the business through best practices and improved tools face a challenge of addressing the digital information needs of the organization effectively and efficiently (Iverson & Vukotich, 2009; Postrel, 2009). The focus of the current research study is on physical structure of organizations in modern business related to communication efficiencies; therefore, the background section addresses organizational structure, organizational constraints, and concludes with organizational function to demonstrate the importance for social and theoretical interest.

Organizational structure. The myriad of theoretical influences throughout the 20th and 21st centuries to organizational design exist because there are multitudes of variables affecting the organization (Robins, 1997). The development of an organizational structure depends upon variables of whether the organization was product

or service orientated, if the organization was natural or rational, and on the unique constraints of the organization's business venture (Robins, 1997; Scott & Davis, 2007). GE's Jack Welch struggled with organizational structure so much that he intended to eliminate all physical organizational boundaries within GE and focus entirely on empowered teams to support the needs of the customer (Robins, 1997).

Organizational constraints. There are three major constraints to communication in organizations, (a) power, (b) bureaucracy, and (c) responsibility, accountability and authority (RAA), or delegation (Mintzberg, Lampel, Quinn, & Ghoshal, 2003; Robey & Sales, 1994). The first constraint, power, relies on the ability of leaders to control and manage issues to successfully lead an organization (Furner, Mason, Mehta, Munyon, & Zinko, 2009). Leadership abuse of power in organizations also reinforces bureaucratic structures of maintaining decision authority at the top of the organization thereby making communication and productivity ineffective at lower levels (Furner et al., 2009). Traditional organizational structures impede the authority of sub-groups due to holding decision authority at the top of the organization, which is inherent with a command and control bureaucracy (Windischer et al., 2009).

Aligned with power, bureaucracy is the hallmark of a mechanistic structure to create specific and predictable decisions through the organization (Robey & Sales, 1994). Bureaucracy provides "stable, strict, intensive, and calculable administration" for all large ventures (Weber, 1947, p. 338). In organizations facing constantly changing information systems with the requirement to expedite the flow of information, such as organizations composed of MIS tools and people, the need for speed and flexibility play an important role in effective communication (Mintzberg et al., 2003).

RAA is a set of terms used both in industry and in the current research study to describe the necessary components required for a successful leader of a mechanistic organization (Robey & Sales, 1994). In the case of groups supporting MIS, the RAA is held at the upper echelons of the organization, or spread thinly through the organization ("Organizational Design," 2004). The reluctance of leadership to give RAA at lower levels of the organization prevents effective management of tasks because the command and control innate bureaucratic boundaries impede communication ("Organizational Design," 2004). The misuse and abuse of the three communication constraints of power, bureaucracy, and RAA creates the underpinning deterrent to effective organizational communication for small groups supporting MIS.

Organizational function. The origins of the paradigms driving organizational design led to the specific structures used by corporations to depict chains of communication within organizations and the bureaucratic structures ultimately led to the constraints on communication within organizations (Wheatley & Kellner-Rogers, 1996). To be responsive to rapid change, organizations implemented flexible functions like cross-functional teams and MIS sub-groups in order to adapt to internal and external influences, like cross-functional teams and MIS sub-groups (Zehir, Altindag, & Gunsel, 2008). The deterrents to flexible functions within the structure were internal struggles involving communication constraints of a bureaucratic organization, which limited potential within the organization and led to inefficiencies or failure of the project (Morris, 2008). Based on inference from Zehir et al. (2008) and Morris (2008), Figure 2 illustrates the correlation of project failure to communication, the need for cross-

functional communication shown with stepped connection, and a loop arrow in black demonstrating the hierarchical organization structure as a possible factor to the failure.

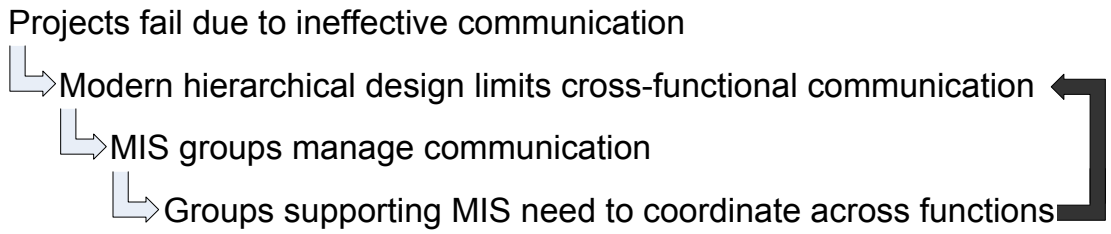

Figure 2. A communication model representing direct linear connection and causal loop influence.

Statement of the Problem

Modern and postmodern vertical organization hierarchies are inefficient in large corporations for small groups requiring responsive communication capabilities (Molloy, 2004). The general problem is modern organizational hierarchies in large corporations with mechanistic structures create a delay in the information flow that prevents knowledge workers from being successful (Wheatley & Kellner-Rogers, 1996). The current research study explored the perceived affects of communication flow and organizational structure pertaining to groups supporting or creating MIS.

The design of horizontal communication structures addressed the real-time collaborative communication requirements of information teams seeking organizational efficiency; however, the design of structures also has shown constraint by the inherent horizontal boundaries impeding communication (Robins, 1993). The industry statistic shows 60-82% of projects fail primarily due to the inability of leadership to manage change, scope and the worker efforts through communication boundaries across all levels of an organization (Morris, 2008). The specific problem is modern hierarchal organizational structures decrease communication speed and quality within the

management information systems (MIS) subgroups responsible for orchestrating communication throughout the organization, which ultimately decreases overall organizational performance and effectiveness (Klovienė & Gimžauskienė, 2008).

A qualitative Delphi method with supporting quantitative data was used to assess perceptions of leaders involved with MIS implementation supporting the tactical or execution level of the organization. The detailed viewpoints of the participants provided the necessary data to address the affect of organizational structure on communication and possibly an alternative design to traditional structure for organizations composed of groups supporting MIS. The population for the current research study consisted of an initial 22 diverse organizational leaders directly involved with MIS organizations and tools in a major aerospace company to capture multiple discipline and division perspectives of those individuals.

Purpose of the Current Research Study

The purpose of the qualitative Delphi study with supporting quantitative data was to examine and better understand the current effects and the limitations on communication in traditional hierarchal organizations with relation to groups applying, supporting, or creating management information systems (MIS) to identify potential organizational design alternatives. The qualitative method allowed a critical analysis of communication influences to identify strengths and weaknesses and address possible improvements to the existing structure through analysis of supporting quantitative data (Dobrovolny & Fuentes, 2008). A Delphi method, which is designed to enable the ability to explore the inputs from expert respondents, was used to address the problem of organizational communication and provided a consolidated recommendation to improve

the organizational communication with MIS subgroups (Hasson, Kenney, & McKenna, 2000). As a second benefit, the Delphi method is designed to allow for anonymity among participants and asynchronous communication as a capacity for ensuring personality and professional position do not influence the outcome of the discussions (Linstone & Turoff, 2002).

The Delphi method was used to understand the personal philosophy of the leaders selected to participate in the current research study. The participants were influential decision makers within their respective division and programs, therefore the Delphi method was chosen to employ three major characteristics, "anonymity, controlled feedback, and statistical group response" (Dalkey, 1967, p. 3). The topics of interest when defining the need for organizational structure included implementation of non-traditional horizontal structures, the success of the structures, the limiting factors of the design, and leader acceptance and adoption of non-traditional structures. Through the collection of individual viewpoints from several unique disciplines within the organization--e.g., program management, engineering, and supply chain management--the current research study elucidated the challenges of migrating to a new organizational design paradigm.

The participants of the current research study were a diverse population to obtain meaningful data at various hierarchical levels in the organization, and the current research study used several individual career disciplines throughout the aerospace corporation by using both program and functional roles. See Figure 3 where areas of focus are in grey for participant selection in the Delphi study. Data from the various diverse levels and disciplines provided a holistic view of organizational influences and

improved capability to provide a conclusion suitable for multiple applications outside of the aerospace industry. The intent of the participant section criteria was to obtain inputs in the form of a three-staged Delphi method from a select initial panel of a minimum of 20 diverse organizational leaders at a large aerospace company who support or use MIS teams in St. Louis, Missouri and Huntsville, Alabama.

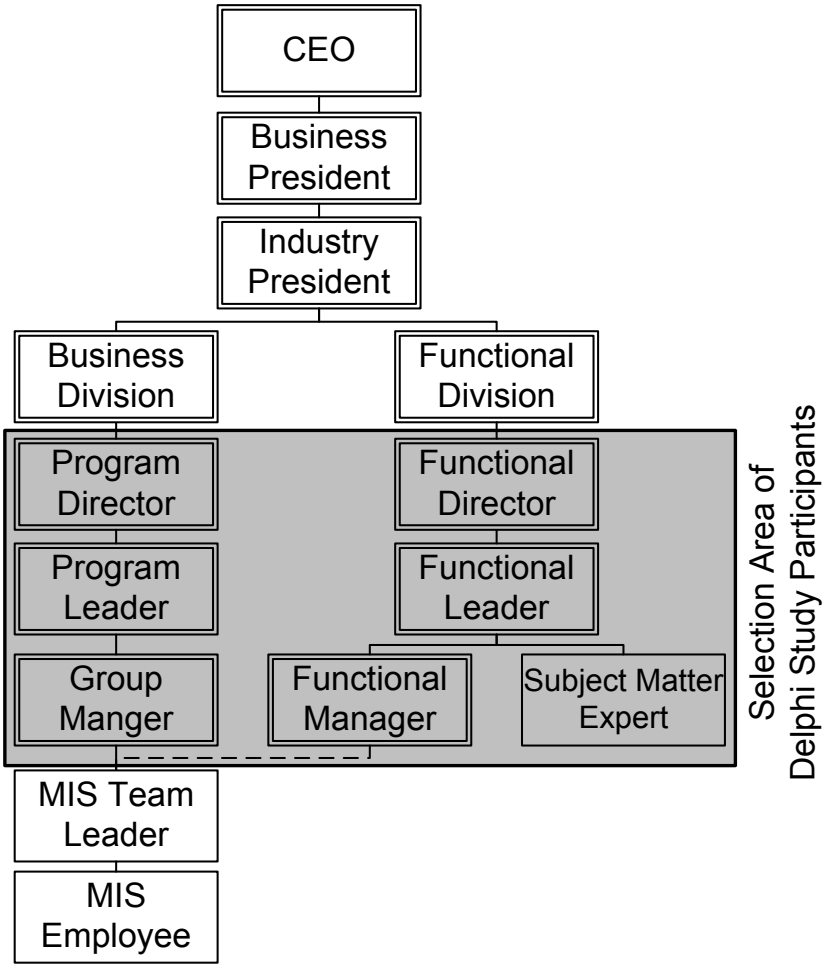

Figure 3. A sample depiction of one business division and single program in a mechanistic organization with participants in grey box.

Significance of the Current Research Study

Overall significance of the current research study. The current research study is significant for two reasons. First, the broader focus of the current research study

addressed the affect of communication issues of project management, which companies spend approximately $177,000 annually trying to improve these communication issues (Morris, 2007). Second, the detailed focus of the current research study addressed a new notion of cross-functional group management for improved communication with MIS sub-groups. The concept of the current research study has been similarly reviewed in literature by organizations using cross-functional groups, or horizontal boundary groups, to take people from multiple disciplines and create a single effective team (Robins, 1997).

With respect to the current research study, the difference assesses individuals in a single discipline spread out in separate organizations under the program and functional leadership levels and address the potential for creating commonality for these individuals across the enterprise. Rather than filtering practices top-down as is done in a bureaucratic or mechanistic organization, the current research study addressed the alternate possibilities to improve horizontal communication through existing independent groups who use informal communication, or organic organizations. See Figure 4 of a mechanistic organization where visual representation of independent organic communication nodes (shown in black) address the communication between the nodes (arrows in black) both cross-functionally and cross-program.

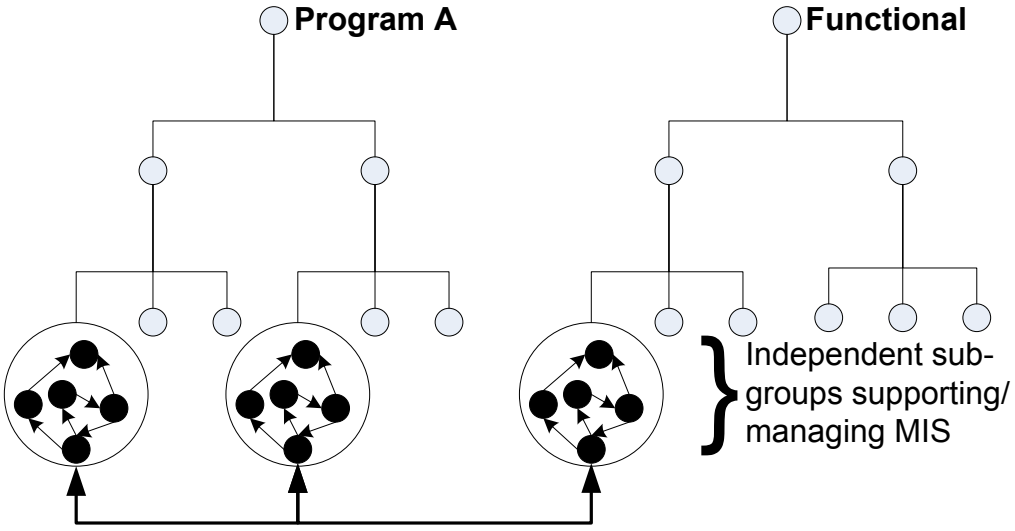

Figure 4. A visual representation of independent organic communication in a mechanistic organization.

The current research study takes a different approach from traditional horizontal communication methodologies by examining the influences of multiple organization paradigms integrated across functional and product-based modern hierarchical organization. The intent of the different approach was to identify improved communication that can be achieved through collaboration within an organization by defining communication interactions leading to improved program performance (Johnston et al., 2007). The result was to find an improved communication method for groups supporting MIS to increase effectiveness and in turn enhance program communication in situations where lack of communication is one of the contributors to project failure (Morris, 2008).

Significance of the current research study to leadership. The benefit for leadership resides in assessing a potential paradigm shift in how leaders treat organizational structures for group environments supporting or using MIS and

subsequently the intellectual capital supporting the organization's ability to enhance communication. An alternate method to align groups with similar focus will yield economies of scale for development while simultaneously integrating best practices from the bottom-up. The result of the alternate method on leadership requires acclimatization to the new structure, and the significance is the ability of the organization design to systematize responsibility to allow leaders to delegate the managing role by empowering subgroups to improve project management. As MIS provided foundational support across the entire organization for successful execution of the business, the result provided the potential for removing or reducing one of the prime factors for project failure by enhancing the communication capabilities of the organization (Morris, 2008).

Nature of the Current Research Study

The focus of the current research study was to address current organizational design from the perspective of the affect of organizational structure on communication to facilitate integration between groups or teams performing similar functions to support a MIS and identify possible alternatives for improved communication capabilities. The study type chosen to elicit an answer was a qualitative Delphi method using supporting quantitative data. The qualitative data in the form of answer to 5-point-Likert-type scale questions enabled a quantitative measure to evaluate a common understanding of the respondents for the qualitative analysis of the open-ended question responses. A Delphi method has a panel of experts to address a topic in a series of question rounds designed to create a mutual understanding and consensus agreement on the topic (Dalkey, 1967). The use of experts who review a topic for potential future implementation provides an

opportunity for yielding reliable results with valid conclusions (Streveler, Olds, Miller, & Nelson, 2003).

Overview of the research method. A qualitative method with supporting quantitative data was chosen to obtain the detailed thoughts required for a possible new concept based on participant experiences (Creswell, 2005). The analysis of qualitative and quantitative data provides a researcher with the tools necessary to answer the research questions (Neuman, 2003). An exclusive quantitative method without qualitative methods was not appropriate as the focus of the current research study to address a new solution was currently nonexistent in industry so past measurable and observable data to compare and contrast the data with similar past studies as required by a full quantitative analysis was unavailable (Dobrovolny & Fuentes, 2008). Quantitative studies also require objective responses to form a conclusion, and the goal of the current research study was to solicit the subjective professional views of experts in the field (Dobrovolny & Fuentes, 2008). A research method collecting quantitative data and interpreting the data with demographics and open-ended responses enables an effective qualitative analysis of the responses.

Overview of the design appropriateness. The goal of the current research study was to address a potential problem in organizational structures related to communication and identify a potential solution. The Delphi method research design enables a researcher to collect information from experts in the field to reach a consensus for the generation of new ideas (Bray & Howkins, 2006). Some of the respondents reside at upper levels of leadership in the organization with strong influence; therefore, the anonymity among the participants of the Delphi method creates an environment for honest and unimpeded

collection of thoughts from the panel (Dalkey, 1967). The group of experts contributes to finding a potential solution to the presented problem based on a series of question rounds designed to elicit responses in further detail through the progressions of the instrument (Streveler et al., 2003).

Multiple designs were reviewed and dismissed since the Delphi method offered the ability to obtain opinions from experts in the field through exploratory inputs of information and develop new ideas (Dalkey, 1967; Streveler et al., 2003). Grounded theory was reviewed for the potential of understanding a new theory of organizational design but was dismissed in support of understanding the problem within the nature of existing organizational theories (Creswell, 2005). In addition, the systemic broad view of grounded theory would not obtain the desired results for a finite organizational assessment (McCreaddie & Payne, 2010). Creswell (2005) defines a case study as requiring extrapolation of existing data, which was not appropriate as the existing data may potentially compromise corporate proprietary information.

Research Questions

Traditional organization structure follows product-based designs in large aerospace companies, where the requirements of the contract dictate the organizational design. Figure 5 describes a notional hierarchy breaking out a product-based aerospace organization structure where a primary group has a single product delivery and each product delivery tier rises to a main individual required to oversee the entire program's health. Capabilities of similar individual workers, like those in a MIS group, are separated into each performing area's subgroup so each subassembly possesses the necessary capabilities to support the deliverable. Such organizational boundaries may

limit workers' abilities to collaborate on the use of common resources. See Figure 5 demonstrating the separation of MIS groups into multiple performing areas, noted by boxes with a dotted line border.

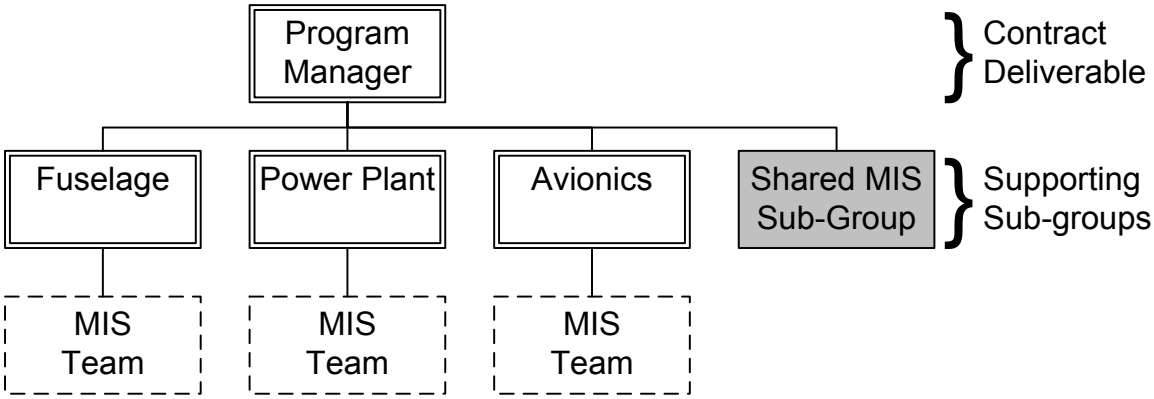

Figure 5. Simplistic representation of typical product-based organizational design with MIS group alternatives.

The challenge for leaders is to bring workers in similar disciplines, such as MIS professional, together on a program to share similar capabilities, so that shared groups can support all contract deliverable product sub-groups (Chaturvedi, 2005). Refer to grey box in Figure 5 showing a single shared MIS sub-group across all performing areas. The arising issue is the design may involve the creation of the shared MIS sub-group outside of the normal structure (grey box), which may improve the MIS sub-groups communication and collaboration, but may limit the communication the MIS teams had with the product sub-groups (dotted line boxes). The following research questions addresses the duality between multiple MIS groups and a single MIS group by helping to define how business is done currently within the group selected for the Delphi study and then to help define how business should be done in the future for the same group.

R1: How do leaders currently address the organizational design integration requirements of MIS throughout an organization to support communication?

R2: What organizational design might be beneficial to exist within a traditional bureaucratic structure but to provide the horizontal communication necessary for MIS effectiveness?

The creation of an integrated group allowed improved communication, but the organizational lines create barriers between the subgroups, particularly with respect to the establishment of assessing management requirements for specific projects (Molloy, 2004). The dichotomy of integrated groups effecting communication was addressed with the following research questions:

R3: How can leaders manage effectively and efficiently the communication of responsibility, accountability, and authority (RAA) for MIS across multiple organizational structures?

R4: How can a highly structured and formalized postmodern organization adapt to new theories of structural design to promote communication in groups supporting MIS?

Theoretical Framework

The germinal foundational theory was based on the three theoretical theories around the works of Weber for bureaucracy, Frederick Taylor for the work on scientific management, and the work of Katz and Kahn on systems theory. The first document use of bureaucracy goes back as far as the establishment of the Catholic Church and forward through numerous postmodern industries (Weber, 1947). Weber (1947) stated the following concerning the use of bureaucratic organizations:

> Experience tends universally to show that the purely bureaucratic type of administrative organization–that is, the monocratic variety of bureaucracy–is, from a purely technical point of view, capable of attaining the highest degree of efficiency and is this sense formally the most rational known means of carrying out imperative control over human beings. (p. 337)

The view of Weber is resonated by Katz and Kahn (1978) who, regarding systems theory, postulated the categorical levels of influence within organizations to achieve performance. During the industrial revolution, the structures imposed on organizations varied based on open system Marxian principles through the general systems theory of von Bertalanffy (Katz & Kahn, 1978). Whether the choice by companies was pure systems theory or general theory, each provided a refined method for promoting value through the establishment of specific and finite roles across the hierarchy to enable the esemplastic ability of various contributing factors to organizational management (Katz & Kahn, 1978). Ancillary to the bureaucratic design, though the design is beneficial for performance, systems theorists have not considered the impact of people in terms of innovation, or allowing adaptability for organizational change (Katz & Kahn, 1978).

The third broad theoretical basis for the current research study involves scientific management particularly in regard to the command and control environment established under the auspice of managing business in the most efficient means necessary (Hoopes, 2003). Frederick Taylor, the father of scientific management, devised highly structured organizations in prescribed manners to elicit the greatest amount of efficiency at the lowest cost (Hoopes, 2003). The detriment of Taylor's design to larger corporations was that as business evolved, companies became more mechanistic to manage the vast

number of people through adoption of the theory of scientific management, and thus the corporations inherited the limitations of bureaucracy (Robey & Sales, 1994). A new design was needed to address the bureaucratic hindrances of a mechanistic structure causing reduced organizational management speed and cost overruns from delayed communication (Robey & Sales, 1994).

Bureaucracy and scientific management have been paradigms of modern and postmodern business to define the internal workings of an organization based on the corporate needs of the time, which include rational system, natural system, and open system. As Kuhn (1996) suggested, the paradigms were created to solve existing problems. In the beginning of the 20th century, rational and natural systems were designed to decrease ambiguity and improve effectiveness through similar but separate methodologies (Yoon & Kuchinke, 2005). The methodologies of rational and natural systems differed in approach because rational systems are designed and changed by the conscious design of those who run the organization, whereas natural systems evolve through the ordinary growth of the organization by the individuals (Scott & Davis, 2007).

The initial systems were *closed* because they did not take into account the external affects of environmental influences (Scott & Davis, 2007). A need existed for a system to be *open* to the external influences. The open systems methodology was characterized by the sub-groups' capability and adaptability across the broad spectrum of the organization in complex environments (Scott & Davis, 2007). The contrast of open and closed systems describes how the open system evolved, but still followed a comparable structure by leadership realizing the need to focus on specific structural influences, such as the rational system, and focus on the individualistic influences, such

as the natural system (Jones, 2007; Scott & Davis, 2007). Nonetheless, open and closed systems operated in a defined bureaucratic structure to manage information (Jones, 2007). Through the 20th century, several schools of thought have evolved to address the constraints caused by organizational structures in attempted to achieve effectiveness.

The current research study broaches other areas in the field addressing the influence of organic structures as a deterrent to bureaucracy (Robins, 1997). The design of organic structures enables innovative thought and enhanced communication capabilities across the organization (Robey & Sales, 1994). Initially organic structures began to take root by establishing natural working relationships through the application of team-based design (Robins, 1997). The intent of leadership was to create low formalization while allowing wide spans of control (Robins, 1997). Despite the effectiveness of organic structures, the lack of structure makes organic design difficult for large corporations to manage beyond the team level structure (Robins, 1997). The description of each of the types of organizational paradigms emphasizes there is no single solution to meet every organizations' need. Rather than postmodern organizations sticking to one design, the description of organizational paradigms does demonstrate how a combination of one or more paradigms can yield the best possible solution,

Specifically, the current research study addresses the economic affect of organizational design with regard to communication as a primary cause of project failure (Morris, 2008). Organizational success depends on successful leadership and traditional organizations create inefficiencies with serial, controlling, and dispassionate tenets of leadership, whereas a need for parallel, collaborative, and compassionate tenets of leadership to obtain success exists (Raelin, 2005). Individuals by nature are hesitant to

change (Piderit, 2000). The reluctance to change stems from leaders not effectively soliciting input about organizational needs of the employees. Lack of input ultimately affects the quality and dedication of the individual worker to the company (Piderit, 2000). Effective organizational design through application of the various theoretical paradigms discussed in this section can offset the negative impacts to the organization.

Definition of Terms

The current research study contains 15 terms unique by design, definition, usage, or definitions are included to ensure a common understanding of terms, which can be subjectively interpreted depending on a reader's epistemological viewpoint. The terms include the following: (a) cross-functional team, (b) functional organization, (c) information technology, (d) management information systems, (e) mechanistic organization, (f) modern, (g) natural system, (h) open system, (i) organic organization, (j) organization, (k) organizational design, (l) organizational structure, (m) postmodern, (n) product organization, and (o) rational system. Clarification of the terms with relation to the current research study is detailed as follows:

Cross-functional team. A cross-functional team is a team composed of diverse members who "cuts across existing lines of authority to create a new entity charged with making decisions, not merely advising others how to make them" (Robey & Sales, 1994, p. 214). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Functional organization. Functional organizations are designed around dependence on the specialized skills of the employees and structured around those skills (Robey & Sales, 1994).

Information Technology (IT). IT is digitally based tools designed to assist in the management of workflow, communication, and decisions within an organization to improve performance capabilities (Robbins, 1997). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Management information systems (MIS). MIS is a "system used to provide management with needed information on a regular basis" (Robbins, 1997, p. 172). For the purpose of the current research study, the system definition was expanded to include groups, tools, and individuals who create or support program reporting, health metrics, decision-making, data mining analysis, and prognostic analysis for performance based management.

Mechanistic organization. A mechanistic organization is composed of predictability, regularity and "carefully structured roles and responsibilities" to maintain stability (Robey & Sales, 1994, p. 90). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Modern. Modern denotes the era from 1492 to 1920, but for the current research study, primarily in reference to the period around the turn to the 20th century (Sarup, 1993).

Natural system. Scott and Davis (2007) defined the term *natural system* as "collectivities whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important

resource" (p. 30). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Open system. Scott and Davis (2007) defined the term *open system* as "congeries of interdependent flows and activities linking shifting coalitions of participants embedded in wider material-resource and institutional environments" (p. 32). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Organic organization. Organic organizations are fluid organizational designs built with the capability of adapting to and coping with change (Robey & Sales, 1994). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Organization. An organization is a "system of roles and stream of activities designed to accomplish shared purposes" (Robey & Sales, 1994, p. 7). In the current research study, the term was repeatedly used to describe groups within a company and not limited to the single organization for the entire company. For example, a CEO has an organization; their subordinate VP has an organization, and the groups continue to the lowest grouped team in the company.

Organizational design. Organizational design is the theory behind development of an organization "so that the organization can create, accumulate, integrate and disseminate, and hence manage" the resources within the organization (Pertusa-Ortega, Zaragoza-Sáez, & Claver-Cortés, 2010, p. 311). The term has been used repeatedly through the current research study to describe to the initial stages of creation of the organization, or planning stage.

Organizational structure. Organizational structure is the physical layout of an organization and the action to denote horizontal and vertical lines of reporting to express the linkages of communication within an organization (Pertusa-Ortega et al., 2010). The term has been used repeatedly through the current research study to describe the final product of the organizational design, or implementation stage.

Postmodern. Postmodern denotes the era from 1920 to present (Sarup, 1993). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Product organization. Also referred to as departmental structures, product organizations are "fairly autonomous, acting almost as separate entities within a larger structure" (Robey & Sales, 1994, p. 187). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Rational system. Scott and Davis (2007) defined *rational system* as "collectivities oriented to the pursuit of relatively specific goals and exhibiting relatively highly formalized social structures" (p. 29). The term is included because it may have been subjectively interpreted by the reader and inclusion will ensure a common definition for all readers.

Assumptions

For the purpose of the current research study, there were four assumptions: (a) organizational influence will be similar in large corporations; (b) organizational design, and subsequent structure, will be addressed as a stand-alone influence to communication; (c) integration will be an achievable factor of organizational design and structure; and (d)

all Delphi study participants will communicate openly, candidly, and objectively about the topic to reach a consensus. The first assumption addresses organizational influences will be common among large corporations. Review of the literature provided consensus showing the use of organizational design is subjective based on the type of business being performed both in size and in function, and the organizational design method chosen by the companies was the same for similar size and function corporations (Mintzberg et al., 2003; Robey & Sales, 1994; Robins, 1997). A basic assumption for the current research study was that all large aerospace companies would have the same constraints and limitations posed to them by organizational design.

The second assumption was organizational design, and the subsequent structure, will be a stand-alone variable to effective communication. Although there are numerous influences on effective communication, the current research study addressed only organizational design and structure as an independent variable creating bureaucracies directly influencing communication (Robins, 1997). The intent of the current research study was to address organizational design and structure as a single factor leaving growth for future study in the other variables impeding effective communication.

The third assumption addressed the influence of integration on organizational designs and structures. Organizational structures are generally divided between mechanistic and organic (Robins, 1997). Integration of multiple styles of organizational design will create challenges preventing adoption of those designs in large organizations (Mintzberg et al., 2003; Robey & Sales, 1994; Robins, 1997). For the purpose of the current research study, the integration factor was addressed as difficult but considered achievable.

The fourth assumption was the participants would communicate openly, candidly and objectively about the topic in order to reach consensus during the Delphi study. A review of literature has shown anonymous studies help mitigate the general influences of strong personalities and groupthink associated with discussion groups (Dalkey, 1967; Dalkey & Helmer, 1963; Streveler et al., 2003). Confidentiality was a requirement, and in the interest of the current research study, participants were expected to operate, and select answers based on individual views not subject to influence by peers (Dalkey & Helmer, 1963).

Scope, Limitations and Delimitations

Scope. The current research study focused on two specific constraints to the demographics: (a) leaders in large aerospace organizations who both make decisions regarding the use of MIS and oversee the individuals who manage and/or create the MIS and (b) leaders located in the central United States. A minimum of 10 leaders were chosen to represent individuals in a common industry who have shared paradigms because the variable of corporation's product is a large influence to organizational design methodologies (Mintzberg et al., 2003). Culture is an additional factor influencing organizational design and the central United States was chosen for large aerospace communities with shared epistemologies.

The qualitative Delphi method with supporting quantitative data enables the objective response through anonymous participation among participants as a way to limit the amount of bias in the responses (Dalkey, 1967). In highly structured organizations, bureaucratic influence can have a strong determination on how people interact (Scott & Davis, 2007). Removal of the influences of individual reputations and strong

personalities driving decisions through anonymous feedback creates an environment focused around the topic and not the person (Streveler et al., 2003). Facilitation of the responses was through the application of 5-point-Likert-type scale questions and open-ended questions relating to communication and organizational design with an analysis of the results produced from the participants' responses. The method for acquiring the data were phone and email solicitation for participation, and the actual instrument was through a web-based survey system. Data from 5-point-likert-type scale questions were analyzed statistically. Content analyses were used for the open-ended questions.

Limitations. The limitations were the constraints of the current research study by establishing factors outside of the current research study's influence and were removed from the current research study. Three limitations were identified in the current research study: (a) acceptance of solutions by participants, (b) myriad of existing theories detracting from focus, and (c) autocratic barriers in current participants' structure. The first limitation addresses the polling opinions from experts creates common constraints to consensus as a function of experience, personal beliefs, and cultural influence, both individualistic and geographical, which make each person unique. The ability to mitigate the limitation is a function of participant selection quality and the interest the participants have with the current research study (Custer, Scarcella, & Stewart, 1999).

The second limitation was the challenge of maintaining focus of the participants on the specific challenge of the current research study. Participants may tend to express their views on existing preferred solutions based on their perceived organizational constraints rather than seeking to understand and address a solution to the problem as a stand-alone situation unimpeded by existing constraints. The open-ended question

addressed the preferred solution items and content analysis was used to address and create commonality in understanding for follow-on Delphi rounds.

The last limitation addresses the tendency for individuals to rely on a personally preferred design with regard to methodology for organizing rather than being open to an alternate solution. The participants may not be accepting of alternate designs due to the constraints of their current organization, which forms their tendency to avoid change. The challenge was to maintain focus on the generalizability of the current research study to maintain an open consideration based on the current research study assumptions.

Delimitations. Delimitations define the scope of how the boundaries were limited for the current research study to a manageable focus on a specific topic. There were three delimitations identified in the current research study: (a) defined participant selection, (b) focused discussion around limited organizational designs, and (c) removal of external influences impeding change. The first delimitation was addressed by choosing participants who had the breadth and depth of experience to address the current research study problem. The second delimitation constrained the discussion to only organizational designs of mechanistic and organic structures in order to keep the current research study's scope manageable. The third delimitation removed the issue of participants focusing on what could have been done based on existing corporate constraints by only addressing what should have been done to determine the best solution. The delimitations allowed generalizability of the findings to apply across a broad spectrum of applications without limitations for participants who cannot relate to MIS groups, have unique organizational designs, or were constrained by corporate bureaucracies.

The generalizability of the current research study is a function of reviewing organizational design as a common theme in any large corporation (Child & McGrath, 2001). Although the participant selection was specific for the purpose of the Delphi method, the questions were discussed in general terms to allow applicability across multiple large businesses. The intent was a broad theoretical application of organizational design for MIS group supporting communication rather than a specific tool that is used to design organizations.

Summary

Chapter 1 provided the layout of the current research study with direction to correct inconsistencies and increase effectiveness of MIS through enhanced communication capability through organizational design. The key sections were: (a) background of the problem facing organizations; (b) identification of the problem and purpose of the current research study; (c) the significance and theoretical framework; and (d) the research questions to seek alternative understanding. The background showed traditional organizations in a global market limit the capability of MIS teams to support organizations (Morris, 2008; Zehir et al., 2008). The problem and purpose statements specifically identified that modern hierarchal organizations impede communication thereby making organizations ineffective and identified an opportunity to address the structure as the contributor to the problem to seek alternatives (Klovienė & Gimžauskienė, 2008). The significance and framework identified how scientific management has created a fixed paradigm for organizational structures and how a new view on organizational design can improve existing structure (Hoopes, 2003; Robins, 1997). The research questions provide a method for understanding the benefits of

unfettered MIS groups within organizations and ultimately to improve communication across organizational boundaries (Chaturvedi, 2005; Molloy, 2004).

The goal of the current research study was to acquire an understanding of the best practices in the industry through opinions of experts and create an understanding of organizational structures, which were both adaptable to unique needs to support communication, and consistent with existing organization practices to maintain commonality. An organization is only as successful as the ability for individuals to communicate effectively (Morris, 2008). Chapter 2 contains the literature supporting the problem statement through discussion in three dependent areas: (a) historical overview, (b) organizational design, and (c) communication through organizational assessment.

Chapter 2: Review of the Literature

The purpose of the current qualitative Delphi study with supporting quantitative data was to examine and better understand the current affects and the limitations on communication in MIS sub-groups resulting from employing traditional hierarchal organizational structures to seek alternatives. Organizational performance is the measure of the organization's effectiveness and the design of the organizational structure affects the communication supporting the performance (Scott & Davis, 2007). Since the beginning of the industrial revolution, organizational design has been used to guide effectiveness from Marxian theories through additional theories of the early 20th century (Katz & Kahn, 1978). In the postmodern era, and now into the 21st century, communication standards to support open and natural subgroups, such as MIS groups, require a restructuring to support effective communication (Scott & Davis, 2007).

The literature review in the chapter enables an analysis of the germinal and current literature to provide a basis of a theoretical design for an organization construct to support MIS subgroups. The chapter is organized by reviewing the supporting physical and philosophical theories, which support and define organizational structure (Katz & Kahn, 1978). The view of the physical aspect is to address the original definitions of organizational closed structures through the current theories supporting rational and natural work designs (Scott & Davis, 2007). The view of the philosophical aspect is to addresses the constraints of organizational design by understanding human epistemological influences. Chapter 2 contains the following five sections: (a) title searches; (b) organization design and communication influences, which addresses the

historical overview, organizational designs, and communication through organizational assessment; (c) literature gap, (d) conclusion; and (e) a chapter summary.

Title Searches, Articles, Research Documents, and Journals

The peer-reviewed journals used for the current research study were obtained from online resources. Several books were also used to gain germinal, historical, and theoretical perspective to apply to the current research study. The title searches contained variations and combinations of the terms organization, design, structure, effectiveness, MIS, and communication. Several dissertations and research studies were used both as topic reference and as historical reference to similar design problems.

Approximately 200 pieces of literature were reviewed and 87 were used in the current research study. Of all references, 60, or 69%, were within the past 5 years, and the remaining were either to provide germinal reference, research method information, or theoretical organizational information flourishing though the 1980s and 1990s forming the accepted organizational design paradigms of many large corporations. Refer to the literature gap section for further discussion. The literature was organized into three major areas comprising historical overview to capture the theoretical framework, organizational design to capture physical architecture, and communication through organizational assessment to capture the application and use of communication. There were no existing articles specifically addressing organizational design with the use of single teams of individuals with common skills who crossed boundaries; therefore, a subjective extrapolation was used to assess similar organizational designs and communication for applicability to the current research study.

Organizational Design and Communication Influences

The influences to organizational design are vast and complex. The literature review summarizes the influences related to the current research study by first addressing the historical influences creating the foundational understanding for organizational design in terms of both the creators of major theories and the underpinning philosophical effects. The philosophical viewpoints were addressed to assess the social phenomenological effects on organizational design. The intent of the two-angled research approach was to capture a holistic view of both the mechanics and idiosyncratic effects of organizational design in a MIS subgroup. Next, an overview provides the general terminology encompassing organizations both in structure and in the managerial aspects supporting the organization. Last, the section addresses the connection of communication to organizations and assessing the contributory factors promoting or impeding the success of communication.

Historical overview. Although bureaucracy has been around since the beginning of recorded time, the work of Max Weber at the turn of the 20th Century set the sociological view for product efficient top-down traditional organizational structure (Child & McGrath, 2001; Weber, 1947). When developing scientific management, Frederick Taylor recognized the need for a highly controlled top-down management structure to create the most efficient use of people for a product-based organization (Hoopes, 2003). Throughout progression of the modern era, additional theorists modified Taylor's vision with subordinate functions to scientific management, such as Gilbreth's shared leadership, and Gantt's incentive-based performance promotion (Hoopes, 2003).

The only significant change in organizations was the way the organizations were managed, not how the organizations were structured (Miller & Vaughan, 2001). Although current organizations still model the organizational structure based on scientific management, the true intent of the research study was to understand the psychology of individual performance rather than to address the function of organizational performance (Katz & Kahn, 1978). Organizations appeared locked in physical organizational structures and relied mainly on the manipulation of the people within the fixed structure rather than redesigning the structure to fit the people.

Since the beginning of the Renaissance, humans have devised structures that support the communication to control people, and the organization of people to promote effective work (Hesselbein et al., 1997). The historical overview will highlight the specific contributors to organizational design who initially envisioned the top-down structure to control production from the president down to the workers (Scott & Davis, 2007). The overview will provide the foundation for the development of new theories supporting organizational design. Along with physical design, the philosophical implications of organizational design will be reviewed from modern theorists to postmodern philosophers. The philosophy viewpoint will enable the assessment of cultures to determine how the individualistic ideals in various subgroups have influenced the expectations for organizational design to promote effective communication. Three major theories of organizational design came to being at the beginning of the industrial revolution: (a) bureaucracy, (b) scientific management, and (c) systems theory.

Bureaucracy. The work of Max Weber at the turn of the 20th Century set the sociological view for product efficient top-down traditional organizational structure

commonly referred to as bureaucratic structures (Child & McGrath, 2001; Weber, 1947). The work of the German sociologist Max Weber is well known for the contributions to bureaucratic organizational design recognized in modern and postmodern eras to manage decisions and establish control over an organization (Jones, 2007). Plutocracy flourishes in a capitalistic business environment and is one of the reasons capitalism is credited with a role in the creation of bureaucracy (Weber, 1947). The six major principles established by Weber to define and categorize an organization are authority, skill requirements, responsibility, chain of command, process and procedures, and accountability through written record (Jones, 2007; Weber, 1947). Despite the desire for the bureaucratic structure, companies are restructuring organizations to reduce managers and employees to control overwhelming bureaucratic costs (Jones, 2007). In line with bureaucratic design was the desire to improve on existing organizations as change within the environment influenced performance.

Scientific management. Frederick Taylor recognized in addition to the need for a highly controlled top-down management to optimize profits there was also a need for more effective management of people within bureaucratic structures (Hoopes, 2003). Although now considered a detrimental aspect for organizations, the work of Frederick Taylor creating scientific management as an expansion to bureaucracy to manage people held constant through the beginning of the 20th century as scientific management led the way (Hoopes, 2003). Additional theories were appended to Taylor's design as methods to further mange the effective use of people within a bureaucratic production organization, such as Gilbreth's shared leadership, and Gantt's incentive-based performance promotion (Hoopes, 2003). Despite the addition of the subordinate

functions, the prime focus of the current research study was the rigor of the traditional hierarchical structure prevailed from the modern era theorists through the postmodern era (Hoopes, 2003).

Scientific management theorists focused on understanding the influences of people on the organization (or production) and devised ways to modify the individual as opposed to correcting the organization (Katz & Kahn, 1978). The primary goal of the theorists was to develop methods to create the most efficient design to promote production. Despite the negativity created around scientific management by social psychologists, the beneficial result was awareness of social psychologists to study and better understand the influences and roles individuals play within an organization (Wren, 2005). As resistance to scientific management increased due to worker unrest about unfair treatment, the end of the scientific management era prompted better understanding of the myriad of influences driving organizational dynamics (Wren, 2005).

Systems theory. In the middle of the 21st century, von Bertalanffy postulated a theory that included all known systems of science to create a unified theory to address all theories (Katz & Kahn, 1978). The primary goal then was as it is now, to break down the barriers between organizations, or in the case of von Bertalanffy, the barriers between various science disciplines (Katz & Kahn, 1978). The theory explicitly addressed the need to create a connection between the work performed and the individual motivational influences (Jones, 2007; Katz & Kahn, 1978).

The intent of systems theory was to understand the culture influencing the organization and to build a structure to support informal norms and employee collaboration to create an efficient organization for flow of product and one organization

effective for people in the organization (Jones, 2007). Katz and Kahn (1978) addressed open system theory where an organization is an organism dependent on monitoring, cultivation, and sustainment to remain effective. According to Katz and Kahn (1978), although organizations are designed for effective management of people, the inherent structure countermands the intent. The origins of bureaucracies created boundaries to communication by setting strict standards of reporting within the organization without regard to individuals (Weber, 1947). Communication boundaries within an organization are the largest driver inhibiting efficiency (Katz & Kahn, 1978).

Vertical boundaries are created by identifying levels of power, wealth, and authority within an organization, which create a separation between the worker and the management (Katz & Kahn, 1978). The separation not only affects the communication within the organization, but also sets the standard for how people work within an organization (Katz & Kahn, 1978). For example, workers seeking to improve the organization are limited in view to their specific columns within the organization, or stovepipes within the organization, without consideration beyond the vertical boundaries encapsulating the worker (Katz & Kahn, 1978). When encapsulated, the worker is also not motivated to take the initiative to improve the company (Da Silva, Hutcheson, & Wahl, 2010). The influence to organizational design of the three major theories are the foundation for postmodern organizations to have the structure of a bureaucracy, the people efficiency of scientific management, and open systems theory for the integration of the structure with individuals (Hoopes, 2003; Katz & Kahn, 1978; Weber, 1947).

Current theories. In the last two decades, a large number of books and articles have addressed organizational design. A few relevant examples will be discussed as

representations of design theories. Due to the number of variables influencing organizational design--e.g., culture, customer, structure, environment--not all areas can be discussed here, hence the focus of the current research study will be around designs and theories relating to organizational structure and communication. The effect on communication as a variable for organizational success has been documented as key discriminator and focus for program success (Johnston et al., 2007; Morris, 2008). The intent of the current research study was not to ignore the other contributing factors, but to focus the current research study on specific communication constraints. In the changing markets characterizing a global economy, organizations are still trying to design rigid organizational structures in an environment requiring more adaptability to change and customer needs (Chaturvedi, 2005).

One possible aspect of the challenge of organizational communication is the vertical and horizontal boundaries of the organization limiting the communication and integration. Robins (1997) wrote about the mechanistic organization, or traditional hierarchical structure, in relation to organic organization, a free-form design to put individuals in natural working groups. The basic premise for organizational design is mechanistic organizations offer strong structure but limited innovation, whereas organic structures offer better cross-functional communication but limited formalization (Robins, 1997). The two opposing structures of mechanistic and organic offer the basis for organizational design in most organizations to allow structure for effective management, but freedom for effective leadership. The challenge for leadership is designing an organization structure to combine support for both management and leadership.

Mintzberg et al. (2003) defined similar structures to meet the demands of the organization and further discussed seven separate instances of organizational configurations. Mintzberg et al. (2003) represented the functions within the organizations in terms of forces acting upon the organization to denote specific organization designs, which are entrepreneurial, machine, professional, diversified, innovative, missionary, and political. Although the separate organizational designs allow the organizer to provide emphasis on key areas to support the business needs of the organization, the methodology still requires a structure to hold the functional pieces of the organization together. The seven-part configuration does not lend itself to the traditional structured organization of the aerospace companies based around a structured production-based product. Mintzberg et al. (2003) noted that the bureaucratic mechanized structures inflexible to change are not successful in aerospace organizations, the primary basis of the current research study.

The prevailing issue in current organizational design theories is how to manage boundaries in organizations (Broadfoot et al., 2008). Simply ensconcing a cross-functional team to manage boundaries will not achieve the desired results to improve communication (Ainamo, 2007). Organizational designs whether purely mechanistic or organic require conscious and deliberate intentions to combine the necessary capabilities to bring together the necessary structure that is unique and beneficial to the specific organization being assessed (Ainamo, 2007; Broadfoot et al., 2008; Robins, 1997). Compounded by the limitations of physical structure are the philosophical organizational constraints of culture, which affect the ability of individuals to communicate and perform (Child & McGrath, 2001).

Philosophical viewpoint. Foucault's views of genealogy emphasized a historical event is not singular creation of new idea but represents a culmination of previous events for critique to ascertain the influences of history on the single event (Sarup, 1993). The view has contributed to organizational design by describing how organizations are composed of many autonomous parts and the collection into account a single organization requires not just what is in vogue, but what method makes sense taking in the entire history of organizational design. The contributors of the design also weigh on individual influences. Foucault's work emphasized the implications of power within organizations, how individuals strive for power as a measurement of themselves, and by their physical place within the organizational structure (Sarup, 1993).

The creation of an individuals' implied personal power is associated with the implementation of bureaucratic structures (Hoopes, 2003). Contrary to the Child and McGrath's (2001) implications, the bureaucratic design has the potential to limit the creative capability of an organization to promote the effective internal capabilities through thought and learning. Removing or limiting the bureaucracy altogether poses a potential for an improved organization. Organizations benefited from removal of bureaucracy by establishing new cultures to encourage each person to participate in decision affecting the organization in terms of innovation and strategic alignment (Budd, Gollan, & Wilkinson, 2010).

The new cultural relationship by members of the organization was achieved through organizational design that promoted communication throughout the organization (Budd et al., 2010). Foucault described the culture as the creation of a society that is self-governing, or as it is applicable to an organization, one that is capable of managing

independent activities without direct leadership supervision (Fitzsimons, 2007). Structure is immaterial where the focus is to develop a communication methods promoting information-processing dependent on external and internal sources of information (Tushman & Nadler, 1978). The removal of bureaucratic influences of traditional organizational structure allows organic communication to be successful.

Traditional communication vertically through an organization results in extended delays in information flow inhibiting program responsiveness (Chaturvedi, 2005). The delay can be due to the power influences of a bureaucratic command and control environment without sufficient delegation, which can cause cost and schedule risks to a corporation (Robey & Sales, 1994). In industries where independent teams perform specialized efforts, such as MIS teams controlling the flow of communication using information technology, following the traditional top-down hierarchy structure limit the communication capability of an organization (Robins, 1993). The views presented in the current research study about the impact of traditional organizational structure and the need for individual workers to have organic communication freedom begin to describe how organizations are designed to create the final structure.

Organizational design. The primary topic of the current research study was organizational design, particularly in the relation to the subsequent physical structure defining communication within an MIS subgroup. Data sources for organizational design are vast, ranging from scholastic text and journals to a large genre of specialty and information books from industry-recognized experts. For the purpose of the current research study, the focus will be on peer-reviewed journals and scholastic text to set the basis for knowledge on organizational design and structure.

Mechanics. In the endeavor to manage organizations, the creators of modern organizational design neglected to understand the influence of history as organizational design evolved through postmodern times to allow for efficient integration of people to perform tasks (Hesselbein et al., 1997). The evolution of organizational design reaches from the beginning of history when instinctual behavior created hierarchal control through alpha and beta roles in pack animals to postmodern developments of the semantic web for human interrelationships (Evermann & Fang, 2010). Organizational design for the purpose of the current research study is the creation of the physical structure of an organization representing the communication down through the various levels, or subgroups, and between each of these subgroups (Robbins, 1990).

The physical structure of an organization represents the individual subgroups performing a specific program objective to support the effort, or arranged in a logical grouping by function. The subgroups represent a specific support activity on an effort, or an analysis team reviewing data to find improvement for the entire effort. The method to which they are organized influences the capability of communication. The intent of the current research study was to illustrate how traditional organizations were structured to drive communication, to contrast the organizational communication with an alternate design methodology, and to determine if efficiencies can be found with communication methodology.

Design. In the beginning of the 21st century, rational and natural systems were designed to decrease ambiguity and improve value through similar but separate methodologies (Yoon & Kuchinke, 2005). The organizational designs differed in approach because rational systems are planned and changed by conscious design of those

running the organization, whereas natural systems evolved through the normal growth of the organization by the individuals (Scott & Davis, 2007).The goal of leaders is to design an organization to embody structure and is adaptive to change. Project managers are faced with challenges of overcoming the limitations of organizational design by the subsequent creation of inherent boundaries (Paton, Hodgson, & Cicmil, 2010). Given free reign, experienced individuals preferred organic structures as opposed to mechanistic structures (Sánchez-Manzanares, Rico, & Gil, 2008). The drive toward rational may be because new individuals to an organization inherently aligned with a mechanistic approach over a natural approach, which creates a general detriment overall if an organization is not designed to allow innovative and effective communication (Sánchez-Manzanares et al., 2008).

The influence of the organizational structure on communication, particularly on the MIS subgroups, is dependent on the physical design. The focus on the MIS subgroup is to identify a need and establish the importance of MIS as the requirement to personalize information and manage information overload (Perugini & Ramakrishnan, 2010). Decentralization of power and of imbibing authority at lower levels, like MIS groups, creates autonomy to improve team effectiveness (Escribá-Moreno, Canet-Giner, & Moreno-Luzón, 2008).

The traditional top-down structure envisioned during the industrial revolution supported product creation, however, in the 21st century where many products are no longer physical, but intellectual, the communication requirements of an organization change. Establishing legitimacy for organizational design from top-level and then leaders providing autonomy for lower-level decision of organizational design created a culture

for effective communication (Rolland & Kaminska-Labbé, 2008). A clearly defined structure was needed by leaders to support the necessary changes, but also adaptable to meet peculiar needs. Managers faced the challenge of integrating organizational designs to improve the communication capability to share knowledge in organizations (Rolland & Kaminska-Labbé, 2008).

Structure. A clearly defined structure can be compared to Weber's bureaucratic structure, in which individual contributions were recognized and integrated as opposed to a pure structure solution Taylor and Fayol favored, but regardless of the structure, the individual was still secondary in design (Scott & Davis, 2007). Bureaucracy also represented "inflexibility, sluggish response, increased stress on employee, and higher cost of operations" (Robey & Sales, 1994, p. 88). Teams given autonomy had a greater influence and effect across the organization than teams centralized in a fixed hierarchy (Escribá-Moreno et al., 2008). Recognizing the needs of the individual in the organization structure rather than letting the organization paradigms drive the design have been beneficial during organizational change.

The organizational change caused by communication requirements has been attributed to the potential for cross-practice integration to leverage capabilities across the organization (Windischer et al., 2009). Such organizational change can be contrasted to a multitude of stovepipe groups performing similar tasks without external influence to increase capability, or without shared activities to use the resources effectively. Reducing vertical boundaries within an organization created improved communication flow and overall organization performance (Lloria, 2007). There is a duality, the formalization of organizations has enabled precise management of knowledge, but has

also been ineffective sharing the knowledge across a more flexible organization (Pertusa-Ortega et al., 2010).

Removing centralization, or autocracy, in an organization has created better individual management of knowledge and enhanced generation of innovative thinking (Pertusa-Ortega et al., 2010). Flat working teams, or teams not highly structured by traditional design, can exist within large hierarchal organizations to foster communication and efficiency (Lloria, 2007). An open systems methodology has been needed for the capability and adaptability of the individual groups across the broad spectrum of the organization in complex environments such as those using MIS (Scott & Davis, 2007). Research opinions vary how combination of designs is accomplished and each viewpoint must be addressed to benchmark the best practice to apply to a new methodology.

Leadership influence. During the 20th century, dozens of leadership and management styles were developed to support organizational structure (Miller & Vaughan, 2001). The styles continued to evolve to improve management of people performance, but the auspice of the styles remained under the premise that enhanced performance occurs with management rather than with structure (Miller & Vaughan, 2001). In the 20th century, theories of management evolution and organizational design were based on a two-dimensional bureaucratic structure that never evolved to yield the best possible production with most successful integration between employees and management (Hesselbein et al., 1997; Hoopes, 2003; Miller & Vaughan, 2001).

The ability for leaders to recognize issues within the organization and act on the issue indicators can be impeded by organizational constraints (Jaques, 2010). Bureaucratic organizations establish layers of power, where the majority of power is held

at the top of the organization (Katz & Kahn, 1978). The difficulty with power is the detriment to organizational health when an individual abuses power for personal and political gain rather than using it as a tool to lead an organization (Furner et al., 2009). Leaders with referent power, those who set examples and delegate to others, set the standard for others to emulate and achieve the greatest influence for dissemination of information (Jayasingam et al., 2010).

Empowered employees, or employees who have the desire and authority to communicate and perform at lower levels yield improved business results (Broadfoot et al., 2007). Individuals who can create meaning out of their work when given the authority to communicate in the decision process have a sense of power (Broadfoot et al., 2007). Organizational design needs to empower workers at the lower levels to identify issues within their sub-groups and to authorize lower level employees to act on the issues that arise in their work (Jaques, 2010). Leaders achieving the balance of empowering responsibility, accountability, and authority to communicate change in the organization enable improved performance.

The lack of decision authority at lower organizational levels in a bureaucratic culture impedes success (Paton et al., 2010). The lack of authority also creates centralized organizations, which create internal competition, reducing the effectiveness of work teams (Vroom, 2006). An alternative may be decentralization, in which organizations more cohesive in communication and collaboration are created (Vroom, 2006). The challenge for leaders is creating an organization to suit the bureaucratic needs of the company by maintaining centralization while empowering the workers with decentralization. The creation of effective organizations becomes a constant battle as

corporations struggle with the management of internal and external influences to organizational boundaries (Robins, 1997).

Diverging solutions. The design of organizations typically shows communication relationships, therefore most researched views are consistent in design style (e.g., Hesselbein et al., 1997; Mintzberg et al., 2003; Robins, 1997; Scott & Davis, 2007). The designs diverge in how the organization promotes the communication through management styles. Mintzberg et al. (2003) partitioned organizations into six basic components (strategy, operations, ideology, middle management, workers, and analysts) and systematically showed the interrelationships of each component in various applications through organizations. A product organization will put more emphasis on the operations component, whereas a professional organization would put more emphasis on the analysis component (Mintzberg et al., 2003). Van Looy, Martens, and Debackere (2005) posited that a rigid bureaucratic organizational structure is not dependent on success and multiple organizational design configurations can coalesce into a working hybrid organization.

The viewpoints of Mintzberg et al. (2003) and Van Looy et al. (2005) represent one of the divergences in thought regarding organizational design. Both agree that a defined structure is required, but the interrelationships between the components within the structure can vary depending on roles and functions of the individuals requiring a standard structure as Mintzberg et al. (2003) described, or be more fluid and adaptive with an open methodology as Van Looy et al. (2005) described. The disagreements represent the need for organizational designs to be more adaptive to the needs of the

organization, rather than be stagnated by corporate policy or current cultural paradigm expectations.

The primary issue addressed is the one of organizational boundaries impeding communication (Broadfoot et al., 2007). Leaders need to recognize that success is about addressing the boundaries of the people rather than creating boundaries in the organization (Broadfoot et al., 2007). Leaders who do not effectively design an organization to meet the needs of the individuals will face challenges of attrition and lack of employee commitment (Da Silva et al., 2010). The challenge for leaders becomes integrating a fixed structure large corporations need to run the business and more fluid structures to promote adaptive and innovative work environments for the individual.

Integration. The current research study addressed the communication capabilities of MIS subgroups within standardized organizations. Building an alternate organizational design through open methodology enables an improved organization capable of achieving homeostasis rather than confined to an ineffective, rigid, closed system (Windischer et al., 2009). Wheatley and Kellner-Rodgers (1996) addressed the phenomenon of the connection between mechanistic and natural organizational designs stating that groups will instinctively migrate to a natural organizational design over a rigid structure.

The literature review has provided a view based on experiences and research in current organizational design information, but there are limited works addressing future requirements for organizations. Several authors have discussed variations of the mechanistic and natural systems of organizational design, and have addressed the unique capabilities within organizations that deviate from the normal design (Hesselbein et al.,

1997; Robey & Sales, 1997; Scott & Davis, 2007). The origin of alternate organizational designs like cross-functional teams is a business response to the recognized inefficiencies of traditional organizational structures (Windischer et al., 2009). Paul and Nazareth (2010) stated that current literature has not shown a definitive viewpoint to address the unique capability of a MIS subgroup as an emerging role with the intent to be integrated into every organization at multiple levels.

Corporate communication is a key area to address for the successful implementation of organizational adaptability and the diligent use of subgroups at the right level to promote communication (Ali, 2006). Substantial work has been completed about analyzing the peculiar needs of an organization to provide general guidelines for achieving success. Despite practices such as Lean, Six Sigma, and Total Quality Management to promote change within an organization in an attempt to improve capabilities, the fixed structure of traditional organizations has been a detriment to change (Lawler & Worley, 2006).

The authors cited thus far have provided generalizations to meet the needs of multiple organizations rather than to define a clear structure for a MIS subgroup. As leaders continue through the future, the need for an MIS subgroups and the capability to organize the subgroups effectively to promote communication will be as common as a need for a manager of an organization (Lawler & Worley, 2006). The common subgroups are achieved by pulling similar capabilities throughout an organization into a single group to exploit inherent capabilities and create commonality (Lawler & Worley, 2006). MIS subgroups will be required for a corporation to stay competitive in a digital world, and preparations need to be made to organize the MIS subgroups to yield the best

communication results throughout the organization. Specific designs are required to manage MIS subgroups before leaders allow such groups to be buried in the organization and debilitating the effectiveness of the MIS subgroups.

Communication through organizational assessment. The secondary topic of the current research study was communication through organizational assessment. The secondary topic determined how communication was conducted within an organization, and how leaders evaluated and managed the capabilities of the communication. Individuals' feelings that they fit in their organization's hierarchy directly influence their performance levels through their commitment to the organization (Da Silva et al., 2010). Ergo, if the majority of persons in the organization are not properly aligned to the structure then the entire organization suffers (Da Silva et al., 2010). The appearance of the breakdown of an organization can be viewed by the individual's abilities within the organization to communicate.

Communication. Communication through organizational assessment was not generalized in terms of communication practices of individuals or general assessments of an organization's capabilities based on their communication skill. The definition was designed rather to address the method of communication between organizational subgroups and across functional organization structures, with the intent to assess effectiveness of these interactions. Communication principles affected by organizational design philosophies, cultural epistemological influences, and technology advances were the key areas of concern.

Organizations supporting communication across boundaries achieved a higher level of performance by gaining additional knowledge and developing communication

relationships to improve effective leadership of the organization (Gilmore, 2009). Addressing communication paradigms, cultures, and capabilities of an organization enabled a collective view of major influences affecting the overall communication practices within an organization. The goal of the current research study was to understand how each of these communication influences provided for the overall effect on the organization by emphasizing organizational practices that influence the capabilities of communication. Achievement of the goal was expressed by understanding the paradigms used and the frequency of those paradigms.

The context of the communication through organization assessment within the current research study emphasizes how communication and assessment contribute to the physical structure of an organization. The main reason for designing an organizational structure is to define roles and responsibilities, but also to pictorially demonstrate how each of the subgroups works together and ultimately reports to the overall organization, program, and company (Robins, 1990). Establishing the chain of command for information flow is a bureaucratic method for managing individuals to ensure prescribed tasks are carried out in an expected and controlled manner (Jones, 2007). The strict command and control method hinders change in organizations forcing realignment to meet organizational needs.

The organizational restructuring by leaders to meet change and often create additional constraints rather than realigning focus to the new change (Lin, Zhao, Ismail, & Carley, 2006). Realignments in communication expectations in organizations require the clarification of responsibility, accountability, and authority. The clarifications cause delay in the communication chain as individuals work to adapt to the new alignment. An

improved alternative is to design an organization more adaptive to change rather than redesigning an organization to the changes (Lin et al., 2006). Once the communication standards are defined, assessing the effectiveness of the design by employing best practices to facilitate communication are the hallmarks of the effectiveness.

Contributors to communication. Communication was based on three subtexts: paradigms, cultural influences, and capabilities. The three areas establish how organizations have defined their origins, how organizations have understood the impacts of outside factors, and how organizations have been able to meet and accommodate the changes caused by those outside factors. Paradigms influencing communication stretch back to the beginning of time, but the focus of the current research study was on the beginning of the industrial revolution to center on the paradigms still in place to some capacity in organizations today, and the most current paradigms influencing how organizations interrelate. The work of Weber initially set the paradigms for the structure of organizations and ultimately the flow of communication (Scott & Davis, 2007). Weber developed a bureaucratic system by adapting the long-standing military paradigm of command and control, or chain of command (Scott & Davis, 2007). The paradigms propagated through the 20th century as business and cultural influences modified the inner workings for corporations based on the experience of leaders passing the military style organizational paradigms.

Linear deconstruction is a philosophical analysis of hierarchal structural components to create an understanding of the interrelationships to allow communication horizontally across the organizations. The linear deconstruction analysis type follows a similar approach to Derrida's deconstruction view of breaking down the information into

the simple parts to understand the overall intent of the structure (Sarup, 1993). The linear deconstruction and Derrida's deconstruction philosophical view differences represent how various sources of influence affect the design of an organization and how the organization affects communication. As the development of communication skills progresses, the initiating culture provides the structure for the design development (Huang, Lu, & Wong, 2003). Consequently, the rational inclination of an organization is to center on a culture purely focused on MIS, rather than one subjugated by different communication methodologies and business practices that may detriment the performance of the organization.

A professional open environment of communication exchange is ideal where businesses inherently possess the individual self-esteem of the worker to share information in a collaborative environment (Constant, Kiesler, & Sproull, 1994). Organizations without basic interrelationships and norms for communication may not be adaptable to different organizational designs. As Kuhn (1996) described, "often a paradigm developed for one set of phenomena is ambiguous in its application of other close related ones" (p. 29). Leaders in organizations need to be adaptive to change not only by recognizing the influences of the paradigms creating change, but also by establishing the ability to promote change to new paradigms.

Bias toward innovation. In essence, an organization must be positioned to adapt, collaborate, and evaluate in order to achieve its highest potential (Malik & Goyal, 2003). The chances for potential success are represented by the capabilities of the organization to take on new methods, but are also limited by the challenge to change to new methods. Piderit (2000) addressed a simple issue of a common euphemism, "resistance to change,"

by changing the interpretation from a negative connotation to one with positive and applicable application by creating an egalitarian relationship with the employee during organizational design to meet the needs of the individual and promote acquiesce to change. The movement to more organic, or horizontally integrated organizations, fosters an environment of change within cultures where leadership are more agile and place more ownership, or empowerment, on the employees (Piderit, 2000). Teams who are imbued with the ability to interact and make decisions will create an improved and efficient working environment (Johnston et al., 2007). Piderit's (2000) reasoning behind the ambivalence individuals stems around the three dimensions of attitudes: the cognitive, emotional, and intentional.

The three dimensions of attitude (Piderit, 2000) can also be described as the intellectual side of understanding the change, the internal reaction to the change, and the outward display in response to the change. Systems and tools also affect communication. Dhanaraj and Parkhe (2006) addressed systems and tools as the key connection between the capabilities of a firm to manage innovation within the organization as opposed to following standard hierarchal approaches. The tools, briefly mentioned by Dhanaraj and Parkhe (2006), also affect the communication capability from the advent of email in the 90's to leadership's acceptance of instant messaging or texting in the new millennium (Boule, 2008). As the tools that leaders use to communicate expand, so must organizational design expand to use the new tools (Boule, 2008).

Organizational assessment. The final communication aspect is the assessment of the three areas: communication, contributors to communication, and bias toward innovation. The basic assessment is an organization using a command and control

methodology, or top-down organization may not be adaptive to change to manage ne methods of information sharing. The top-down design represents the basic bureaucratic design originally envisioned by Weber to manage an organization (Scott & Davis, 2007). The design is unresponsive to change and could have drastic affects on leaders' abilities to be adaptive.

Corporations are showing that a large movement of information through an organization requires groups who can traffic the knowledge sharing across boundaries (Meyer, 2010). Traditional organizations lack the flexibility to move internal information effectively, due to the imposed vertical and horizontal boundaries (Broadfoot et al., 2008). Organizational design needs a structure to support information movement across the organization boundaries rather than a periphery subgroup appended to the organization structure to bypass the barriers and mask the systemic communication issue (Meyer, 2010).

The periphery subgroups applied to organizational structures involve cross practice integration, or using capabilities from several subgroups to facilitate optimal resource usage within and across organizations to create cross-functional teams (Scott & Davis, 2007). A second method are high performance work teams, which are independent collections of specialized individuals from multiple organizations and subgroups who are activated as needed to address unique problems or innovations required by the organizations (Ainamo, 2007). The two example periphery subgroups represents leadership's attempt to create a solution to the systemic communication problem of a bureaucratic organization by appending an existing structure.

The two types of teams, cross-functional teams and high performance work teams represent an improved method of communication by effectively managing the available resources and enabling an organization to be greater than the sum of the parts, or subgroups. Recognizing the need to create the sub-teams is the first step for leaders to address the organizational paradigm of traditional structures creating boundaries that provide the hindrance to communication. The natural progression of leaders applying the communication methods through the century lead to a logical conclusion of organization styles, which can leaders can use to assess the overall capability of the organization, and define the next evolution of communication style.

Over the 20th and 21st centuries, organizational design has been constant as well as the contributing factors defining the physical structure (Hesselbein et al., 1997). Organizational awareness is the intellectual construct to achieve the design. For leaders to perform effectively, they require an orchestrated plan than ensures the ideal use of each instrument, either person or tool, within the organization. Several sources (Broadfoot et al., 2008; Dhanaraj & Parkhe, 2006; Rimvydas, 2005) have provided views on how to address the orchestration, and while many agree, the authors disagree on some points, or have a slightly skewed variation.

Highly organized structures provide too much constraint for an innovative organization, while too little control and lack of stability cause innovative organizations to be ineffective. Dhanaraj and Parkhe (2006) addressed the issue of a traditional hierarchy by recommending a hub solution. The hub solution uses interaction and management between innovative organizations to share information, while providing the necessary flexibility for creativity (Dhanaraj & Parkhe, 2006). The hub solution premise

may not fully address boundaries in large organizations. The milieu of communication within organizations is hampered by the boundaries inherent to structure (Broadfoot et al., 2008). Inherent organizational boundaries create inefficient communication networks due to lack of synergy with the rest of the organization and prevent individuals from completing meaningful work (Broadfoot et al., 2008).

The review of the communication through organizational assessment yielded several implications regarding the affects of communication and assessment to organizational design. The intent of the current research study is not to recreate a completely new organizational design paradigm, but rather modify existing paradigms for how the rest of the organization contributes to communication. In conclusion, a need to adapt existing principles and paradigms into a single meaningful structure to promote the communication theories and philosophies over the century, while leveraging the assessment capabilities of benchmarked efforts to encourage communication, exists. The potential to modify existing paradigms is addressed for making a strategic decision to reuse the information to benefit all participants for the efficiency and decision quality in a shared environment (Rimvydas, 2005). The capability of an organization is only limited by the ability of the individuals to communicate the information the organization already possesses.

Literature Gap

The scope of the literature review extends over a century of practices, theories, and philosophies contributing to organizational design. The gap in the literature review does not represent a lack of information, but rather the inability to capture every piece of information discussed concerning organizational design over the past 130 years to

measure the applicability to the current research study of organizational design concerning communication with MIS subgroups. In one aspect, the literature gap may arise because of the problem that no new organizational paradigms exist, and in actuality, there have been no new organizational designs in 100 years (Hesselbein et al., 1997). The collection of information is merely recommendations about managing organizational effectiveness, which have had little effect on the actual structure.

The gap in the literature is primarily on the amount of germinal and Delphi method supporting references. The literature of the current research study is focused around influences of organizational terms to include, design, structure, effectiveness, and communication. The search produced thousands of results ranging throughout the past 100 years. Despite the abundant collection of references, the research on the relationship between communication and organizational performance is limited (Johnston et al., 2007). In addition, very few authors have reviewed the aspect of managing knowledge in organizations with regard to dissemination of information (Jayasingam et al., 2010). Books were selected to provide a general overview of various thoughts regarding organizational influences from a diverse collection of authors to show the influence maintained from Weber's (1947) initial bureaucratic design to the organic or natural working groups in organizations in the post-modern era.

Table 1 shows that the references used about the design of organizational structure in relation to MIS communication comprise approximately 86% of resources within the past 5 years. In addition, approximately 76% of all sources were peer-reviewed journals. The remaining resources were used to provide foundational credence

to the germinal topic using recognized resources throughout history, the research method support, and the Delphi method background.

Table 1

Title Search Gap Analysis

	Books		Journals		
Title Search	Pre-2005	Post-2005	Pre-2005	Post-2005	Total Percent Post-2005
Organization			7	44	86%
Germinal	12	4		1	29%
Research Method	2	3	6	8	58%
Total	14	7	13	53	69%

Note. Search terms relating to organization included design, structure, effectiveness, MIS, and communication. Total references were 87. Sixty references were within the past 5 years representing 69% of total references.

Conclusions

The discussion of the contributing elements of corporate communication is a key area to address for the successful implementation of organizational adaptability and the effective use of subgroups at the right level to promote communication (Ali, 2006). A need was identified for a specific organizational paradigm to address the specific needs of MIS subgroups to improve functional capabilities. Specific designs are required to manage the subgroups before leaders continue to allow them to be buried in the organizational, debilitating the performance (Paton et al., 2010; Van Looy et al., 2005).

The key points to the chapter are that history shows that in postmodern times individuals are still actively employing the organizational paradigms of modern sociologists (Hoops, 2003; Jones, 2007; Scott & Davis, 2007). Organizational structures have remained fixed throughout the postmodern era using basic design methods will little imaginative variance (Hesselbein et al., 1997). Leaders in organizations still struggle with finding a design to improve the communication despite information showing that effective communication promotes improved results (Malik & Goyal, 2003; Mesmer-Magnus & DeChurch, 2009). Whether the struggle is corporate limitations, philosophical viewpoints, or environmental, many variables contribute to organizational design, and to the communication of individuals within the organization (Liao, Toya, Lepak, & Hong, 2009).

Organizational design has been represented as one aspect of the supporting structure to define communication capabilities of the subgroup. The second aspect is the assessment of improved communication. Organizational design is representative of a need to adapt existing principles into a single meaningful structure to promote the communication theories and philosophies over the century while leveraging the assessment capabilities of benchmarked efforts to foster communication. The potential for making strategic decisions to reuse the information to benefit all participants for the efficiency and decision quality in a shared environment has been addressed (Rimvydas, 2005). The success of an organization is dependent on the abilities of individuals to communicate the information they already possesses within the context of the subgroup.

Cultural differences among participants lead to a broad spectrum of opinions contributing to the diversity of the contextual influences. Depending on the culture at

each location, the practices used have varied results, but the commonality across geographic and cultural areas is mitigated by leaders addressing the root commonality shared by MIS subgroups. Treating the MIS subgroup as a single entity with its own culture will enable a consolidated organizational design that advances communication and overall value by instilling an evolved natural working group able to traverse traditional organizational boundaries (Scott & Davis, 2007).

Summary

The key subjects in chapter 2 were representative in three distinct areas: design, communication, and assessment. The three areas represent the stepped developmental approach to design the physical layout, address the functionality of the designed structure, and ultimately measure the success of organizational communication as key contributors. The three steps help to capture the specific contributors necessary to understand the significance of organizational design and communication.

Organizational design has evolved over the past century, but the general shape of top-down management has been fixed (Scott & Davis, 2007). The general bureaucratic organizational design creates a predictable structure but creates ineffectiveness in organizations requiring quicker throughput of information and greater empowerment of the individual worker. In the postmodern era, focus needs to move away from the organization to the needs of the individual, or subgroups, through an organizational design supporting communication (Sarup, 1993).

Communication is inherent to the success of an organization. As the development of the communication skills progresses, the initiating culture provides the structure for the development (Huang et al., 2003). Establishing the communication needs of the

organization defines the structure and ultimately its effectiveness. Setting up the communication best practice requirements and mandating the requirements throughout an organization is not enough. Organizations are organisms that must be continually monitored and assessed, because the current principles applied in an organization may not sustain the organization as it grows (Katz & Kahn, 1978). In essence, the leaders of an organization must be positioned to adapt, collaborate, and evaluate the physical influences of the organization in order to achieve a stoichiometric balance (Malik & Goyal, 2003). In order to design an organization to promote communication and assess effectiveness, a Delphi study of industry experts was used to determine current principles used and determine a single method for incorporation. Chapter 3 has details for the application of the qualitative Delphi method with supporting quantitative data to understand the influence of organizational structure on communication for MIS subgroups.

Chapter 3: Research Method

The purpose of the qualitative Delphi study with supporting quantitative data was to examine and better understand the current effects and the limitations on communication in traditional hierarchal organizations with relation to groups applying, supporting, or creating management information systems (MIS) to identify potential organizational design alternatives. The intent of the current research study was to elucidate the effects of traditional organizational design on communication in large corporations to identify alternate means of organizational structuring, as a whole or as an underlying sub-structure, to facilitate improved efficiency in the effectiveness of communication. The general types of organizations to be evaluated by the participants include the following, (a) mechanistic, (b) organic, (c) rational system, (d) natural system, and (e) open system. The Delphi study helped to identify known methods of improving communication from a diverse panel. The researcher also solicited views of alternate designs to provide enhanced or new paradigms of organizational design. Chapter 3 contains the following nine sections: (a) research method and design appropriateness, (b) research questions, (c) population, (d) sampling frame, (e) data collection, (f) instrumentation, (g) validity and reliability, (h) data analysis, and (i) summary.

Research Method and Design Appropriateness

The current research study is appropriate at this time owing to the struggles corporations face facilitating unique organizations (Morris, 2008). The qualitative method using quantitative data was chosen to allow an open response from the participants to discuss the effects on communication from organizational structure

impacts in relation to MIS. The design focuses on acquiring a firsthand knowledge of current practices and identifying a possible alternative for the future. The instrument was organized in a linear flow understanding organizational design implications to existing paradigms compared to the performance of the organization and thus determine the relationship (Creswell, 2005). The Delphi study data contained the quantitative data to perform an analysis to create an evaluation using partial and bivariate comparisons (Creswell, 2005). The findings of the Delphi study were used to ascertain the feasibility of an ideal structure to achieve effective communication in organizations managing and supporting MIS.

Rationale for research method. A qualitative method with supporting quantitative data was chosen over a purely quantitative method because the intent was to capture individual experience as opposed to observable data (Dobrovolny & Fuentes, 2008). The purpose of recognizing how organizational structure affects communication currently necessitated an understanding from individuals who were managing and leading the organizations to get better clarity of the efficiencies or inefficiencies of physical design constraints for future changes. A full quantitative study would have only allowed for comparison and contrast among fixed variables of observation, and there were too many variables and thresholds of variables to collect meaningful data (Dobrovolny & Fuentes, 2008). A qualitative analysis using some quantitative data provided a comprehensive delineation of the leading phenomenon contributing to the affect of organizational communication (Creswell, 2005).

Rationale for research design. The Delphi method is an instrument to obtain the expert opinions of volunteers through anonymous participation (Dalkey, 1967). The

design was appropriate because it allowed the best method to capture personal experience of individuals who were experts in the field being studied (Creswell, 2005). The Delphi method enabled the researcher to collect information from "experts or especially knowledgeable individuals" (Dalkey, 1967, p. 1). The individuals being solicited could have a strong influence on the other participants, so the anonymity among the participants of the Delphi method enabled open and honest responses from each person (Dalkey, 1967). The method enabled a structured exchange of participant views to remain focused on specific aspects of the Delphi study to address a difficult concept (Streveler et al., 2003). The research design was optimal because of the ability of the researcher to coalesce strong personalities in an environment enabling open opinions and views (Dalkey, 1967; Streveler et al., 2003).

Design goal achievement. The research design was chosen to elucidate that organizational design by leaders, though structured, was subjective and composed of many unique variables affecting the execution and success of organizational communication. The use of the Delphi method allowed experts to provide insight from their experiences with actual application of various designs to understand how structure effects communication currently and to suggest or evaluate a potential alternative for the future (Linstone & Turoff, 2002). To recognize organizational structure effects, a Delphi method was the optimal choice. The information collected was based on subjective views of industry experts who had applied experience and firsthand knowledge of success and failures (Creswell, 2005). The views of the participants also enhanced the innovative thinking of how people work and interrelate in organizations (Schermerhorn, Hunt, & Osborn, 2008).

Research Questions

The following research questions were used to understand input from the respondents to gain further insight. The goals of the current research study were to establish what the current state of communication was to elucidate possible alternatives to improve the current structure, to establish requirement to ensure effective leadership of a new design, and to understand the implications for the adoption of new theories across the organization.

R1: How do leaders currently address the organizational design integration requirements of MIS throughout an organization to support communication?

R2: What organizational design might be beneficial to exist within a traditional bureaucratic structure but to provide the horizontal communication necessary for MIS effectiveness?

R3: How can leaders manage effectively and efficiently the communication of responsibility, accountability, and authority (RAA) for MIS across multiple organizational structures?

R4: How can a highly structured and formalized postmodern organization adapt to new theories of structural design to promote communication in groups supporting MIS?

Population

The population of the participants was individuals who support and manage MIS or who rely on MIS to conduct their business. The population of the current research study was individuals with diverse backgrounds. The diversity of the participants was required to obtain meaningful data by selecting participants from several work disciplines throughout an aerospace corporation, as well as participants from various levels in the

corporation (see Figure 3). The population comprised professionals who were tasked with the daily management of various contracts with two primary objectives of providing enhanced low cost service to the customer and increasing shareholder value.

Obtaining data from participants working in various disciplines at diverse levels in aerospace corporations provided a holistic view and improved capability to provide a conclusion that would ultimately be suitable in multiple business and organizational applications. The disciplines of participants ranged across the fields of engineering, supply chain management, business operations, logistics, and several other key areas of program management. The design method obtained inputs in the form of multiple round discussions from a select panel of a minimum of 10 diverse organizational leaders at a large aerospace company who support MIS teams in St. Louis, Missouri and Huntsville, Alabama. Signed permission to use premises and recruit subjects had been obtained from the appropriate organization and is included in Appendix A.

The participants with similar backgrounds were chosen to enable a common frame of reference for organizational design that offered some consistency in corporate culture, and business epistemologies. The participants were accessed via email, phone calls, and personal invitations. Deciding whom to solicit for participation was either through direct knowledge of the individuals or by their peers using various sampling methods.

Sampling Frame

Based on the population under review, the participants had an experience level of greater than 5 years. Educational background was collected, but a minimum educational level was not a requirement for participation. Field of work was areas providing or

receiving support from MIS organizations. The sample was chosen based on the direct involvement with organizations dealing with the communication phenomenon. The participants ranged from the first level management and up so as not to be low in the organization as to lack experience or decision-making authority, and ranged from the director level and down so as not to be too high in the organization and be far removed from the daily operations centered on communication. Acquiring the participation of these individuals necessitated purposeful sampling.

Purposeful sampling. The ability of the participants to understand the central phenomenon of the current research study requires the use of purposeful sampling (Creswell, 2005). One set of participants was determined before data collection to identify specific persons to contribute to the current research study (Marina, 2009). The type of purposeful sampling used was a combination of theory or concept sampling to generate a theory or explore a unique concept, and homogeneous sampling to capture individuals in a common subgroup (Creswell, 2005). Before and during Round 1 data collection, the investigator was open to additional participants through snowball sampling to ensure a broad spectrum of responses and an adequate number of participants to validate results.

Theory or concept sampling. Theory or concept sampling enabled clear selection of people who have prior knowledge on the topic, and therefore the specific nature of the current research study required individuals with direct experience involving MIS (Creswell, 2005; Marina, 2009). The larger theory anticipated to emerge required participants who were experienced or who were considered experts on the topic (Chew, 2010; Creswell, 2005). Selection of individuals based on the researcher's prior

knowledge of a person's role within the organization facilitated the proper sampling method.

Homogeneous sampling. In conjunction with theory or concept sampling, the homogeneous sampling enabled clear identification of participants who directly relate to MIS. The participants relate either from a leader's perspective managing MIS or from the perspective of a MIS user. The relational trait of having knowledge and experience of MIS facilitated selection in relevant MIS subgroups to ensure reliable results (Iacovou & Dexter, 2004).

Snowball sampling. Individuals working with MIS were dispersed around the organizations being studied. Snowball sampling ensured a diverse variety of participants through recommendations from existing participants (Creswell, 2005; Iacovou & Dexter, 2004). The recommendations also encouraged participants, who may have otherwise dismissed an unsolicited request, to take part.

Sampling details. The ability of the researcher to collect individuals with similar backyards to augment validity of the current research study was the first limiting factor for sampling size. The pool of participants began with 22 volunteers and maintained 15 participants through the final round. As demonstrated in a study by Akins, Tolson, and Cole (2005), a small sampling of respondents with similar backgrounds yields consistent and reliable data for analysis and validity of study.

In the Atkins et al. (2005) study, 23 respondents were selected with similar backgrounds and responses validated using a bootstrap sampling method, which yielded a conclusion demonstrating that results from small focused groups were equivalent to results from large samplings. In the Chew (2010) and Marina (2009) studies, 13

respondents were used to reach a consensus with relation to organizational design and leadership attributes. The researcher's intent to use a minimum of 10 participants for the Delphi study was determined by reviewing the similar Delphi studies with focus around participants who were experienced, had decision-making authority, and studies with attributes similar to the current research study (see Table 2). Data in Table 2 show the average number of participants was 19.5 when 23.2 were invited to participate.

Table 2

Participant Information for Similar Delphi Studies

		Number of participants	
Study	Attributes	Invited	Completed
Chew (2010)	Organizational Design	13	13
Iacovou & Dexter (2004)	Communication	38	32
Marina (2009)	Leadership Attributes	13	11
De Haes & Van Grembergen (2008)	Leadership, IT, Organization	29	22

Note. Average number of participants invited was 23.2, and average completing was 19.5.

Informed consent. Informed consent established the ethical and social reasonability of protecting the privacy of participants in qualitative research (Swan & Collins, 2008). Digitally signed informed consents were required prior to participation (see Appendix B). Distribution and collection of informed consent forms was integrated into the online survey so a person must agree prior to be given access to take the survey. The form consisted of the following 12 items: (a) title, (b) voluntary participation, (c)

right to withdraw at any time, (d) the purpose of the participation, (e) the conduct method of soliciting information, (f) personal rights for providing and receiving results, (g) publication of anonymous data, (h) protection of anonymity, (i) personal risk, (j) personal benefit, (k) signature authority, and (l) investigator information (Creswell, 2005).

Confidentiality. Confidentiality among the participants was important both in the validity of the current research study to maintain anonymity among the participants for open response as well as the ethical aspect of the researcher protecting personally identifiable information (PII). At no time were names released publically through the dissertation or as raw data. Informed consent forms and records of responses were securely maintained on the survey server and will be for 3 years following completion of the dissertation, then manually deleted from the survey server by the investigator.

Identity of participants was not shared with any person other than the investigator. Digitally maintained information was password protected and any written information was held under lock and key. Digital information was maintained by a corporate employee survey team on secured servers within the company's firewall. The employee survey team had written corporate policies and procedures dictating requirements to protect personally identifiable information. Proprietary nature of the corporate policies prevents specific details of those procedures listed in the current research study, but the researcher signed an agreement with the host corporation to follow the prescribed policies. Names were only used to track and provide information back to a participant under the provisions of their informed consent agreement. Only summary metrics were included in the current research study with summary demographic detail and names

replaced with respondent 1, respondent 2, and so on to protect confidentiality in the written dissertation.

Geographic location. The current research study was limited to a geographic location of the central United States specifically around the cities of St. Louis, Missouri, and Huntsville, Alabama. The researcher's intent was to reduce additional variables preventing consensus of decision due to epistemological, cultural, and geographic influence by choosing groups with similar backgrounds in aerospace and generalized geographic similarities. As a benefit, the two sites also ensure geographical diversity of ideas from dispersed individuals by collecting inputs from two separate locations (Creswell, 2005; Dobrovolny & Fuentes, 2008).

Data Collection

The method for collecting data was a three round Delphi method utilizing an online questionnaire. The data collection aligns with design appropriateness by allowing participants to provide their views freely in a structured format using Delphi method rounds to identify initial views and to refine the views through additional rounds (Chew, 2010). The data collection method followed the intent of the current research study's problem statement by clearly identifying current communication issues in organizations using traditional hierarchal organization structures and alternatives for the future. The data collection and type of data collected employed a survey collection method.

Collection method. The technique used for collecting data was a series of survey questions and open-ended questions under the rigor of the Delphi methodology submitted through an electronic survey. The rationale for the method was a two-pronged approached to collect closed-ended standardized data responses for bivariate comparison

with a detailed open-ended response for substantive value of inputs to the closed-ended responses (Chu, 2010). Other collection methods were considered and rejected based primarily on access to participants. Conducting personal interviews face-to-face would have been time consuming for working individuals and costly to conduct over large distances (Creswell, 2005; Dobrovolny & Fuentes, 2008). Personal interviews also leave a large margin of open-ended discussion that may deviate from the topic being researched and potentially yielding widespread and unrelated data points to the current research study. Focus groups were considered but the risk of groupthink and hesitation of full participation presented concern for cohesive inputs (Creswell, 2005; Dobrovolny & Fuentes, 2008).

Data type. The data types were demographic multiple-choice questions, rating questions using a 5-point-Likert-type scale, followed by open-ended questions to elicit further detail (Creswell, 2005). The focus of the current research study was to collect demographic information and to set the understanding of organizational design with relation to the support of MIS groups. The demographic questions were used to provide insight into epistemological differences of the participants as they applied to responses to the questions. The 5-point-Likert-type scale rating supplied quantitative data for statistical comparison among participants for analysis of the responses in order to recognize themes. The results from the open-ended question were subjected to content analysis to ascertain similarities and relationships from each participant's perspective, as well as to elicit details to augment questions in the following rounds.

Instrumentation

A three-round survey instrument was used to solicit detailed inputs from the participants based on both a 5-point-Likert-type scale survey and an open-ended question for additional comments. Figure 6 provides the flow for the four-phase project through development, application, refinement, and execution. Phase 1 was the creation of the round one instrument and provided the necessary detail to level-set the understanding of organizational design in reference to MIS subgroups. Phase 2 was an expert panel using four unique participants with similar backgrounds similar to those of the Delphi study participants. The panel was used in order to validate the understanding and anticipated results of the Delphi study, with the addition of a section to solicit the expert panels' opinions and recommendations directly related to the instrument. In phase 3, the researcher rewrote the questions, tailoring the instrument and supporting details to ensure clarity and universal application across all participants. Phase 4 was the application of the three-round Delphi study using the validated survey, collection of the data, and analysis of the results.

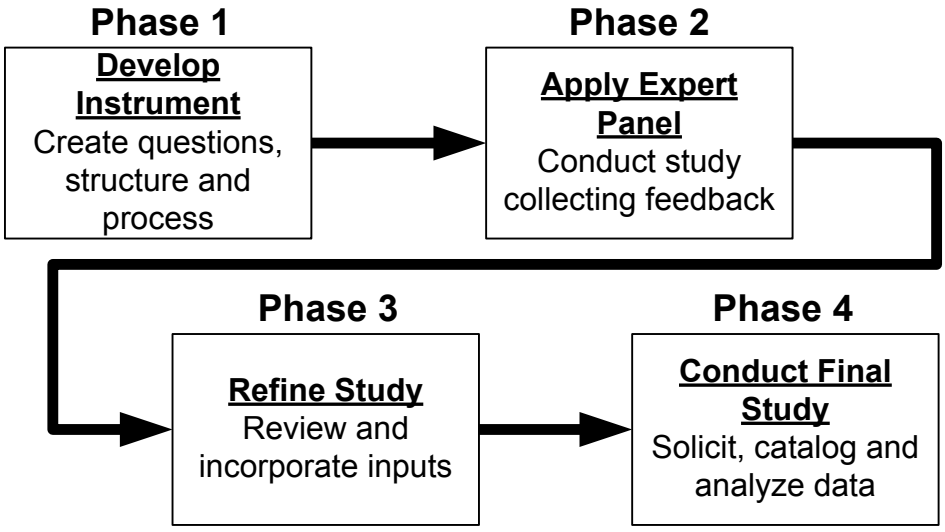

Figure 6. Phased development plan for creating and conducting Delphi study.

Phase 1 develop instrument. The instrument was developed to level-set participants' responses and was used to provide a common framework of the participants' views about the greatest effects of organizational designs on communication. The instrument had three sections, not including the informed consent: (a) demographics, (b) organizational communication, and (c) general observations and comments. The instrument was designed to collect pertinent demographic information about the participants to determine a possible relationship to the participants' responses related to the personal communication and organizational design modalities discovered during the Delphi study. Next, 5-point-Likert-type scale questions were used to evaluate the importance the participants placed on factors contributing to communication. The instrument ended with an open-ended question designed to solicit additional information not covered in previous questions and to collect any additional comments or recommendations. The next step was to validate the Delphi study.

Phase 2 expert panel. An expert panel was conducted with four professionals with similar backgrounds similar to those of the participants. The panel was used to find any potential inhibitors to collecting sound and meaningful data for analysis. The researcher submitted the initial instrument to the expert panel participants asking them to respond to the survey and to give feedback in terms of comprehension of terms and concepts, clarity of questions, and relevance to the topic of the Delphi study.

Phase 3 refine study. The inputs were collected from the expert panel, incorporated for revisions to the initial Round 1 instrument, and lessons learned for application in the subsequent rounds. The information received in Phase 2 was sufficient

to support the rewrite and a repeat of Phase 2 was not required. The final study was created and loaded to the online survey tool for execution of the final study.

Phase 4 final study. Phase 4 was composed of three steps: solicitation, catalog, and analysis. Steps one and two were part of conducting the survey with participants by soliciting participants and administering the Delphi study through all three rounds. The final step entailed analysis of the data once the Delphi study was complete using the methods described in the current research study.

Validity and Reliability

There were several threats to validity and reliability in the case of the Delphi study; the primary contributors were history, maturation, instrumentation for internal validity, and interaction setting for external validity (Creswell, 2005). In terms of reliability, quantifiable measures were used in the 5-point-Likert type questions and qualitative data were used in the open-ended questions to collect enough data to create a holistic view of a complex topic (Shank, 2006). As time passed between rounds, the participants may have been exposed to external variables, potentially changing their viewpoints from one round to the next (Creswell, 2005). Similarly, maturation of participants may have applied variables where experience or education may have altered the participants' views from round to round (Creswell, 2005).

The Delphi study ensured validity by conducting the rounds in short turn around composed of less than three months after the initial release of the Round 1 instrument. The researcher's intent was to limit the time and experience variables to the results to ensure the highest level of accuracy (Shank, 2006). The other factor was instrumentation effect on the participants from the expert panel to the final study. The group affected was

small, but to ensure reliability, the scale used between the expert survey and final survey remained constant, where only the descriptive factors of the questions and supporting information changed to correct for expert panel recommendations (Creswell, 2005).

In terms of external validity or criticism, the affect of demographics where the Delphi study took place may not be valid outside of the geographical location defined for other similar organizations (Berg, 2009). To ensure external validity, responses focused on the structure of large corporations as opposed to the specific industry and geographical locations used within the current research study. The generalization of the Delphi study to address systemic issues with large corporations dealing with communication in traditional organizations enabled applicability outside of the demographic chosen for the Delphi study (Berg, 2009).

The reliability of the Delphi study was based primarily on the researcher's ability to ensure validity of the participants' responses by addressing the external and internal validity variables above as well as by conducting an expert panel to ascertain potential pitfalls before final data were collected. Addressing the internal and external validity variables ensured reliability and consistency of results for the specific demographic identified (Shank, 2006). Applying the instrument in a different demographic may yield separate results, but the alignment of the participants to a final consensus in the current research study was consistent.

Data Analysis Procedures

The data collection took seven weeks from the start of Round 1 to the final survey submitted in Round 3. A complete data analysis followed the Delphi study Round 3. Responses were viewed for consistent participation in all three rounds from each person.

No errors were identified collecting the data in terms of erroneous inputs into the survey tool or unauthorized participants. Five-point-Likert-type scale responses were statistically compared to recognize the key contributors to organization communication. Responses to the open-ended question were analyzed for recommendations of what organizational improvement would improve the communication. The data were compiled and were presented in chapter 4.

The analysis of the survey results from the three rounds of the Delphi study used a descriptive ranking system for the 5-point-Likert-type scale section and content analysis for the inferential open-ended response. The Delphi method enables the combination of both quantitative and qualitative data from a small group of individuals (Skulmoski, Hartman, & Krahn, 2007). The method enabled a statistical analysis of the 5-point-Likert-type scale questions to apply to the quantitative aspect of a Delphi study, and subjective analysis of the open-ended question to apply to the qualitative aspect of a Delphi study. The combination of the quantitative and qualitative analysis enabled a holistic view for comparison and comprehension from alternate perspectives.

The analysis methodology enabled development of subsequent rounds by identifying trends in the data to provide more focus to key areas brought forward by the participants. Round 1 was broad and subjective to gain an overall understanding to level set the group. Each of the following two rounds became more focused to detail the implications of the specific effects of organizational design and communication. The results were the identification of finite data points representing the key contributors to communication in groups using or developing MIS with regard to organization design and identify possible alternatives.

As shown in Table 3, authors of similar Delphi studies primarily used a ranking by importance to assess 5-point-Likert-type scale responses (Chew, 2010; De Haes & Van Grembergen, 2008; Iacovou & Dexter, 2004; Marina & Ellert, 2009). The statistics used ranking and comparison of demographic results to the 5-point-Likert-type questions. Patterns were identified between responses to the 5-point-Likert-type scale questions and epistemological backgrounds of the participants through the demographic questions in the instrument. The results of the data comparison were an understanding of the influence of individuals on organizational design communication and the influence of mechanistic organization structure.

Table 3

Analysis Method Applied in Similar Delphi Studies

Study	Method
Chew (2010)	Ranked Factors by Importance
Iacovou & Dexter (2004)	Average, SD, Kendall's coefficient of Concordance
Marina (2009)	Ranked Factors by Importance
De Haes & Van Grembergen (2008)	Ranked Factors by Importance

Three distinct measurement categories were used in the Delphi study instruments to collect the data from participants. Demographic information, specific questionnaire responses in the form of a 5-point-Likert-type scale, and open-ended responses for detailed points of views were collected in each round. The three categories of inputs enabled the comparison of results by the research to understand any contributing factors

to participant response and discern descriptive details for the researcher to formulate each subsequent round and achieve the purpose of the Delphi study.

Demographics analysis. The Delphi study contained nine individual demographic questions: (a) age, (b) metropolitan area, (c) educational background, (d) military experience, (e) professional experience, (f) organization type, (g) leadership role, (h) number of direct reports, and (i) gender. The final item, gender, was collected based on firsthand knowledge of the participants following completion of Delphi study. Ranges were used for age and experience to help maintain confidentiality and to protect the participants' personally identifiable information. In order to evaluate if there was a relationship between the demographics and the responses to the 5-point-Likert-type scale questions, the researcher applied an Excel™ pivot table and inference to recognize comparative trend patterns of the questions results compared to the demographic data. If a pattern appeared, percentages were used to calculate the frequency of responses compared to each of the demographic scores.

Inference. The data were organized by each individual demographic and reviewed for possible patterns. For example, the demographic of leadership role was compared to 5-point-Likert-type question number 1 to see if there was even distribution of responses among all participants. If a pattern existed that showed no Subject Matter Expert (SME) disagreed with a statement while participants among the other roles disagreed, a possible relationship to the response and demographic was inferred. Another example may be even though there was even distribution of agree and disagree for each question, individuals with 10-15 years of experience may have disagreed across all

questions. The inference of patterns between the 5-scale-Likert type questions and demographics prompted a secondary comparative trend analysis to validate the inference.

Comparative trend analysis. An inference of a pattern in the demographic analysis prompted a calculation against the total responses to determine what the percentage was that each demographic contributed to all responses. For example, if seven SMEs disagreed, and everyone else agreed with a particular question, the value was 30% (7 divided by 22) of the participants did not agree with the question and all of those individuals were SMEs. A threshold of 25% was used to evaluate the calculation in terms of consensus (Hsu & Sandford, 2008). If a particular subgroup, such as SMEs in the Leadership Role demographic, exceeded 25%, the demographic analysis was recorded and addressed as a potential contributing factor to the overall analysis in comparison to the additional 5-point-Likert-type questions and the open-ended questions.

Quantitative 5-scale-Likert-type questions analysis. The Delphi study questions provided the root of analytic data by addressing specific areas related to the current research study to gauge an individual's level of agreement. The comparison of the data to identify consensus was achieved through measure of central tendency and level of dispersion. Central tendency determined the level of agreement of all participants, and level of dispersion validated if consensus had been reached.

Central tendency. Three measures were used to identify central tendency as the best measure for the quantities: mean, mode, and deviation between the two (Linstone & Turoff, 2002). The measure of median was left out due to the small amount of data and the limited usefulness of the measure (Creswell, 2005). The mean provided the true average of all responses while the mode calculated the most frequently occurring

response. The deviation was measured to understand the separation between the data points. If a small separation was observed, the implication was that consensus had been achieved between the members for the identified mode, and if a large separation occurred, consensus may have not been reached.

Consensus was achieved when a pre-established percentage of participants agreed (Linstone & Turoff, 2002). The maximum possible deviation between mean and mode was a value of 2. In order to gauge consensus and based on the observations of Hsu and Sandford (2008), a value of 25% of the maximum possible deviation to denote at least a majority of three out of four people agreed generated the threshold. A mean to mode deviation greater than or equal to .5 (2 multiplied by 25%) was determined to be an area where consensus may not have been achieved.

Level of dispersion. In addition to central tendency, the variability of participant's responses was measured based on standard deviation and interquartile range (Hsu & Sandford, 2008). Standard deviation provided a relevant measure of participant consensus because a zero value indicated complete consensus and values greater than zero indicated a measure of dispersion between participant responses. The interquartile consensus threshold was established at greater or equal to 1.0, based on 25% of the maximum possible interquartile range of 4 and half of the maximum of standard deviation value of 2.05. The interquartile measures were also compared to the standard deviation as a source of validity.

Box plot. The plot method was used to visually depict and compare the level of dispersion to the central tendency. The mean was identified in the chart encased in the interquartile range while showing the maximum response and the minimum response.

The layout of the data visually reinforced the conclusion derived from the calculations by depicting a deviation from consensus of the group as a large gray box surrounding the mean, or consensus as a small gray box (or none) around the mean (see Figure 7).

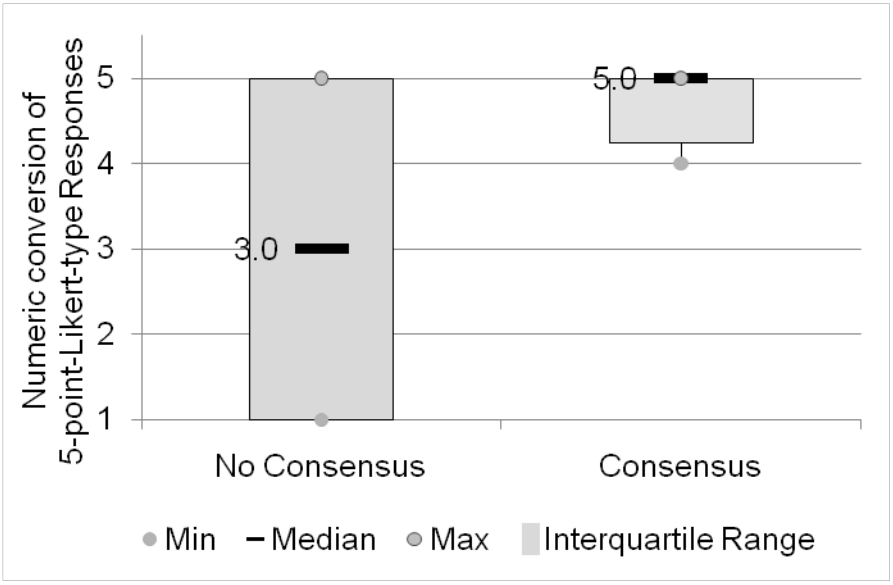

Figure 7. Sample of Box Plot showing no consensus and consensus.

Qualitative open-ended responses analysis. The open-ended questions were analyzed using content analysis "to identify patterns, themes, biases, and meanings" (Berg, 2009, p. 338). The analysis was an iterative process of matching words, phrases, and ideologies to coalesce the items into single statements (Berg, 2009). Open-ended responses were created to allow participants to expand on the inputs made in the survey or also to bring forward thoughts that may have not been considered in the survey.

Content analysis. There were only seven total open-ended questions in all rounds; therefore, the content analysis was done manually using a spreadsheet as opposed to using a computer-assisted qualitative data analysis software package (Berg, 2009). Evaluation of the open-ended questions was achieved through content analysis of specific sub-themes from the statements and through cataloging those themes. The sub-themes

were then reviewed to create a single theme to unite the responses into manageable phrases and statements. Themes not repeated by at least 25% of the participants were reviewed and removed from the analysis if they did not align to the purpose of the current research study.

Data anomalies. Data anomalies represent obvious disconnects in format or collection of data. Only two anomalies were identified during the collection of the data. One individual mistakenly entered the total number of people in their organization rather than the number of their personal direct reports. The value was manually modified in the data analysis tool to reflect the true demographic based on corporate database information. The second anomaly was on two occasions, a person's browser experienced a critical error, and a users' unique ID was recorded with no responses. On both occasions, the user retook the survey and the faulty records were deleted from the analysis.

Summary

The Delphi method was chosen to solicit the experienced views of decision makers in the industry to answer the basic question, "How does organizational design effect communication?" The discussion captured the key points of design, participation, and method. The Delphi design was chosen because the topic requires opinions from experts in their fields to create a consensus (Creswell, 2005; Dalkey, 1967). The participants were identified as decision-makers within their organization who provided substantive recommendations based on their experience and knowledge related to organizational design and the effects of MIS subgroups (Marina, 2009). The instrument was a 5-point-Likert-type scale survey with open-ended questions to create a focused

consensus from the group as well as to provide detailed opinions to validate the survey (Shank, 2006). The outcome of the Delphi study was a focused research method to illuminate the phenomenon of the affect of organizational design on communication in groups supporting or creating MIS. Chapter 4 contains the comprehensive analysis of data collected from the participants of the Delphi study.

Chapter 4: Data Analysis

The purpose of the qualitative Delphi study with supporting quantitative data was to examine and better understand the current effects and the limitations on communication in traditional hierarchal organizations with relation to groups applying, supporting, or creating management information systems (MIS) to identify potential organizational design alternatives. The principle reason for the Delphi study was to establish consensus among the participants to answer the research questions through a series of questionnaires to evaluate data from experts (Hsu & Sandford, 2007). Analyses of the Delphi study results were completed using three distinct methods: comparative analysis, statistical measurement, and content analysis. Chapter 4 is composed of the following five sections: (a) expert panel, (b) data collection, (c) demographics, (d) data analysis, and a (e) summary.

Expert Panel

The expert panel was provided to a select group before initiation of Round 1. The individuals were solicited by email (see Appendix C). The email contained a link to the informed consent (see Appendix D), which upon completion contained a link to the actual expert panel instrument (see Appendix E). The goal of the expert panel was to provide an objective review of the information in the survey and to provide observations relating to the usability, clarity, and cohesive nature of the information presented in the survey. The observations and recommendations from the expert panel supplied modifications to the Round 1 instrument.

The expert panel consisted of four members who completed a sample Round 1 survey (see Appendix E). The panel provided both written and verbal feedback on

improvements to the instrument. Inputs from the panel included general grammatical recommendations for correctness and clarity. Panel members also identified areas where interpretation could be construed differently dependent on a person's background. A section that provided definitions of common terms to ensure each participant was answering with the same lexicon was added to the beginning of every instrument. The definitions can be viewed in the Round 1 instrument in Appendix F. Once the instrument was modified, the actual Delphi study commenced.

Data Collection

The distribution of the solicitation email (see Appendix G) consisted of 38 persons who possessed the credentials to participate in the Delphi study. The intent for the solicitation was to obtain a minimum of 20 participants to begin the Delphi study and maintain a minimum of 10 for completion of the Delphi study. The criteria for participation were individuals who designed, reviewed, or managed organizations composed of groups who received or provided MIS tools and services.

Twenty-two participants completed Round 1, 17 participants completed Round 2, and 15 participants completed Round 3. Each round maintained a retention rate greater than 75% and the overall retention from initial Round 1 completions to Round 3 completions was 68%. Although some individuals did not complete all three rounds, none of those individuals requested their information and responses be withheld from the Delphi study. As such, the responses from all individuals were included for the round(s) in which they participated.

Data collection consisted of communication through email to coordinate participation. Potential participants received a solicitation email providing details about

the survey with a request for their support (see Appendix G), or were contacted in person to solicit support and later provided the solicitation email as follow-up. As individuals replied with their acceptance to participate, they were cataloged and assigned a unique identification number in a secure system. Once the minimum desired participation was reached, invitation emails were sent for Round 1.

Round 1 collection. Individuals volunteering received an invitation email (see Appendix H), which provided information about the survey, a requested completion date, a link to the informed consent, and a unique identifier. During Round 1, recommendations by current participants were provided for additional participants as part of snowball sampling and subsequent solicitation and invitation emails were sent out to those individuals. A follow-up email (see Appendix I) was sent to individuals who had not completed the survey two days prior to the requested completion date. The day following the requested completion date, the survey was locked for further inputs and the coded responses were downloaded from the survey tool into Excel™ for analysis. An analysis was completed and the conclusions used to develop the Round 2 instrument.

Round 2 collection. Individuals who completed Round 1 received an invitation email for Round 2 (see Appendix J), which provided information about the survey, a requested completion date, an overview of the results from Round 1, and a unique identifier for each participant. Users were tracked by a unique identification number; therefore, an additional informed consent was not required. Additional participants were not permitted in the subsequent rounds if they had not participated in Round 1. A follow-up email (see Appendix K) was sent to individuals who had not completed the survey two days prior to the requested completion date to notify them the requested completion date

was extended by one week because of time limitations imposed due to a holiday. The day following the updated completion date, the survey was locked for further inputs and the coded responses were downloaded from the survey tool into Excel™ for analysis. An analysis was completed and the conclusions used to develop the Round 3 instrument.

Round 3 collection. Individuals who completed Round 2 received an invitation email for Round 3 (see Appendix L), which provided information about the survey, a requested completion date, an overview of the results from Round 2, and a unique identifier for each participant. Since participants were tracked by a unique identification numbers, additional informed consents were not required. Additional participants were not permitted in the subsequent rounds if they had not participated in Round 2. A follow-up email (see Appendix M) was sent to individuals who had not completed the survey two days prior to the requested completion. The day following the requested completion date, the survey was locked for further inputs and the coded responses were downloaded from the survey tool into Excel™ for final analysis.

Demographics

The Delphi group consisted of 22 initial participants in Round 1, reduced to 17 in Round 2, and reduced to 15 for Round 3. The reasons for participants not completing the entire study were personal medical concerns and professional commitments precluding them from meeting the established completion milestone date for each round. The participants' decisions to leave the Delphi study were voluntary and personal and no participant stated the choice was related to concerns about the Delphi study or the current research study as a whole. The departures were viewed as naturally expected attrition providing no negative impact to the results of the Delphi study. Details of participant

attrition from the study round-by-round can be discerned in the subsequent tables of this section. The participants were cataloged by nine separate demographic criteria: (a) gender, (b) age, (c) metropolitan area, (d) educational background, (e) military experience, (f) professional experience, (g) organization type, (h) leadership role, and (i) number of direct reports. Appendix N provides a graphical percentile distribution summary of all demographic information collected.

The Delphi study participants were 19 males and three females (see Table 4) with ages distributed between the ranges of 20-29 through 60+ (see Table 5). The majority of participants were older than 40, which was anticipated based on the experience and leadership position required for the Delphi study. These individuals resided in two distinct metropolitan areas; 17 from Huntsville, Alabama and five from St. Louis, Missouri, which provided the diversity sought for the Delphi study but still maintained some geographical semblance (see Table 6).

Table 4

Demographic Data Dispersion by Gender

	Count		
Gender	Round 1	Round 2	Round 3
Male	19	15	13
Female	3	2	2

Table 5

Demographic Data Dispersion by Age

	Count		
Age	Round 1	Round 2	Round 3
20-29	1	1	1
30-39	3	2	2
40-49	5	4	4
50-59	9	7	5
60+	4	3	3

Table 6

Demographic Data Dispersion by Metropolitan Area

	Count		
Metropolitan	Round 1	Round 2	Round 3
Huntsville	17	12	10
St. Louis	5	5	5

The participants had a high level of educational background. The majority of participants possessed a graduate degree and everyone had at least an undergraduate degree (see Table 7). The educational background was supported by the years of military and professional experience (see Table 8), providing a diverse range of knowledge to draw from and to support the survey. The military background provided insight into the

rigorous command and control leadership mentality discussed in chapter 2 while the professional insight brought in experience about large corporation organizational bureaucracy.

Table 7

Demographic Data Dispersion by Educational Background

	Count		
Highest Education	Round 1	Round 2	Round 3
Undergraduate	8	6	5
Graduate	13	10	9
Doctorate	1	1	1

Table 8

Demographic Data Dispersion by Experience

Experience (years)	Military Count			Professional Count		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
0	11	9	7			
1-4	3	3	3			
5-9	4	3	3	1	1	1
10-14	1	1	1	5	2	2
15-19				2	2	2
20-24	3	1	1	5	4	4
25+				9	8	6

The participants in the two major organizational categories requested from the survey were 18 people from programs, four people from functional support who provided the views from both program and functional aspects in relation to influence of organizational design (see Table 9). The participants also crossed a wide range of leadership roles from subject matter experts to program directors (see Table 10). The leadership role of the participants also contained a wide range of direct reports ranging from zero for the SMEs up to 360 for the directors (see Table 11). The dispersion of direct reports represented a diverse collection of participants who have worked with small organizations of people with specialized skills and participants integrating a large number of unique skills and services. The people working in smaller organizations were the

majority and were beneficial for understanding the influence of small groups like MIS teams.

Table 9

Demographic Data Dispersion by Organization Type

	Count		
Organization Type	Round 1	Round 2	Round 3
Program	18	14	12
Functional	4	3	3

Table 10

Demographic Data Dispersion by Leadership Role

	Count		
Leadership Role	Round 1	Round 2	Round 3
SME	4	3	3
Lead	6	5	5
Manager	7	5	4
Director	5	4	3

Note. SME is Subject Matter Expert. Lead refers to a non-management individual responsible for a small team.

Table 11

Demographic Data Dispersion by Number of Direct Reports

	Count		
Direct Reports	Round 1	Round 2	Round 3
0 - 12	16	12	11
13 - 24	1	1	1
25 - 36	2	2	2
37 - 48	1	1	1
49 - 360	2	1	

The general mix of participants provided the knowledge base to assess how organizational design was influenced by multiple factors of organizational constraints. The Delphi study participants provided insight into organizational boundaries, responsibility, accountability and authority, and migration to new types of organizational structures. The analysis of these diverse participants provided information to support the research questions of the current research study.

Data Analysis

The data analysis procedure outlined in chapter 3 was used to analyze and understand the results of each section of the survey. Data were analyzed after each round to develop the subsequent round instrument. The intent of apply results to subsequent rounds was to ensure the final round was a collective interpretation of the participants views from all of the rounds.

Round 1 results. Round 1 consisted of quantitative and qualitative data from 22 participants. The first round of the Delphi study was to gauge a common understanding and relationship of organizational design influences. Rather than making assumptions, the analysis of the round determined if the literature review was supported by actual results from participants. In various areas, there was clear consensus, in others; there was a dichotomy of perception and influencers to organizational communication. The following sections will describe each portion of the survey with the results and conclude with a summary. The raw data for Round 1 are listed in Appendix O.

Round 1 demographic results. The intersections between demographic and 5-point-Likert-type scale question responses from review of the data showed there were only three areas that created a slight inference to the data denoting a possible relationship. Concerning Leadership Roles, there was an even dispersion of responses from Directors, Leads, and Managers across all questions. However, when reviewing views of difficulty overcoming horizontal and vertical boundaries in organizations (questions 3 and 4, see Appendix F) none of the Subject Matter Experts strongly disagreed or disagreed with the statements creating a comparative trend analysis of 30%. The second emerging inference produced a comparative trend analysis where 67% of organizations consisting of more than 12 people agreed vertical boundaries in organizations were difficult to overcome, compared to 44% of organizations fewer than 11 people. The patterns are not conclusive of definite trends, but provided greater clarity and holistic view when applied to the 5-point-Likert-type questions. Figure 8 provides a sample of how the data were compared to perform the analysis.

Leadership	.SD3	.D3	.N3	.A3	.SA3	.SD4	.D4	.N4	.A4	.SA4
Director		2		2	1		1	1	2	1
Lead	1	1		4			3		1	2
Manager		3	2	1	1		2	2	3	
SME			3	1				2	1	1
Grand Total	**1**	**6**	**5**	**8**	**2**	**0**	**6**	**5**	**7**	**4**

Figure 8. Sample of demographic comparative Excel pivot table.

Round 1 5-point-Likert-type scale questions results. There were five individual 5-point-Likert-type scale questions, shown in Appendix F. Evaluation of the responses was achieved through statistical analysis of the central tendencies of each question with a comparison to the level of dispersion. The initial view of questions 1, 2, and 5 shows a consensus among the participants. Figure 9 demonstrates the dispersion of data using a box plot by viewing the median response as a black horizontal line, and the interquartile range of the responses in the grey boxes. There were two disagree responses for question 2, but the remaining participants did not disagree with the statements. The results illustrate the consensus of the group for questions 1, 3, and 5 confirming that the organizational design, use of MIS tools processes and groups, and effective use of RAA are necessary for successful communication in an organization.

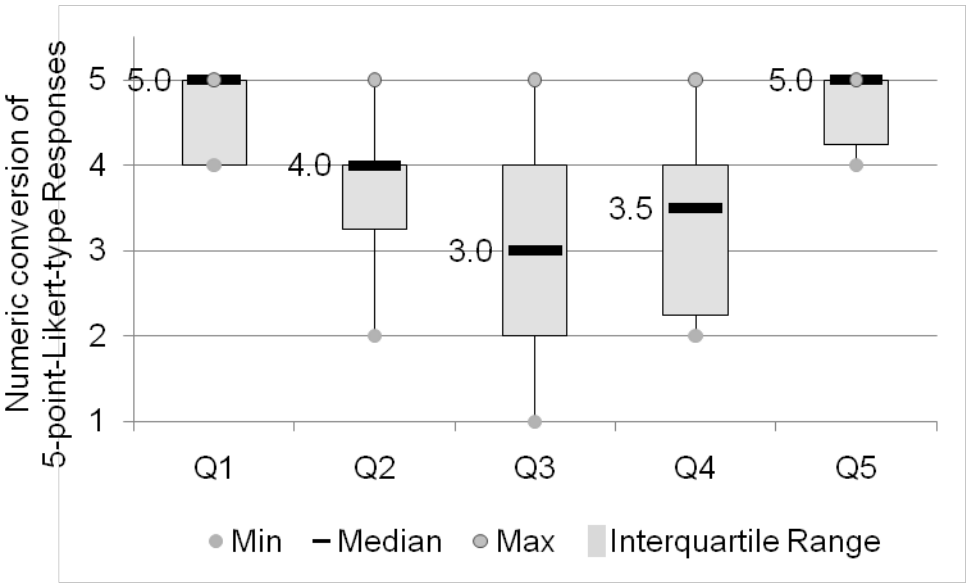

Figure 9. Round 1 Box plot of 5-point-Likert-type scale questions

Questions 3 and 4 results demonstrated a clear separation between the participants as shown by the large interquartile range (see Figure 9). Although both questions have a mode of 4 (see Table 12), the mean is positioned near the middle of the group for question 3 providing a deviation from the mode of .818, which is greater than the .500 threshold. The deviation of the mode from the mean shows consensus has not been reached and is confirmed by the standard deviation for participants' responses being greater than 1.000. The interquartile range was 2.000 signifying a large gap between the participants (see Table 12). The pattern is similarly reproduced for question 4 showing a deviation between the mean and mode of .591, a standard deviation of 1.098, and an interquartile range of 1.750 (see Table 12).

Table 12

Summary of Round 1 Responses and Statistical Measures

Measure / Summary Name	Q1 Design	Q2 MIS	Q3 Horiz	Q4 Vert	Q5 RAA
Question Rating					
Strongly Disagree			1		
Disagree		2	6	6	
Neither Agree nor Disagree		4	5	5	
Agree	10	14	8	7	6
Strongly Agree	12	2	2	4	16
Central Tendency					
Mean	4.545	3.727	3.182	3.409	4.727
Mode	5.000	4.000	4.000	4.000	5.000
Mean - Mode (Absolute)	.455	.273	**.818**	**.591**	.273
Level of Dispersion					
Standard Deviation	.510	.767	**1.097**	**1.098**	.456
Interquartile Range	**1.000**	.750	**2.000**	**1.750**	.750

Note. Factors exceeding the following thresholds are in boldface: Absolute value of Mean minus Mode greater than or equal to .5; Standard Deviation and Interquartile Range greater than or equal to 1.

The results of the 5-point-Likert-type questions identified two areas requiring further elucidation of systemic constraints contributing to the limitations of organization communication for groups using or supporting MIS solutions. There was a distinct separation among participants' views on the impact of horizontal and vertical barriers within organizations. The results from Round 1 for questions 3 and 4 relating to these communication channels will be addressed separately.

Horizontal boundaries. The results from question 3 show 45% of participants strongly agree and agree horizontal boundaries (*boundaries separating layers of*

leadership) demonstrate organization communication challenges, 32% disagree and strongly disagree there is an impact to organizational communication from horizontal boundaries, and 23% of the participants neither agreed nor disagreed (See Figure 10). None of the Subject Matter Experts and only one-third of the Leads strongly disagreed or disagreed with the statement.

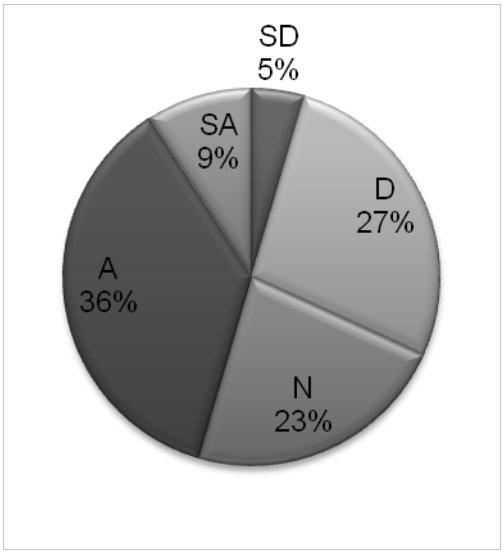

Figure 10. Round 1 result for 5-point-Likert-type Question 3: Horizontal boundaries in organizations are difficult to overcome.

Vertical boundaries. The results from question 4 show 50% of participants strongly agree and agree vertical boundaries (*boundaries separating teams across an organization*) demonstrate organizational communication challenges, 27% disagree there is an impact to organizational communication from vertical boundaries, and 23% of the participants neither agreed nor disagreed (See Figure 11). The vertical boundary as well showed a slight association to demographics. Again, no Subject Matter Expert strongly disagreed or disagreed with the statement. However, with vertical boundaries more directors and managers agreed vertical boundaries were difficult to overcome, whereas

more leads disagreed. Overall, vertical boundaries were viewed as a slightly greater challenge in organizations than horizontal boundaries.

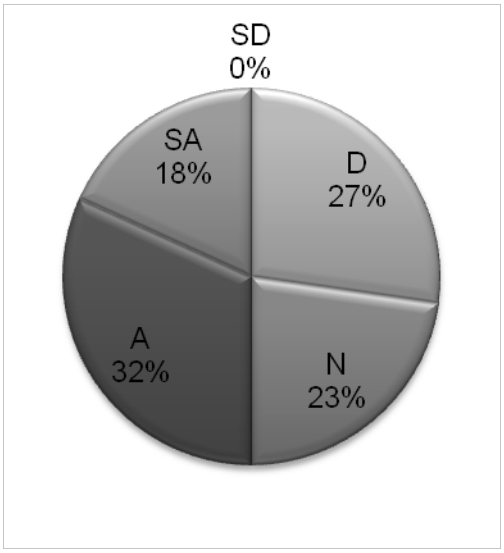

Figure 11. Round 1 result for 5-point-Likert-type Question 4: Vertical boundaries in organizations are difficult to overcome.

Round 1 open-ended question results. There was one open-ended question in Round 1, "What additional factors contribute to the capability of an organization to effectively communicate through the use of MIS tools, processes, and sub-groups? Include any additional comments or recommendations you would like to share." The content analysis generated three distinct themes of (a) open culture, (b) commonality/resistance to change, and (c) required proper use of effective MIS tools. The themes were created by combining sub-themes created from the statements in the comments. Respondent 2 stated, "Organizational culture of open & honest communication" and respondent 9 stated, "Promoting a culture of open, honest communication is paramount. Tools and processes only facilitate communication." The theme extracted from each statement was "open culture," which was a recurring theme

among 54% of the respondents. The same method was used for all three themes collected in Round 1.

The open culture theme indicated by the participants was the foundation for success is a culture of an open environment where individuals are encouraged and expected to share information at all levels and across the organization, regardless of the mechanics of communication. The second theme, commonality/resistance to change, focused on two separate and interrelated aspects of creating a common method for communication and simultaneously addressing a person's preponderance to resist a change to new methods of communication. The final theme, requiring proper use of effective MIS tools, is a combination of another two interrelated themes stating effective communication requires everyone be required to use the same tools for communication, but the tools in themselves must be effective and useful tools. More aptly stated, an organization should not take the effort to apply a poor tool if the only reason is to be common with the rest of the corporation.

The three themes were connected to the company's leadership model demonstrating a strong corporate culture of providing instruction, delineating the expectations, and setting the standard through personal actions. However, there is recognition of the systemic limitations within the large organization to change, and the possibility that change within a large corporate culture is a lengthy process for a paradigm shift to effect the way the business operates. The three themes were addressed in more detail in Round 2.

Round 1 summary. The culmination of the analysis centered around the influence of organizational design on communication and the effect to communication on

inherent organizational boundaries. Round 2 of the Delphi study expanded on the influences of horizontal and vertical barriers as well as built on the themes developed in Round 1. The intent of Round 1 was to drive the discussion toward the group reaching a consensus in Round 3 to support the purpose of the current research study by addressing the research questions.

Round 2 results. The round consisted of quantitative and qualitative data from 17 participants. Round 2 of the Delphi study was designed to delve deeper into the two questions that did not demonstrate consensus in Round 1 and to explore the open-ended themes. Round 2 provided a greater challenge because there was less deviation between agreeing and disagreeing responses, and there were a greater number of themes in the open-ended questions. The following sections will describe each portion of the survey with the results and conclude with a summary. The raw data for Round 2 are listed in Appendix P.

Demographic results. The analysis showed that except for one director on question five, 60% of leads with less than 12 direct reports responded with disagreeing to one or more questions. The breakout of all leads and all negative responses are highlighted in Table 13. All other participants either agreed or were neutral on the five questions.

Table 13

Breakout of Disagree Responses in Round 2

		Question				
Leadership	Reports	1	2	3	4	5
Lead 1	12	SA	SA	N	**D**	A
Lead 2	12	N	A	A	A	A
Lead 3	12	A	SA	SA	SA	A
Lead 4	12	**D**	A	A	SA	SA
Lead 5	12	A	**D**	**D**	**D**	**SD**
Director 1	24	A	A	A	N	**D**

Note. SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree. SD and D items are bold faced.

Round 2 5-point-Likert-type scale questions results. There were five individual 5-point-Likert-type scale questions, shown in Appendix Q. Evaluation of the responses was achieved through statistical analysis of the central tendencies of each question with a comparison to the level of dispersion. The initial review of the questions showed a tendency for consensus among all five questions as noted by the median response of four (see Figure 12). Question 1, for MIS Teams driving change, the vertical boundaries between groups impede adoption of best/common practices, showed consensus by 76.5% agreement and only 6.0% disagreement. Question 2, vertical boundaries between dissimilar groups (engineering vs technician, vs management, etc) create communication challenges and is compounded when not using the same MIS tools, showed consensus by

88.2% agreement and again only 6.0% disagreement. The view of consensus on Questions 1 and 2 was supported by neither question exceeding the central tendency or level of dispersion threshold (see Table 14).

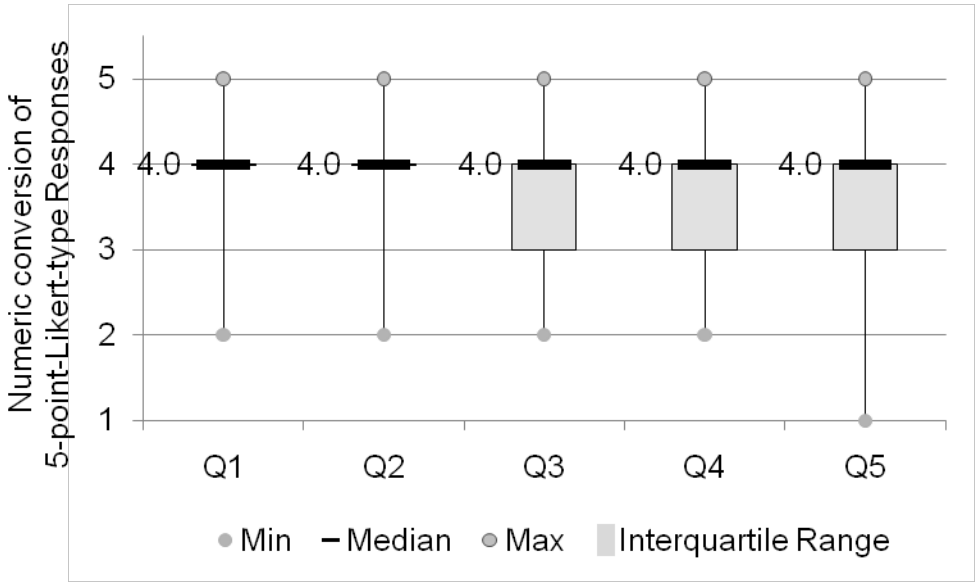

Figure 12. Round 2 Box plot of 5-point-Likert-type scale questions

Table 14

Summary of Round 2 Responses and Statistical Measures

Measure Summary Name	Q1 Vertical Impedes	Q2 Dissimilar Groups	Q3 All Levels	Q4 All Teams	Q5 Mandate MIS
Question Rating					
Strongly Disagree					1
Disagree	1	1	1	2	1
Neither Agree nor Disagree	3	1	4	5	4
Agree	12	11	9	6	10
Strongly Agree	1	4	3	4	1
Central Tendency					
Mean	3.765	4.059	3.824	3.706	3.529
Mode	4.000	4.000	4.000	4.000	4.000
Mean - Mode (Absolute)	.235	.059	.176	.294	.471
Level of Dispersion					
Standard Deviation	.664	.748	.809	.985	.943
Interquartile Range	.000	.000	**1.000**	**1.000**	**1.000**

Note. Factors exceeding the thresholds are in boldface: Absolute value of Mean minus Mode greater than or equal to .5; Standard Deviation and Interquartile Range greater than or equal to 1.

Common MIS for leadership. The question provided near consensus by achieving 70.6% of participants strongly agreeing or agreeing with the statement presented in question 3 (see Figure 13). The outliers provided comments that emphasized the single/common MIS tools cannot just be provided at all organizational levels, but must address RAA for adoption of the tools by both the providers and users. The clarification was included in Round 3 to confirm the interpretation of the data.

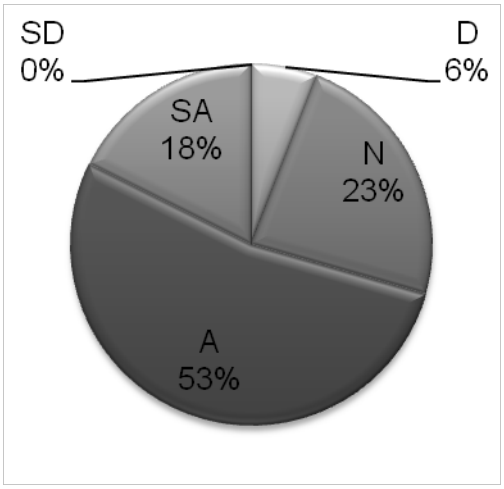

Figure 13. Round 2 result for 5-point-Likert-type Question 3: Horizontal boundaries can be overcome or improved by establishing single/common MIS tools at all levels of the organization.

Common MIS for teams. The question did not achieve consensus by only having 58.8% of participants strongly agreeing or agreeing with the statement presented in question 4 (see *Figure 14*). The respondents provided comments that emphasized the common MIS tools could not be one size fits all, but must be adaptive to organizational needs. The clarification was included in Round 3 to confirm the interpretation of the data.

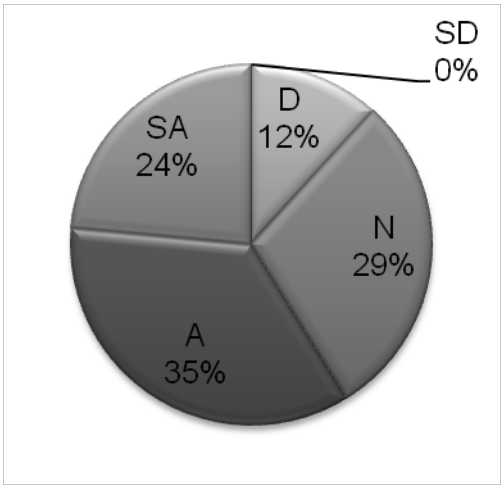

Figure 14. Round 2 result for 5-point-Likert-type Question 4: Horizontal boundaries can be overcome by MIS services that are common across all teams within the organization.

Mandated MIS. The question did not achieve consensus with only 64.7% of participants agreeing with the statement presented in question 5 (see *Figure 15*). The respondents provided comments emphasizing the collective collaboration are the key to success rather than making MIS a requirement without organizational support. The statements in Round 3 provided specific detail to clarify the collaborative point and confirm the analysis of the data.

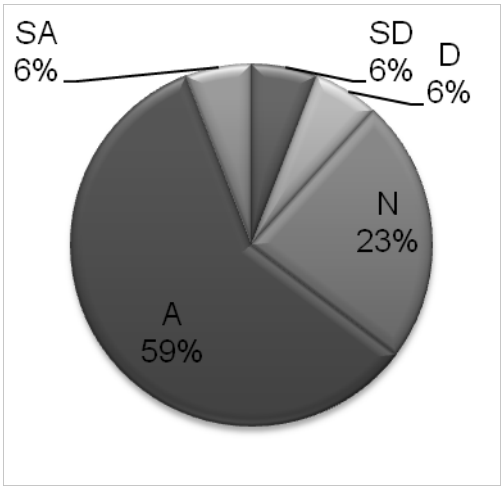

Figure 15. Round 2 result for 5-point-Likert-type Question 5: To encourage an open culture of communication, mandating use of common and efficient MIS solutions is necessary for effective communication.

The level of dispersion threshold exceedance for questions 3, 4 and 5 demonstrated the influences of additional variables identified by participants within the open-ended questions (see Table 14). Although there were very few negative responses, the large percentage of neutral responses, illustrated by the interquartile range between 4 and 3 in Figure 12, was addressed in the open-ended questions in Round 3. The high number of neutral responses was summarized as the following, MIS tools must be adaptive to organizational needs, and supported (as opposed to mandated) by both leadership and individual.

Round 2 open-ended comments results. The open-ended comments built on the Likert-type questions by combining the two non-consensus questions from Round 1, the three themes from Round 1, and the four research questions of the current research study that contribute to an effective MIS organization solution (see Appendix Q). The content analysis of Round 2 produced five themes. Appendix P has a table showing the general

method of combining sub-themes from each of the five open-ended comments into common themes.

Individuals given RAA to use MIS. The first theme was supported by an average of 49% of the participants across all five questions. The emphasis was on the importance of establishing clear RAA with the individuals involved with MIS demonstrating both the support of the organization as well as the duty on the individual to support the organization. Respondent 17 stated, "Barriers [to information distribution] need to be broken down to increase the flow of gaining and sharing." Respondent 20 stated there is a need to develop "the solution across the horizontal team to gain ownership and a broader understanding of all the stakeholder`s needs." Respondent 16 emphasized the need for "[o]ne bellybutton with the RAA (and staff) to work and ensure effective communication across the enterprise." Respondent 8 posited, "There should be a hierarchy structure with the RAAs [and] metrics that can be used to track status and manage RAA and team responsibilities." The culmination of the responses centered on the need to ensure support throughout the organization by establishing a business norm.

Leadership setting the standard. An average of 44% of participants across all 5 questions with a similar response led to the theme of leadership setting the organizational standard for the use of MIS solutions. In order to achieve unilateral adoption of MIS best practices, leadership must set the standard by adopting and integrating the single MIS within their organizations. Respondent 8 focused on "embedding champions throughout the [organization] to help manage, integrate, and promote the MIS." Respondent 9 emphasized "leadership buy-in of MIS and implementation of communication plan." Respondent 5 also supported understanding and "buy-in to the value that change will

bring" through implementation of the MIS. Respondent 14 clearly stated that, "[c]hange must be sponsored by the leaders of the organization and, to be successful;[sic] the leaders should be very open about the goals and objectives of the change." The establishment of leadership support is achieved through observed action, and by establishing a documented plan for the organization.

Clear communication plan. The average of participants emphasizing the need for a program plan was 33% across all five questions, and the percentage alone for question E was 76%. An organization sets standards and gains acceptance by clearly documenting the organizational communication plan providing the guidance for the use and expectations of MIS. Respondent 5 stated, "The key to enhancing communication is found in the culture, the tools (e.g. the MIS), and the operating rhythm of the organizational entity (e.g. the program)." Respondent 1 emphasized the organizations need "a clear goal and plan to achieve [success]." Respondent 10 identified team communication "must include both vertical and horizontal representation in order to have effective outcomes." Respondent 11 viewed communication success by stating "lower level teams need sponsorship at the executive level. With this warrant, they are able to implement changes needed for MIS." Once the expectations are defined through the communication plan, developing organizational support for MIS is the next step.

Organizational support. Participants identified the theme of organizational support across 32% of the five questions. Success of a new organizational design to support MIS requires support from the organization to demonstrate the benefit and faith the solution will provide for the organization. Respondent 11 wrote that a common MIS team will "enhance communication via a common infrastructure accessible to all

employees." Respondent 5 stated the key to change in organizational structure "is to have the organization (i.e. its people) understand and buy-in to the value that change will bring." Respondent 8 stated the foundation is "planning, communication, and involving all level of org and effected party throughout the process." Respondent 17 stated support "starts at the top [and] discourse over an extended period of time will help people understand and be more accepting and open to the change." Once the RAA, leadership standards, plan, and support have been established, the relationship of a common method can be created.

Collaboration of tools and people with a common MIS. The participants identified collaboration across the organization through a common MIS solution in an average of 31% across all five questions. Organizations require common solutions to enhance the communication capability of the organization to enable effective collaboration. Respondent 16 wrote the "MIS component is defined and embedded in the design." Respondent 15 emphasized collaboration through a common tool required "the MIS needs to fit the needs of the organization." Respondent 1 established the solution requires "a commitment up front from the leaders of the organizations to allow the team to broaden boundaries." Respondent 11stated, "By establishing common goals and processes for all MIS teams[,] they can establish common data structures, which would provide a means to translate data between groups." The combination of the five themes provided insight into the perspective of the participants about effective application of organizational design.

Round 2 summary. The second round provided beneficial detail addressing the specific nuances of organizational communication. The participants provided responses

leading to five themes, which followed thoughts from existing literature. Although consensus was not reached on three of the five 5-point-Likert-type questions, the details provided in the open-ended questions honed the major concerns regarding organizational design and communication to address the research questions in the Round 3 instrument.

Round 3 results. The final round consisted of quantitative and qualitative data from 15 participants. The final round of the Delphi study was used to verify the findings from the previous two rounds with alignment to the four research questions. In the interest of ensuring precision of responses to research questions, participants were presented with the research question followed with a statement that consolidated inputs from Rounds 1 and 2 (see Appendix R). The following sections describe each portion of the survey with the results and conclude with a summary. The raw data for Round 3 are listed in Appendix S.

Demographic results. The analysis of the demographics produced no quantifiable results demonstrating a trend based on epistemological diversity. Each of the nine demographics was compared to the responses and the comparative analysis percentage did not exceed 7% because only one respondent disagreed on question 2 and strongly disagreed on question 3 (see Appendix S). No discernable trend between individuals who agreed and strongly agreed was seen.

Round 3 5-point-Likert-type scale questions results. There were four individual 5-point-Likert-type scale questions, shown in Appendix R. Evaluation of the responses was achieved through statistical analysis of the central tendencies of each question with a comparison to the level of dispersion. The review of the questions showed a tendency for consensus among all four questions as noted by the median response of 4.0 in all four

questions (see Figure 16). The breakout of questions 1 through 4 equate to a general consensus of 93%, 87%, 87%, and 100%, respectively, where consensus was measured by achieving 75%. The interquartile range had a score of 1.000 for all four questions and because range was completely in the agree and strongly agree range the threshold was moot (see Figure 16). The threshold for exceeding for central tendency is misleading due to the strongly disagree rating compared skewing the value (see Table 15). The questions that did not receive 100% consensus were evaluated individually.

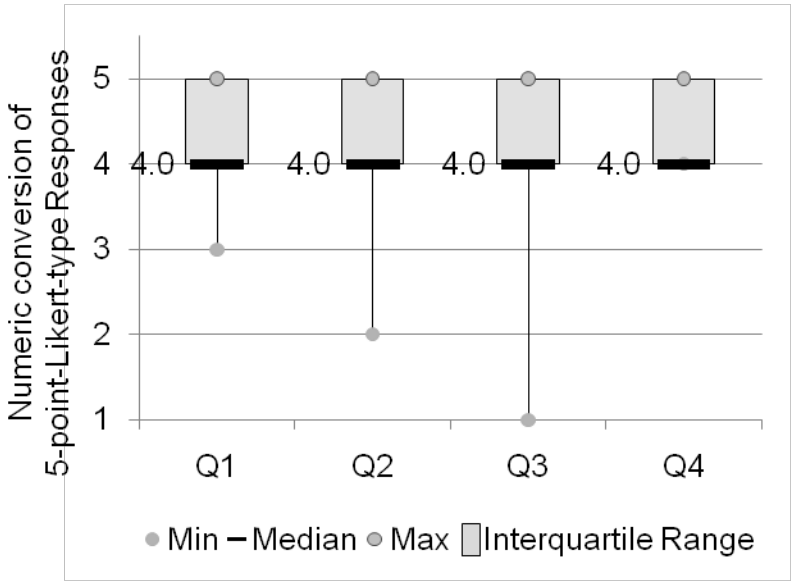

Figure 16. Round 3 Box plot of 5-point-Likert-type scale questions

Table 15

Summary of Round 3 Responses and Statistical Measures

Measure Summary Name	Q1 Single	Q2 Central	Q3 Support	Q4 Demo
Question Rating				
Strongly Disagree			1	
Disagree		1		
Neither Agree nor Disagree	1	1	1	
Agree	9	7	6	9
Strongly Agree	5	6	7	6
Central Tendency				
Mean	4.267	4.200	4.200	4.400
Mode	4.000	4.000	5.000	4.000
Mean - Mode (Absolute)	.267	.200	**.800**	.400
Level of Dispersion				
Standard Deviation	.594	.862	**1.082**	.507
Interquartile Range	**1.000**	**1.000**	**1.000**	**1.000**

Note. Factors exceeding the following thresholds are in boldface: Absolute value of Mean minus Mode greater than or equal to .5; Standard Deviation and Interquartile Range greater than or equal to 1.

Cross-integrated MIS. Question 1 showed a consensus of 93.3%, with no disagreement, and only one neutral response (see Figure 17). There was no comment from the respondent in relation to the neutral response for this question. The extrapolation from the respondents' previous round comments may suggest the individual was again questioning the clear lines of RAA and effective collaboration at all levels was not completely addressed in the statement.

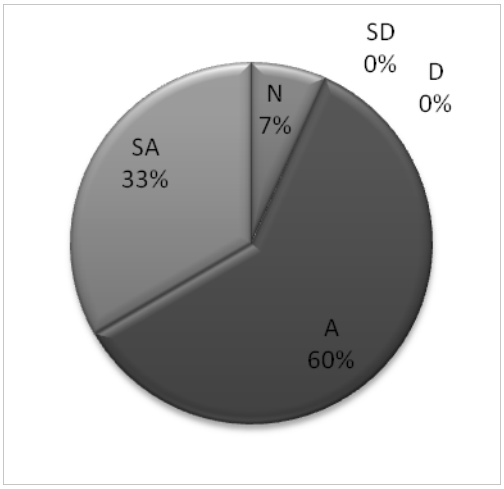

Figure 17. Round 3 result for 5-point-Likert-type Question 1: Program and functional leadership must jointly support a single MIS Team to design a cross-integrated MIS to meet the needs of the organization by establishing clear accountability through a program plan to integrate the tools at all levels of the organization.

Centralized MIS team. Question 2 showed a consensus of 86.7%, with one disagreement, and one neutral response (see Figure 18). Analysis of the comments revealed the neutral respondent required more emphasis that a single group may be sufficient, but a single tool may be detrimental to organization success. The respondent who disagreed placed emphasis that RAA was not only the duty of the MIS group, but also of the end-user. Clarifying the two individual comments from the respondents during the creation of round 2 instruments rather than implying them would have alleviated the two respondents' concerns.

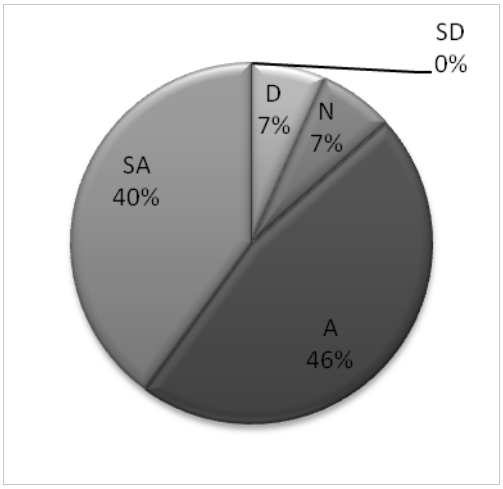

Figure 18. Round 3 result for 5-point-Likert-type Question 2: A centralized MIS team is needed to facilitate a closed-loop plan of tools, services, and people coordinated with leadership and the RAA to collaborate with users at the working level to integrate solutions horizontally and vertically throughout the organization.

MIS single authority. Question 3 showed a consensus of 86.7%, with one disagreement, and one neutral response (see Figure 19). The respondent who was neutral provided no comment. Review of previous comments may suggest the participant required more emphasis that organization dictates the MIS solution, and the MIS group has the RAA to accomplish the goal. One participant strongly disagreed implementation was exclusively the RAA of the MIS. Review of the comment showed the respondent felt the user had the ultimate RAA and this is true for using and defining the tool, but the question may have been interpreted that the MIS would be accountable for defining the tools and services, which was not the intent of the question. MIS needs to work collaboratively with users during the process. Clarifying the two individual comments from the respondents during the creation of round 2 instruments rather than implying them would have assuaged the two respondents' apprehensions.

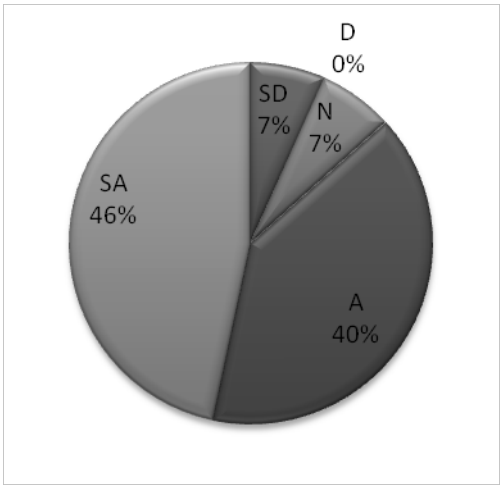

Figure 19. Round 3 result for 5-point-Likert-type Question 3: Leadership from the highest levels to the working levels must support the MIS Team's mission as the single authority to implement the integrated solution plan to support all levels of the organization.

Round 3 open-ended question results. The open-ended question was provided for the participants to add clarity to the questions where responses were neither agree nor disagree, or when participants wanted to add additional comments. Respondent 3 stated, "I am in 100% agreement with the necessity of having a centralized MIS team. [There have been detriments in the past to forcing] 'common tools, common systems'." Respondent 11 stated, "A common data set [in lieu of a common team] could be supported by numerous groups with the caveat that they adhere to enterprise-level standards and requirements." Respondent 13 stated, "It is necessarily difficult to implement any one-size-fits-all solution." Respondent 18 said, "Ultimate responsibility and authority should rest with the users of MIS products, not the suppliers of tools. Further, it should be the responsibility of MIS to obtain that approval through communication in user terms of commitments being made." The four responses were

summarized into the following statements. Centralized MIS teams are good to create commonality for both enterprise solutions and program unique solutions, but require periodic assessment to ensure the tools provided will continue to be the best support capability meeting the needs of the organization. No "one size fits all" solution exists and the MIS must be adaptive to support the specific needs of the organization and predominately support the end-user for the solutions. Two additional questions were provided at the end of the survey as a courtesy if participants wanted to receive the interim Round 3 analysis or receive a copy of the final dissertation. The responses are not part of the analysis.

Round 3 summary. The final round provided statistical consensus among the participants for the factors influencing design of organizations with relation to effective communication of groups providing or supporting MIS solutions. Complete consensus may have been achieved through additional rewording of the statements. A key factor is a collaborative organization where leadership at all levels supports a single MIS team to provide integration throughout the organization. For the team to be effective, clear RAA must be provided to the MIS team as well as to the end user. The critical factor for success is employing integration with stakeholders to demonstrate the solution and to create shared ownership and support for the final solution. A fourth round was considered but omitted, as the variance was too small to be a critical concern toward consensus.

Summary

Analysis of the three rounds provided progression of thought as information was reviewed and the group migrated toward consensus. The initial round established topic

comprehension by the participants and was expanded through open-ended responses to capture ideas for greater clarity. The second round went a step deeper to indentify the intrinsic values representing influences of organizational design surfacing from the Round 1 analysis. The final round brought the pieces together in cogent statements representing consensus by the participants to support the research questions of the current research study.

Several demographic influences brought diversity of thought to the rounds to provide a more cogent understanding of information implications. In the final round, the participants came together despite varying epistemological backgrounds to create a unified response to address organizational design solution for teams creating or supporting MIS. The major findings created themes that placed emphasis on clear RAA for all stakeholders, established leadership support to carry a unified message throughout the organization, and applying a centralized MIS group tasked with the responsibility to support the organization communication to achieve success. Chapter 5 takes the findings and analysis to create a recommendation to satisfy the purpose of the current research study.

Chapter 5: Conclusions and Recommendations

The purpose of the qualitative Delphi study with supporting quantitative data was to examine and better understand the current effects and the limitations on communication in traditional hierarchal organizations with relation to groups applying, supporting, or creating management information systems (MIS) to identify potential organizational design alternatives. This chapter will provide the views developed from the analysis of the data and provide recommendations based on interpretation of the analysis. The chapter will also introduce two new terms created and unique to the current research study based on the findings and implications: cross-integrated teams and Integrated Product Organizations. Chapter 5 is composed of the following five sections: (a) effects of limitations and delimitations, (b) findings and analysis, (c) recommendations, (d) suggestions for further research, and a (e) summary.

Effects of Limitations and Delimitations

The current research study identified three limitations and three delimitations influencing the results of the data collection. The limitations were (a) acceptance of solutions by participants, (b) myriad of existing theories detracting from focus, and (c) autocratic barriers in current participants' structure. The delimitations were (a) defined participant selection, (b) focused discussion around limited organizational designs, and (c) removal of external influences impeding change.

The effect of the limitations was mitigated across all three items by addressing the delimitations of the current research study. The first limitation was addressed by the first delimitation by carefully selecting the participants to have participants with the knowledge and experience to address the problem. The second limitation was addressed

by the second delimitation to establish a lexicon of definitions related to organizational design to focus the participants around a common theme. The third limitation was addressed by the third delimitation to word the questions carefully to focus participants on what should be done as opposed to limiting their responses on what could be done.

Implications of the Findings

The data analysis of chapter 4 provided a thorough look at participant views about the influence of organizational design on communication to establish the significance the current research study brings to the topic. The affect of communication as a variable for organizational success has been documented as key discriminator and focus for program success (Johnston et al., 2007; Morris, 2008). The themes confirmed the initial expectations about the impact of organizational design on communication and the individual themes were discussed in detail in the findings for each round. The themes produced by the participants followed the same germinal foundational theories based on the works of Weber for bureaucracy, Frederick Taylor for the work on scientific management, and the work of Katz and Kahn on systems theory. Each round produced a theme that was narrowed in specificity for the follow-on rounds and in Round 3 direct association to the research questions and problem statement were explicitly drawn out. The quantitative and qualitative findings for each round are discussed in order.

Round 1 findings. In Round 1, the participants determined organizational design is necessary to promote communication within an organization but organizational design may inherently instill boundaries countermanding the goal of effective communication. The results from the quantitative and qualitative sections of the Round 1 instrument

demonstrated the challenges to communication created by organizational design. The literature review supported the affect of organizational boundaries on communication.

Round 1 5-point-Likert-type question findings. The first round findings indicated that organization design architecture and lack of RAA has a direct affect on speed and quality of communication. The reluctance of leaders to give RAA at lower levels prevents effective management of tasks due to command and control innate bureaucratic boundaries impeding communication ("Organizational Design," 2004). A lack of consensus on the effect of horizontal boundaries and vertical boundaries differed among participants. All of the SMEs agreed that horizontal boundaries were difficult to overcome. When compared to the demographic data, a relationship is extrapolated that horizontal boundaries are less of a challenge where individuals are provided inherent authority because of the official leadership role and more of a challenge for those who have implied authority through an informal leadership role (Furner et al., 2009; Windischer et al., 2009).

The results from the survey showed that managers and directors agreed that vertical boundaries provide challenges to communication. Chaturvedi (2005) supported the finding stating traditional communication vertically results in extended delays in information flow inhibiting program responsiveness. In addition to the SMEs, more directors and managers agreed vertical boundaries were difficult to overcome than those directors and managers who had agreed about horizontal boundaries. The lack of power follows the finding that individuals who does not have inherent authority over an individual or team will use interpersonal communication (like those of Leads and Subject Matter Experts) at the working level as the effective method to overcome vertical

boundaries (Furner et al., 2009; Windischer et al., 2009). The finding is also supported by Paton et al. (2010), who determined the lack of decision authority at lower organizational levels in a bureaucratic culture impedes success. The remaining demographics were evenly dispersed among the participants indicating external epistemological differences of participants had little influence on the interpretation of the responses and all shared a strong corporate culture.

Round 1 open-ended question findings. The open-ended question provided three themes (a) open culture, (b) commonality/resistance to change, and (c) required proper use of effective MIS tools. The themes generated closely followed the corporate principles of desired behaviors and expectations. The phenomenon of the themes following the corporate principles reinforces the aspect of internal epistemologies of corporate culture was a driving factor of participant interpretation.

Open culture. The analysis confirmed participants felt project managers are faced with challenges of overcoming the limitations of organizational design and subsequent creation of boundaries (Paton, Hodgson, & Cicmil, 2010). Organizations require an open culture where individuals are empowered to communicate across boundaries to improve organizational effectiveness. Meyer (2010) wrote that corporations are showing that the large movement of information through an organization requires groups who can traffic the knowledge sharing across boundaries. Creating an open culture requires changes to common methods of business operation.

Commonality and resistance to change. Organizational success depends on overcoming the general resistance to change to create an efficient and common method of communication. Mintzberg et al. (2003) noted that bureaucratic mechanized structures

inflexible to change are not successful. The origin of alternate organizational designs, like cross-functional teams, is a business response to the recognized inefficiencies of traditional organizational structures (Windischer et al., 2009). Despite practices to promote change within organization to improve capabilities, such as Lean, Six Sigma, and Total Quality Management, the fixed structure of traditional organizations are a detriment to change (Lawler & Worley, 2006). A common MIS solution provides the communication capability for organizational success.

Required proper use of effective MIS tools. The traditional organizations lack the flexibility to move information internally effectively due to the imposed vertical and horizontal boundaries (Broadfoot et al., 2008). The same effects of these limitations are propagated to lower levels of the organization, as demonstrated by non-management struggling with horizontal boundaries, especially in smaller organizations. An open systems methodology is needed for the capability and adaptability of the individual groups across the broad spectrum of the organization in complex environments such as those using MIS (Scott & Davis, 2007). A common MIS solution creates an open environment of communication with the least impact to organizational change. The themes were addressed in detail in Round 2 in order to confirm the intended meaning by the participants.

Round 2 findings. In Round 2, the participants determined that individuals are needed to manage the variables of business and these individuals need the common MIS solutions to collaborate to address the communication needs of the organization. The results from the quantitative and qualitative questions determined the degree of impact vertical boundaries and horizontal boundaries had on communication within the

organization, as well as addressing the need for a mandated use of common tools. The findings show a relationship to the literature review with relation to MIS subgroups.

Round 2 5-point-Likert-type question findings. The results showed consensus among the participants that vertical boundaries impeded adoption of common practices for MIS and the vertical boundaries further limited communication among groups when common MIS tools were not in place. The results are supported by Lloria (2007), and Lawler and Worley (2006) who wrote that reducing vertical boundaries and increasing commonality within an organization creates improved communication flow and overall organization performance. Although the majority of participants agreed with the final three questions, a consensus was not achieved in relation to the impact of horizontal boundaries to mandate MIS tool at all levels and across the organization. The lack of consensus turned out to be matter of semantics that was addressed in the open-ended questions to provide a greater level of detail and understanding to the 5-point-Likert-type questions.

Round 2 open-ended question findings. A review of the 5-point-Likert-type questions responses compared with the inputs from the open-ended responses added clarity about the lack of consensus in which the primary concern was a matter of semantics and addressed the specific nature of communication within the organization. The summary of the content analysis themes was characterized in the following statements. (a) Individuals must have RAA to use the MIS solutions within and across teams, but mostly the accountability to use the MIS solutions. (b) Leaders must set the example for use of the MIS solutions to demonstrate and gain support of the organization. (c) A recognized program plan that directly involves the users is necessary to provide

closed-loop success. (d) Organizational support at all levels is necessary to ensure a common vision for the individuals. (e) Collaborative support between leaders and individuals is required for successful design of common MIS tools and procedures. The open-ended themes are discussed individually.

Assigned RAA. The participants suggested clear RAA must be provided to the MIS team as well as to the end user for the organization to be effective. Escribá-Moreno et al. (2008) determined teams who are given autonomy had a greater influence across the organization than teams encapsulated in fixed hierarchy. These theme is reinforced by Windischer et al. (2009) who noted organization who maintain all decision authority at the top of organization do not achieve a collaborative environment. Achieving the collaborative culture throughout the organizations starts with the examples set by leadership.

Set the example. Providing services and tools is the first step to integrating and MIS, and showing support for adoption of those services and tools starts with leadership. Jayasingam et al. (2010) determined leaders with referent power, those who set examples and delegate to others, set the standard for others to emulate and will achieve the greatest influence. Setting the example also requires documented procedures to ensure consistency of the example.

Involved program plan. The organization must create a shared plan with all individuals in the organization to formulate a solution accepted and supported through direct involvement. Escribá-Moreno, Canet-Giner, and Moreno-Luzón (2008) concluded decentralization of power and empowering authority at lower levels, like MIS groups, creates autonomy to improve team effectiveness. Clearly stating organizational

communications standards establishes the relationship within the organization and identifies the accountability of the individuals (Gilmore, 2009). The success of the MIS team being given the power to succeed is also dependent on support throughout the organization.

Organizational support. The participants determined a key factor to a successful MIS is a shared organization where leadership at all levels support a single MIS team to provide integration throughout the organization. Jones (2007) determined the culture influencing the organization and building the structure to support the informal norms and employee collaboration creates an organization efficient for flow of product and effective for people in the organization. Organizational support achieves higher levels of performance by developing communication relationships to improve effectiveness of the organization (Gilmore, 2009). In addition to organizational support, rather than mandating adoption, leaders will need to create a collaborative environment encouraging participation.

Collaboration through common MIS. The critical factor for success is employing integration of the MIS with stakeholders to demonstrate the organizational solution and to create a shared ownership and support for the final solution. A centralized MIS reduces organizational constraints, which enables the ability of leaders to recognize issues within the organization and act on the issue indicators with improved effectiveness (Jaques, 2010). The promotion of successful communication through organizational design necessitates common tools and procedures to support the infrastructure (Lawler & Worley, 2006). Each of the five open-ended themes from Round 2 was incorporated in

the final 5-point-Likert-type questions in Round 3 to ensure clarity of the questions to promote consensus.

Round 3 findings. In Round 3, participants determined a systematic approach to achieving organizational communication success centered on effective incorporation of a MIS subgroup. Each of the four 5-point-Likert-type questions directly related to each of the research questions of the current research study by making a statement that answered the research question. The consensus of the participants confirmed the research questions and addressed the problem statement of the current research study: The specific problem is modern hierarchal organizational structures decrease communication speed and quality within the management information systems (MIS) subgroups responsible for orchestrating communication throughout the organization, which ultimately decreases overall organizational performance and effectiveness (Klovienė & Gimžauskienė, 2008). The Delphi study identifying the contributors to the problems of poor communication established the significance of the current research study in relation to increased program cost due to ineffective communication and an organizational design leadership can adopt to improve communication.

Round 3 5-point-Likert-type question findings. The results of Round 3 showed consensus across all four questions. The participants agreed a centralized MIS team with full RAA supported by leadership was necessary to create the collaboration required to provided tools, services, and people throughout the organization to overcome vertical and horizontal boundaries. Furthermore, implicit support of leadership through all levels of the organization was necessary for an integrated solution by demonstrating the capabilities of the MIS team through actual application to gain organization-wide

support. Lawler and Worley (2006) supported the findings by confirming that, as leaders continue through the future, a need for an MIS subgroup and the capability to organize effectively the subgroup to promote communication through a single group to exploit inherent capabilities and create commonality exists. The five total responses that did not agree across all four questions were addressed in the themes created from the Round 3 open-ended data.

Round 3 open-ended question findings. The lack of complete consensus was determined by analyzing the themes from the open-ended questions. Two themes prevailed: (a) Centralized MIS teams are good to create commonality for both enterprise solutions and program unique solutions, but require periodic assessment to ensure the tools provided will continue to be the best support capability meeting the needs of the organization. (b) No "one size fits all" solution exists so the MIS must be adaptive to support the specific needs of the organization and predominately support the worker for the solutions.

Periodic assessment. MIS teams need periodic evaluation of performance to ensure the shifting requirements of the organization are continually satisfied. Ainamo (2007) supported simply ensconcing a cross-functional team to manage boundaries will not achieve the desired results to improve communication. MIS teams need to be adaptive to organizational needs on a continual basis.

Adaptive to needs. The market place continually evolves and organizations need to be adaptive to change as well as to the systems that support communication. Broadfoot et al. (2007) determined leaders needed to recognize success is about addressing the boundaries of the people rather than creating boundaries in the

organization. Leaders who did not effectively design an organization to meet the needs of the individuals will face challenges of employee commitment and attrition (Da Silva et al., 2010).

Summary of findings and implications. The ability for organizations to provide the necessary communication infrastructure successfully is dependent on the capabilities of the MIS services and tools. Survey results revealed an organizational paradigm shift is needed to rethink how MIS organizations are integrated into the hierarchy to provide the necessary horizontal integration of tools and services to the organization. A solution to manage the RAA for these groups is based on views of the participants for leadership support horizontally and vertically through the organization. Support from leadership to the user level and across the organization will enable MIS groups to be a collaborator of service rather than a retailer of product. The current research study provided a recommendation of an integrated solution to address the communication constraints of organizational design with relation to MIS groups.

There was no significant gap between the research study findings and the literature findings, in part, due what was addressed by Johnston et al. (2007) and Jayasingam et al. (2010) who both noted the lack of research pertaining to the management of communication with relation to organizational influence. While addressing the limitations and constraints communication plays within organizations, there has not been significant study as to the role organizational structure influences organizational communication. The lack of available literature was addressed in the current research study by specifically tying communication to the physical constraints organizations have on communication with relation to horizontal and vertical boundaries.

Additional comparison of the literature with research findings shows a definite relationship between the need to define a clear organization and addressing the needs of the individuals in the design (Ainamo, 2007; Broadfoot et al., 2007; Da Silva et al., 2010). The research findings align to the literature as respondents emphasized the need for open communication and clear establishment of RAA for each individual to support communication. The main contrast between the literature and findings was that although literature and respondents agreed open cultures with RAA provided at lower levels were necessary for success, the open-ended responses continued to repeat the paradigm of working in rigid structures. A hybrid organizational design is necessary to support the need for improved communication, while still operating within a rigid organizational structure.

Recommendations

The findings from the three rounds of the Delphi study presented four key areas necessary to resolve the problem of the current research study. The four areas can be summarized as an organization needs to (a) support and (b) demonstrate (c) a single MIS Team with (d) the RAA to provide and support communication throughout the organization. The success is dependent of execution of all aspects to create an effective solution.

Recommendations to leadership. Van Looy, Martens, and Debackere (2005) posited a rigid bureaucratic organizational structure is not a requirement for success and multiple organizational design configurations can coalesce into a working hybrid organization. Furthermore, corporations are showing the large movement of information through an organization requires groups who can traffic the knowledge sharing across

boundaries (Meyer, 2010). The findings from the Delphi study determined the initial solution is an organization design built around a more rigorous communication system through MIS to establish clear RAA for each individual to overcome the inherent boundaries of an organization. Figure 20 illustrates the initial literature research on the topic and shows a bureaucratic organization is designed to show the flow of information up and down the organization (Meyer, 2010; Paton, Hodgson, & Cicmil, 2010; Van Looy, Martens, & Debackere, 2005; Weber, 1947). Figure 20 also illustrates how poor communication across the organization at lower subgroups levels, like MIS groups, are not often clearly defined or given sufficient RAA to communication horizontally across the organization (Meyer, 2010; Paton, Hodgson, & Cicmil, 2010; Van Looy, Martens, & Debackere, 2005).

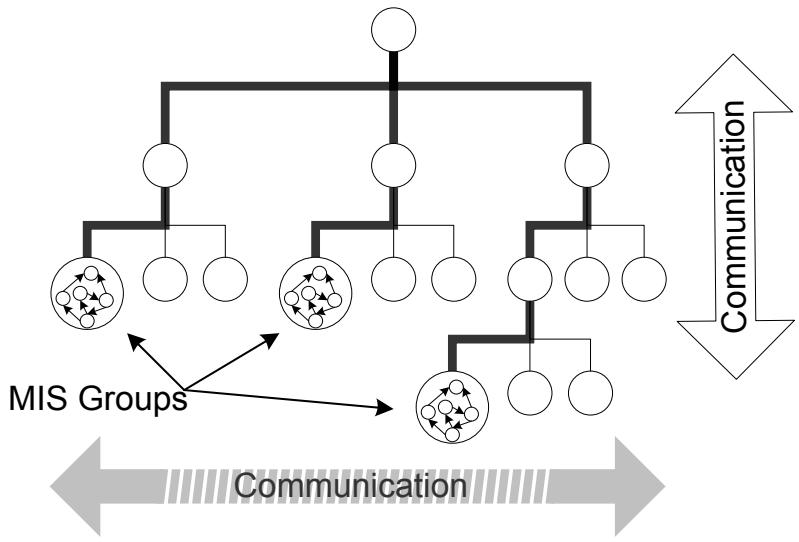

Figure 20. The interrelationship between the design of organizational structure, original independent MIS groups, and communication capabilities.

The recommendation of the current research study is an organization structure moving the MIS team to the top of the organization at the same level of Integrated

Product Teams to help overcome horizontal boundaries of communication, and creating integrated sub-teams at the lower levels of the organization to address the vertical boundaries of communication. Figure 21 provides a simplistic representation of how an MIS team can be integrated at upper and lower levels of an organization. The solution requires the use of two new organizational designs: Integrated Product Organizations, and Cross-Integrated Teams.

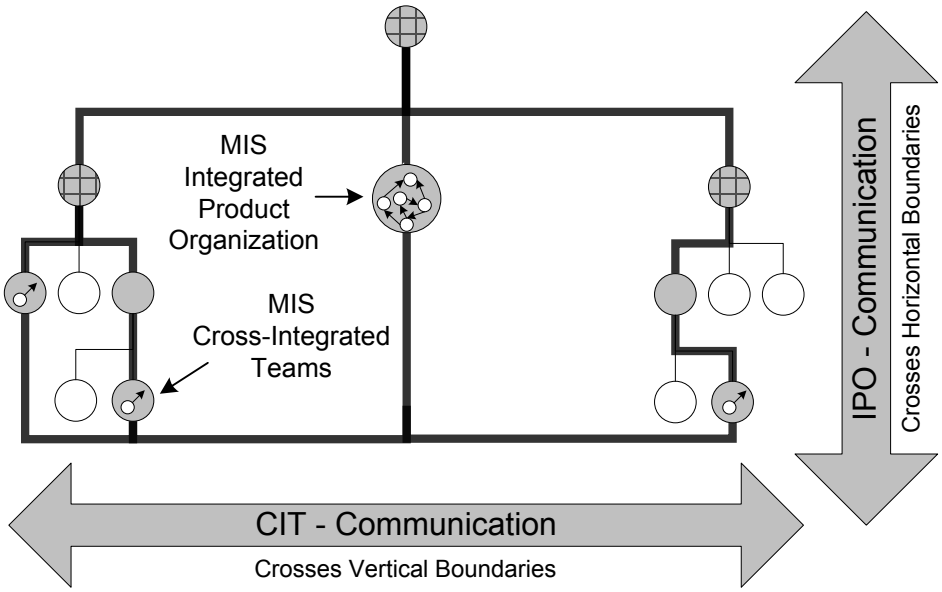

Figure 21. A new MIS Integrated Product Organization (IPO) using Cross-Integrated Teams (CIT) to mitigate vertical and horizontal communication boundaries.

Integrated Product Organizations model. The term *Integrated Production Organization* (IPO) model was created for the current research study as an expansion from the term Integrated Product Teams (IPT). The distinction between the two can be summarized as an IPT produces a product up through the organization to support the program, while the IPO produces a product down through the organization to provide a service. Establishing an IPO at the same level as the IPTs enables direct communication at the upper levels of the organization and mitigates the problem of horizontal barriers

created by horizontal boundaries. The second barrier of vertical boundaries was to address the communication limitations by adopting Cross-Integrated Teams at the sub-group level.

Cross-Integrated Teams model. The term *Cross-Integrated Teams* (CIT) model was created for the current research study to expand on the existing capability of Cross-Functional Teams (CFT). The distinction between the two terms is that a CFT uses a team composed of members with diverse capabilities from across the organization into a single group to solve single project problems, whereas a CIT uses a specific capability, like those of an MIS team, integrated across the organization in multiple groups to solve organizational problems. As shown in Figure 21, individuals of the CIT populate the subgroups across the organization to cross the vertical boundaries while still maintaining a direct connection to the IPO demonstrated by the dark black line across the bottom of the organization. The combination of the IPO and CIT creates a solution to address the vertical and horizontal boundary impacts that traditional organizational designs have on communication.

The IPO-CIT model recommendation. Individuals within the MIS IPO will form CITs within organizational sub-groups. Penultimate to the design of the organization is a clear understanding of the CIT's RAA. Success depends on the CIT members having dual RAA both functionally to the MIS IPO and programmatically to the sub-team where they are assigned. The dual RAA in the organization structure may present the possibility of conflicting direction from leadership; however, the clear lines of communication will help mitigate the risk through the collective autonomy of the MIS IPO.

The IPO-CIT recommendation addresses each of the issues identified by participants. In the IPO-CIT model, the MIS subgroups have been brought together under a single IPO to ensure commonality. The CITs are assigned at the subgroup level to ensure the needs of the organization are addressed at the working level. RAA is established for each individual of the CIT to provide the clear direction and to improve communication. Lastly, the IPO-CIT model exists within a traditional organizational design to allow the mechanistic organizational reporting requirements required of a large organization, while supporting the organic organizational effective communication at lower levels.

Recommendations for Future Studies

The current research study was focused on a very specific group within organizations to understand the effects of communication. Additional studies about other specialized groups may reveal similar or dissimilar organizational design solutions. Possible teams could be business operations, engineering, program integration, or one of the myriad of services that are common within an organization.

Additional studies could be done on different organization types in different fields of business. The Delphi study was conducted in a large corporation with an employee base greater than 20,000. A similar study in a smaller company may produce separate results.

The separation between strongly agree and agree in the Round 3 results may represent participant thoughts on having a rigorous mechanistic organization or those in favor of a more organic organization to determine level of MIS authority. The separation

lends itself to future research regarding the epistemologies of individuals related to their views on ideal organizational design and governance.

Due to the quantitative aspect of the current research study, a Delphi study from a purely qualitative aspect may be beneficial to gain richer information by doing personal interviews with the participants. Detailed discussions and exchange of ideas may identify similar or newer recommendations for organizational design considerations. The end hope for any future study will be a result that further helps leadership understand the dynamics of communication and the influence of organizational design.

The current research study focused completely on traditional hierarchical organization, readdressing communication within multidimensional organizations might provide alternate perspectives. Multidimensional organizations use independent business units and disperse resources as needed to support the business units (Strikwerda & Stoelhorst, 2009). The organization method combined with the IPO-CIT model as an independent resource may provide additional benefit to the organizational method.

The final recommendation for future studies is to take the IPO-CIT model presented in the current research study and apply the model in an MIS organization. Establishment of the communication plan to guide the new organization model, to establish clear RAA for the teams, and to ensure leadership support is a necessity to implementation of the model. A quantitative assessment of communication efficiency of the organization before and after implementation of the IPO-CIT model will determine the application success.

Summary

The purpose of the current research study was to gain a better understanding of the influence organizational design has on communication for Management Information System groups. The current research study addressed how existing bureaucratic organizational designs impede the communication capability of organizations. The research was conducted to identify an alternate organizational design and to define how leadership can adapt and lead such an organization.

The current research study used the Delphi method to obtain the opinions of leaders. The participants went through three rounds of questionnaires designed to identify the problems and reach consensus on a solution. The Delphi study ended with the participants reaching a consensus about the influence of organizational design on communication. The results showed participants determined there was a definite need to establish a centralized MIS group with the RAA to establish the requirements for communication throughout the organization.

The findings from the Delphi study revealed four themes to answer the research questions. (a) Program and functional leadership must jointly support a single MIS Team to design a cross-integrated MIS to meet the needs of the organization by establishing clear accountability through a program plan to integrate the tools at all levels of the organization. (b) A centralized MIS team is needed to facilitate a closed-loop plan of tools, services, and people coordinated with leadership and the RAA to collaborate with users at the working level to integrate solutions horizontally and vertically throughout the organization. (c) Leadership from the highest levels to the working levels must support the MIS Team's mission as the single authority to implement the integrated solution plan

to support all levels of the organization. (d) To obtain willing support of all individual in the organization, the MIS Teams need to demonstrate success and benefit of solutions through actual test cases within the organization that are actively adopted by leadership to set the example. The findings led to a recommendation to address the problem.

The recommendation is composed of two facets to modify existing traditional organizational design. The first is an Integrated Product Organization at the upper echelon to construct a single cohesive team to create common solutions across the organization. The second are Cross-Integrated Teams composed of members of the Integrated Product Organization residing in subgroups across the organization to create communication at the working level. The two elements mitigate the horizontal and vertical boundaries impeding communication.

The conclusions of the current research study created a new organizational design methodology for leadership. The current research study was centered specifically on MIS subgroups in large organizations, but the findings can be generalized to any large group requiring communication to provide a common service across the organization such as banks, hospitals, or Fortune 500 companies. However, the need to provide support across all lower levels of the organization may make the recommended model too costly for smaller organizations. The current research study also lends itself to additional research in the area of organizational design to support organizational leadership. Avoiding program failure depends on the communication capability of the organization (Morris, 2008). The current research study supports a hybrid mechanistic and organic organizational design to improve organizational communication.

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Appendix A: Permission to Use Premises, Name, and/or Subjects

UNIVERSITY OF PHOENIX

PERMISSION TO USE PREMISES, NAME, AND/OR SUBJECTS

[redacted]

Check any that apply:

☒ I hereby authorize Timothy M. Lewis, student of University of Phoenix, to use the premises (facilities identified below) to conduct a study entitled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study.

☒ I hereby authorize Timothy M. Lewis, student of University of Phoenix, to recruit subjects for participation to conduct a study entitled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study.

☐ ~~I hereby authorize Timothy M. Lewis, student of University of Phoenix, to use the name of the facility, organization, university, institution, or association identified above when publishing results from the study entitled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study.~~

[redacted]

8/3/10
Date

Address of Facilities:
All [redacted] buildings located in metropolitan areas of Huntsville, Alabama and St. Louis, Missouri.

Note: This page has been redacted to protect anonymity of the company used in the current research study.

Appendix B: Delphi Study Informed Consent

Dear Prospective Delphi Study Participant,

My name is Timothy M. Lewis and I am a student at the University of Phoenix working on a doctorate degree. I am conducting a study entitled ORGANIZATIONAL STRUCTURE EFFECT ON COMMUNICATION EFFICIENCY FOR MANAGEMENT INFORMATION SYSTEM SUPPORTED ORGANIZATIONS: A DELPHI STUDY. The purpose of the study is to ascertain the viewpoints of the participants as they relate to organizational communication effectiveness as a function of physical design of organizational structures.

Your participation will involve response to three rounds of an online survey spaced over several months. The survey will be composed of rating several questions and an open response question to collect your views on the topic. Total time anticipated for review and response of each round is less than one hour (three hours total for all three rounds). Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the study may be published but your identity will remain confidential and your name will not be disclosed to any outside party.

In this research, there are no foreseeable risks to you for participating. Although there may be no direct benefit to you, a possible benefit of your participation is sharing information that may guide future considerations to communication management and organizational design paradigms. If you have any questions concerning the study, please call me at *xxx-xxx-xxxx* or timothy.m.lewis@<*Company*>.com.

As a participant in this study, you should understand the following:
1. You may decline to participate or withdraw from participation at any time without consequences. Send an email to researcher indicating your desire to withdraw by stating, “Please remove me from participation of the study.”
2. Your identity will be kept confidential.
3. Timothy M. Lewis, the researcher, has thoroughly explained the parameters of the study and all of your questions and concerns have been addressed.
4. The researcher will structure a coding process to assure that anonymity of your name is protected for the open response question.
5. Data will be stored in a secure and locked area. The data will be held for a period of three years, and then destroyed.
6. The anonymous research results will be used for publication and presentation.

Respondent Information

First Name (*required)

Middle Initial (optional)

Last Name (*required)

ID

Informed Consent

By selecting the Radio Button on this form, you acknowledge that you understand the nature of the study, the potential risks to you as a participant, and the means by which your identity will be kept confidential. Clicking the first Radio Button on this form also indicates that you are 18 years old or older and that you give your permission to serve voluntarily as a participant in the study described. (*required)

I understand the above statements and give consent for my information to be used in the study.

If you understand the above statement and do NOT give consent for your information to be used in the study then please close the browser. No information about you will be saved.

Appendix C: Expert Panel Solicitation Email

Good afternoon,

As you know, I am working on a doctorate and part of my graduation requirement requires that I conduct a study and write a paper on the results. I have chosen a Delphi Method to complete my study. Before I can conduct the survey I need to validate the survey, and this is where I am requesting your help. As a panel of experts, I would like you to objectively review the information in the survey and provide observations relating to the usability, clarity, and cohesive nature of the information presented. Feedback can be in the form of comments relating to format, grammar/spelling, word use, general meaning, or any other aspect that you feel would improve the quality of the survey. Your comments will be used to modify the final product prior to conducting the Delphi Study. If you are willing to help, please click the link below and follow the instructions being sure to read all the information fully. At the end of the survey, there will be a form box for you to provide comments, or you may feel free to call or email me with your observations and recommendations.

The survey has been authorized by the *<Company>* Survey Team in accordance with Rules for Surveying *<Company>* Employees. You may use *<Company>* property to participate, however you must perform the task on your personal time and not charge any direct or indirect labor associated with the survey. Total time to complete the survey and provide recommendations should be no more than a half hour.

Prior to reviewing the survey, you will need to complete an informed consent that provides information to participants about their rights.

Expert Panel Informed Consent (provides link to survey)

<link>

After completing this form and clicking send, you will see a new link to the Expert Panel Survey.

There will be an option for "Unique Identifier". This is a number that will be assigned to future participants and not required for the Expert Panel.

Your inputs will be anonymous so your candid feedback will be appreciated. In addition, if you know anyone who may be interested or have the experience to participate in the final study please send me their names or include them in the survey.

If you choose to participate, please try to complete your response by October 26th.

If you have any questions, please feel free to contact me.

Note: Please do not provide survey links to other persons to ensure confidentiality of your information and integrity of the survey inputs. If another person would like to participate, please send me their name and I will email a separate invitation.

Tim

Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

Appendix D: Expert Panel Informed Consent

Note: You are reviewing the survey as part of an Expert Panel. Your responses will not be used in the final analysis; however, your comments will provide improvements to the survey tool. Thank you for your open and honest assessment of the survey tool.

Your participation is completely voluntary. <*Company*> has authorized the use of <*Company*> resources to take the survey, but the time spent performing the action must be done on your personal time.

Dear Prospective Delphi Study Participant,

My name is Timothy M. Lewis and I am a student at the University of Phoenix working on a doctorate degree. I am conducting a study entitled ORGANIZATIONAL STRUCTURE EFFECT ON COMMUNICATION EFFICIENCY FOR MANAGEMENT INFORMATION SYSTEM SUPPORTED ORGANIZATIONS: A DELPHI STUDY. The purpose of the study is to ascertain the viewpoints of the participants as they relate to organizational communication effectiveness as a function of physical design of organizational structures.

Your participation will involve response to three rounds of an online survey spaced over several months. The survey will be composed of rating several questions and an open response question to collect your views on the topic. Total time anticipated for review and response of each round is less than one hour (three hours total for all three rounds). Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the study may be published but your identity will remain confidential and your name will not be disclosed to any outside party.

In this research, there are no foreseeable risks to you for participating. Although there may be no direct benefit to you, a possible benefit of your participation is sharing information that may guide future considerations to communication management and organizational design paradigms. If you have any questions concerning the study, please call me at 302-981-2053 or timlewis1@email.uop.com.

As a participant in this study, you should understand the following:
1. You may decline to participate or withdraw from participation at any time without consequences. Send an email to researcher indicating your desire to withdraw by stating, “Please remove me from participation of the study.”
2. Your identity will be kept confidential.
3. Timothy M. Lewis, the researcher, has thoroughly explained the parameters of the study and all of your questions and concerns have been

addressed.
4. The researcher will structure a coding process to assure that anonymity of your name is protected for the open response question.
5. Data will be stored in a secure and locked area. The data will be held for a period of three years, and then destroyed.
6. The anonymous research results will be used for publication and presentation.

Respondent Information

First Name _____ (*required)

Middle Initial _____ (optional)

Last Name _____ (*required)

ID _____

Informed Consent

By selecting the Radio Button on this form, you acknowledge that you understand the nature of the study, the potential risks to you as a participant, and the means by which your identity will be kept confidential. Clicking the first Radio Button on this form also indicates that you are 18 years old or older and that you give your permission to serve voluntarily as a participant in the study described. (*required)

☐ I understand the above statements and give consent for my information to be used in the study.

If you understand the above statement and do NOT give consent for your information to be used in the study then please close the browser. No information about you will be saved.

Appendix E: Expert Panel Survey Instrument

Unique Identifier (*required)

Demographics

The following demographic information is required to provide association between individuals and organizational communication questions. All information will remain strictly confidential.

Age (*required)

- 20-29
- 30-39
- 40-49
- 50-59
- 60+

Metropolitan Area (*required)

- Huntsville, AL
- St. Louis, MO

Highest Educational Level (*required)

- High School
- Undergraduate
- Graduate
- Doctorate

Years of Military Service (*required)

- 0
- 1-4
- 5-9
- 10-14
- 15-19
- 20-24

- ☐ 25+

Years of Professional Service (not including military) (*required)

- ☐ 0
- ☐ 1-4
- ☐ 5-9
- ☐ 10-14
- ☐ 15-19
- ☐ 20-24
- ☐ 25+

Primary Organization Type. (*required)

- ☐ Program
- ☐ Functional

Leadership level in current organization. (*required)

- ☐ Subject Matter Expert
- ☐ Project/Team Lead
- ☐ Team Manager
- ☐ Director/Program Manager

Number of direct reports in your organization. (Please enter a whole number)

(*required) ☐

Organizational Communication

The following statements are used to assess your opinion on the effect of organizational design on communication with regard to support or creation of tools, process, and management of management information system (MIS). Please select the level to which you agree or disagree with each statement.

	Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Organizational design architecture has a direct effect on speed and quality of communication. (*required)	☐	☐	☐	☐	☐
2. MIS tools, processes, and groups provide the common foundation for communication within an organization. (*required)	☐	☐	☐	☐	☐
3. Horizontal boundaries in organizations are difficult to overcome. (*required)	☐	☐	☐	☐	☐
4. Vertical boundaries in organizations are difficult to overcome. (*required)	☐	☐	☐	☐	☐
5. Lack of clearly defined responsibility, accountability, and authority has a direct effect on communication within an organization. (*required)	☐	☐	☐	☐	☐

General Observations and Comments

What additional factors contribute to the capability of an organization to effectively communication through the use of MIS tools, processes, and sub-groups? Include any additional comments or recommendations you would like to share. (*required)

Referrals

Tim Lewis is hoping to collect a minimum of 20 participants for this study. If you have a colleague who has experience or interest in organizational design please provide their name and contact number in the box below.

Thank you for your participation in Round 1 of the study. Tim Lewis will be in contact with you to complete the subsequent rounds.

Expert Panel Recommendations

Please provide any comments that will enhance the usability and clarity of the survey. If you prefer, you may also contact Tim Lewis directly by phone or email. (*required)

Appendix F: Round 1 Survey Instrument

The survey begins below. The following are definitions and details to refer back to as you complete the survey.

- *Functional Organization*: Organizations designed around dependence on the specialized skills of the employees and structured around the skills. Used primarily for core activities and skills to support product organizations.
- *Information Technology (IT)*: Digitally based tools designed to assist in the management of workflow, communication, and decisions within an organization to improve performance capabilities.
- *Horizontal Boundaries*: Implied lines across an organizational chart denoting separation between layers of leadership
- *Management Information Systems (MIS)*: A system used to provide management with needed information on a regular basis. For the purpose of the study, the system definition is expanded to include groups, tools, and individuals who create or support program reporting, health metrics, decision-making, data mining analysis, and prognostic analysis for performance based management. (e.g. <*company tools*>, etc)
- *Organization*: A system of roles and stream of activities designed to accomplish shared purposes. In the study, the term will be repeatedly used to describe groups within a company and not limited to the single organization for the entire company. For example, a CEO has an organization; his VP has an organization, and continues to the lowest grouped team in the company.
- *Organizational Design*: The theory behind development of an organization so that the organization can create, accumulate, integrated and disseminate, and hence manage the resources within the organization . The term is used repeatedly through the study to describe to the initial stages of creation of the organization, or planning stage.
- *Organizational Structure*: The physical layout of an organization is the action to denote horizontal and vertical lines of reporting to express the linkages of communication within an organization. The term is used repeatedly through the study to describe the final product of the organizational design, or implementation stage.
- *Product Organization*: Organizations with a defined contractual deliverable(s) and generally derive funding from a customer.
- *Responsibility, Accountability & Authority (RAA)*: The three major interrelated components that imbue an individual with the capability to complete a task, and often used when delegating assignment to give individuals or a group autonomy to complete the assignment.
- *Vertical Boundaries*: Implied lines between organizational groups or integrated product teams

The Unique Identifier was provided to you in an eMail from Tim Lewis. If you did not receive an identifier or need the email resent, please send a request to timothy.m.lewis@<*Company*>.com.

Unique Identifier (*required) _____

Demographics

The following demographic information is required to provide association between individuals and organizational communication questions. All information will remain strictly confidential.

Age (*required)

- ☐ 20-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60+

Metropolitan Area (*required)

- ☐ Huntsville, AL
- ☐ St. Louis, MO

Highest Educational Level (*required)

- ☐ High School
- ☐ Undergraduate
- ☐ Graduate
- ☐ Doctorate

Years of Military Service (*required)

- ☐ 0
- ☐ 1-4
- ☐ 5-9
- ☐ 10-14
- ☐ 15-19
- ☐ 20-24
- ☐ 25+

Years of Professional Service (not including military) (*required)

- ☐ 0
- ☐ 1-4
- ☐ 5-9
- ☐ 10-14

- ☐ 15-19
- ☐ 20-24
- ☐ 25+

Primary Organization Type. (*required)

- ☐ Program
- ☐ Functional

Leadership level in current organization. (*required)

- ☐ Subject Matter Expert
- ☐ Project/Team Lead
- ☐ Team Manager
- ☐ Director/Program Manager

Number of direct reports in your organization. (Please enter a whole number) (*required) ☐

Organizational Communication

The following statements are used to assess your overall opinion on the effect of organizational design on communication with regard to support or creation of tools, processes, and application of management information systems (MIS).

Please select the level to which you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Organizational design architecture has a direct effect on speed and quality of communication. (*required)	☐	☐	☐	☐	☐
2. MIS tools, processes, and groups provide the common foundation for communication within an	☐	☐	☐	☐	☐

organization. (*required)					
3. Horizontal boundaries in organizations are difficult to overcome. (*required)	☐	☐	☐	☐	☐
4. Vertical boundaries in organizations are difficult to overcome. (*required)	☐	☐	☐	☐	☐
5. Lack of clearly defined responsibility, accountability, and authority has a direct effect on communication within an organization. (*required)	☐	☐	☐	☐	☐

General Observations and Comments

What additional factors contribute to the capability of an organization to effectively communication through the use of MIS tools, processes, and sub-groups? Include any additional comments or recommendations you would like to share. (*required)

Thank you for your participation in Round 1 of the study. Tim Lewis will be in contact with you to complete the subsequent rounds.

Referrals

Tim Lewis is hoping to collect a minimum of 20 participants for this study. If you have a colleague who has experience or interest in organizational design please provide their name and contact number in the box below.

Appendix G: Delphi Participant Solicitation Email

Good afternoon,

First of all my apologies for the informal email, but I wanted to give you an opportunity to read my request at you leisure rather than capturing you on the phone or cornering you in the hall.

Overview

I recently received final approval by *<Company>* to conduct a survey required for my degree. I am writing to request your support as an anonymous member in a small group completing a three-round survey. Based on my experience working with you directly or recommendations from your peers, you possess the experience and knowledge to provide the expert insight needed on the subject.

Detail

I am working on a graduate degree and part of my graduation requirement requires that I conduct a study and write a paper on the results. My study is titled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study. I have chosen a Delphi Method developed by the Rand Corporation to complete my study because the method uses an anonymous panel of experts to assess a topic to reach a conclusion. I have attached the introduction to the paper that gives an overall representation of the purpose of the study.

The survey has been authorized by *<Company Division Vice President>* (*see attached*), and the *<Company>* Survey Team in accordance with Rules for Surveying *<Company>* Employees. You may use *<Company>* property to participate, however you must perform the task on your personal time and not charge any direct or indirect labor associated with survey participation. Total time to complete the survey and provide recommendations should be no more than one hour for each of the three rounds *(there are only 10 demographic questions, 5 multiple choice questions, and 1 open-ended question; the time will vary depending on how much detail you wish to provide in the final open-ended question)*. At no time will your name be disclosed as a participant in the study.

Request

If you are interested in participating in the study, or know someone else who may be, please let me know, and I will send you the survey link.

Thank you for your time and consideration,

Tim
Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

Appendix H: Round 1 Email Notification

Thank you again for volunteering to participate in the survey. The first round will be basic questions to ensure a common understanding and to level-set the discussion for the two follow-on rounds.

There are two sections to the first survey. Total time to complete is less than 1 hour. I hope to have all responses by November 19th to begin analysis and preparation for the subsequent two rounds.

A. Informed Consent: The link to the Informed Consent is a form to apprise you of your rights for participation. This is a *<Company>* and academic mandate that requires your name. Clicking submit is your digital signature and upon clicking Send you will be given the link to the Round 1 Survey.
Link to Informed Consent and Survey:
<Link>

B. Round 1: After completing the Informed Consent, you will have a link to the actual survey that will ask demographic information and your views on organizational communication efficiency. Your unique identifier is used on the actual survey in place of your name. The method is used to ensure protection of your Personally Identifiable Information (PII) and maintain the level of confidentiality for the study.
Your Unique Identifier: XX,XXX
The same identifier will be used for all 3 rounds and is important to maintain data integrity. If you lose or forget your identifier, please let me know and I will resend.

Note: Please do not provide your unique identifier or survey links to other persons. This will ensure confidentiality of your information and integrity of the survey inputs. If another person would like to participate, please send me their name and I will email a separate invitation with their own unique identifier.

If you have any questions about partaking in the survey, please do not hesitate to call or write.

Tim
Timothy M. Lewis, Office: xxx-xxx-xxxx | Cell: xxx-xxx-xxxx

Additional Information

I am working on a graduate degree and part of my graduation requirement requires that I conduct a study and write a paper on the results. My study is titled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study. I have chosen a Delphi Method developed by the Rand Corporation to complete my study because the method uses an anonymous panel of experts to assess a topic to reach a conclusion. I have attached the introduction to the paper that gives an overall representation of the purpose of the study.

The survey has been authorized by *<Company Division Vice President>* (see attached), and the *<Company>* Survey Team in accordance with Rules for Surveying *<Company>* Employees. You may use *<Company>* property to participate, however you must perform the task on your personal time and not charge any direct or indirect labor associated with survey participation. Total time to complete the survey and provide recommendations should be no more than one hour for each of the three rounds *(there are only 10 demographic questions, 5 multiple choice*

questions, and 1 open-ended question; the time will vary depending on how much detail you wish to provide in the final open-ended question). At no time will your name be disclosed as a participant in the study.

If you know someone else who may be interested, please let me know and I will send them the survey link and their unique identifier.

Frequently Asked Questions

Q: Why does the survey require I put in my name?
A: Due to the type of study, legally I have to be certain that each person signs the informed consent as a separate document and to ensure each person participates in all three rounds to include their input in the final analysis.

Q: Why do I have to use a unique numeric identifier?
A: The number is used so your responses and your name are not on the same survey to ensure protection of your Personally Identifiable Information (PII).

Q: How do I know my data is protected?
A: Your information is stored on the <*Company*> Survey Tool and access to the data is protected by the <*Company*> Survey Team. At no time will the information you provide be stored with your name, instead a unique numeric identifier will be used to track your participation.

Q: How do I know my information is safe?
A: Per <*Company*> guidelines, I am using the corporate survey tool to protect the data. Via <*secured user authentication*>, I am the only person who has access to the responses. When I download your inputs from the survey tool, they will have a unique identifier to keep your responses confidential. Following completion of the survey (and the academic three year waiting period) I will delete the survey and subsequently your information (the back-up of the data will be wiped 30-days later though normal system maintenance). My process for protecting the PII has been reviewed and approved by <*Company*> Global Diversity and Employee Rights and Global Data Privacy Office.

Q: will other people see my responses, and/or will my name go in the final paper?
A: No. At no time will your name be shared with any person. Your unique identifier in the final paper will also be replaced with a random number (I.e. Respondent 1, Respondent 2, etc) to further ensure identify protection.

Q: Why does the survey ask questions about my years of service, age, etc?
A: The demographics are for analysis purposes to see if responses to questions are common among various ages, position in the company, military experience, etc. For example, the results may show the physical organization is efficient and the potential may be addressed within our diversity.

Q: is there a charge number to support the survey?

A: No. <*Company*> has agreed to allow reasonable use of <*Company*> tools and services to conduct the survey (email, phones, websites, etc) but the time to complete the activities is purely voluntary on your own time.

Q: Can I preview the survey before I choose to participate?
A: No. Academic mandate requires you to complete an Informed Consent prior to viewing and taking the survey. Once you complete the informed consent and view the survey, you may choose at that time (or any time) to remove yourself from participation.

Q: Can I discuss the survey with other people?
A: The intent of the Delphi method is to obtain individual viewpoints. Discussing the survey openly with others would skew the integrity of the information provided.

Q: What if I change my mind or personal obligations prevent me from completing all 3 rounds?
A: Notify the researcher, Tim Lewis. There will be no penalty and your responses (if any) will not be used in the final study.

Q: Who else is participating in the survey?
A: The names of participants are confidential. The most that can be said is that they represent individuals ranging from subject matter experts to program directors from organizations in the St. Louis and Huntsville Metropolitan areas.

Q: What if I have different interpretation of the questions or my organization interprets the meaning differently?
A: Either call the researcher Tim Lewis to discuss, or add these comments and observations in the open-ended question at the bottom of the survey.

Appendix I: Round 1 Follow-Up Email

Good morning <name>,

Thank you again for volunteering to participate in the survey for my degree project. I know too well how emails can get lost in the stack, so I just wanted to follow up with you. My hope is for all inputs by Friday (Nov 19th) so I can use the weekend to complete my analysis and create the questions for Round 2. If you have not already, please take a few moments *(should be about 15 minutes)* to complete the survey. Do not hesitate to call or write if you have any questions, need the survey link, or your unique identifier.

Thank you very much!

Tim
Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

Appendix J: Round 2 Email Notification

The results are in and tallied for continuation to Round 2. Thank you again for taking the time to support my survey.

My hope is to have all three rounds completed before the holiday break.
Round 2 Participant Input: Nov 22 – Dec 3
Round 2 Analysis: Dec 3 - 6
Round 3 Participant Input: Dec 6 – 17

To help this goal, I have designed Round 2 to take approximately 15 minutes to complete; both in reading and responding.

Step 1: Review summary document
Attached is a 2 page summary of my analysis for Round 1 (*summary.docx*). Please take a moment to read the Summary document before starting Round 2.
(I have attached a draft of my full analysis of Round 1 including the comprehensive results. You are welcome to review, but it is not required.)

Step 2: Link to Round 2 Survey
<Link>
Note. In the interest of saving you time, your Informed Consent applies to all 3 rounds and I will reuse your demographics from Round 1.

Step 3: Your Unique Identifier: XX,XXX

Step 4: Complete and submit survey

Note: Please do not provide your unique identifier or survey links to other persons. This will ensure confidentiality of your information and integrity of the survey inputs. The study is now closed to additional participants.

If you have any questions about the survey, please do not hesitate to call or write.

Tim
Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

The following information is a repeat from Round 1 to have for reference.

Note: Please do not provide your unique identifier or survey links to other persons. This will ensure confidentiality of your information and integrity of the survey inputs. The study is now closed to additional participants.

In the interest of saving you time, your Informed Consent applies to all 3 rounds and I will reuse your demographics from Round 1.

Previously Signed Informed Consent
Dear Prospective Delphi Study Participant,

My name is Timothy M. Lewis and I am a student at the University of Phoenix working on a doctorate degree. I am conducting a study entitled ORGANIZATIONAL

STRUCTURE EFFECT ON COMMUNICATION EFFICIENCY FOR MANAGEMENT INFORMATION SYSTEM SUPPORTED ORGANIZATIONS: A DELPHI STUDY. The purpose of the study is to ascertain the viewpoints of the participants as they relate to organizational communication effectiveness as a function of physical design of organizational structures.

Your participation will involve response to three rounds of an online survey spaced over several months. The survey will be composed of rating several questions and an open response question to collect your views on the topic. Total time anticipated for review and response of each round is less than one hour (three hours total for all three rounds). Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to yourself. The results of the study may be published but your identity will remain confidential and your name will not be disclosed to any outside party.

In this research, there are no foreseeable risks to you for participating. Although there may be no direct benefit to you, a possible benefit of your participation is sharing information that may guide future considerations to communication management and organizational design paradigms. If you have any questions concerning the study, please call me at *xxx-xxx-xxxx* or timothy.m.lewis@<*Company*>.com.

As a participant in this study, you should understand the following:
1. You may decline to participate or withdraw from participation at any time without consequences. Send an email to researcher indicating your desire to withdraw by stating, "Please remove me from participation of the study."
2. Your identity will be kept confidential.
3. Timothy M. Lewis, the researcher, has thoroughly explained the parameters of the study and all of your questions and concerns have been addressed.
4. The researcher will structure a coding process to assure that anonymity of your name is protected for the open response question.
5. Data will be stored in a secure and locked area. The data will be held for a period of three years, and then destroyed.
6. The anonymous research results will be used for publication and presentation.

You understood the above statements and gave consent for your information to be used in the study.

Additional Information

I am working on a graduate degree and part of my graduation requirement requires that I conduct a study and write a paper on the results. My study is titled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study. I have chosen a Delphi Method developed by the Rand Corporation to complete my study because the method uses an anonymous panel of experts to assess a topic to reach a conclusion. I have attached the introduction to the paper that gives an overall representation of the purpose of the study.

The survey has been authorized by *<Company Division Vice President>* (see attached), and the *<Company>* Survey Team in accordance with Rules for Surveying *<Company>* Employees. You may use *<Company>* property to participate, however you must perform the task on your personal time and not charge any direct or indirect labor associated with survey participation. Total time to complete the survey and provide recommendations should be no more than one hour for each of the three rounds *(there are only 10 demographic questions, 5 multiple choice questions, and 1 open-ended question; the time will vary depending on how much detail you wish to provide in the final open-ended question)*. At no time will your name be disclosed as a participant in the study.

Frequently Asked Questions

Q: Why does the survey require I put in my name?
A: Due to the type of study, legally I have to be certain that each person signs the informed consent as a separate document and to ensure each person participates in all three rounds to include their input in the final analysis.

Q: Why do I have to use a unique numeric identifier?
A: The number is used so your responses and your name are not on the same survey to ensure protection of your Personally Identifiable Information (PII).

Q: How do I know my data is protected?
A: Your information is stored on the <*Company*> Survey Tool and access to the data is protected by the <*Company*> Survey Team. At no time will the information you provide be stored with your name, instead a unique numeric identifier will be used to track your participation.

Q: How do I know my information is safe?
A: Per <*Company*> guidelines, I am using the corporate survey tool to protect the data. Via <*secured user authentication*>, I am the only person who has access to the responses. When I download your inputs from the survey tool, they will have a unique identifier to keep your responses confidential. Following completion of the survey (and the academic three year waiting period) I will delete the survey and subsequently your information (the back-up of the data will be wiped 30-days later though normal system maintenance). My process for protecting the PII has been reviewed and approved by <*Company*> Global Diversity and Employee Rights and Global Data Privacy Office.

Q: will other people see my responses, and/or will my name go in the final paper?
A: No. At no time will your name be shared with any person. Your unique identifier in the final paper will also be replaced with a random number (I.e. Respondent 1, Respondent 2, etc) to further ensure identify protection.

Q: Why does the survey ask questions about my years of service, age, etc?
A: The demographics are for analysis purposes to see if responses to questions are common among various ages, position in the company, military experience, etc. For example, the results may show the physical organization is efficient and the potential may be addressed within our diversity.

Q: is there a charge number to support the survey?
A: No. <*Company*> has agreed to allow reasonable use of <*Company*> tools and services to conduct the survey (email, phones, websites, etc) but the time to complete the activities is purely voluntary on your own time.

Q: Can I preview the survey before I choose to participate?
A: No. Academic mandate requires you to complete an Informed Consent prior to viewing and taking the survey. Once you complete the informed consent and view the survey, you may choose at that time (or any time) to remove yourself from participation.

Q: Can I discuss the survey with other people?
A: The intent of the Delphi method is to obtain individual viewpoints. Discussing the survey openly with others would skew the integrity of the information provided.

Q: What if I change my mind or personal obligations prevent me from completing all 3 rounds?
A: Notify the researcher, Tim Lewis. There will be no penalty and your responses (if any) will not be used in the final study.

Q: Who else is participating in the survey?
A: The names of participants are confidential. The most that can be said is that they represent individuals ranging from subject matter experts to program directors from organizations in the St. Louis and Huntsville Metropolitan areas.

Q: What if I have different interpretation of the questions or my organization interprets the meaning differently?
A: Either call the researcher Tim Lewis to discuss, or add these comments and observations in the open-ended question at the bottom of the survey.

Appendix K: Round 2 Follow-Up Email

Good evening everyone,

With the holiday and vacations, I received a few requests for some extra days to complete the survey, so I have extended the desired date for everyone by a week to December 10th. When you have some time, use the link below to access the survey:

<Link>

Please let me know if you need a copy of your Unique Identifier sent to you, and thank you again very much for taking the time to participate.

Tim

Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

Appendix L: Round 3 Email Notification

Welcome to Round 3, the final round!
I have done the initial analysis on the responses from Round 2 (*summary attached for reference*).

The last round is 4 multiple-choice statements and should take approximately 5 minutes to complete. No required essay questions!

My hope is to have all responses by December 23rd so I can use the holiday break to begin work on the final dissertation.

Link to Round 3 Survey
<Link>
Your Unique Identifier: XX,XXX

I cannot begin to tell you how much I appreciate your help with the study. If you have any questions about the survey, please do not hesitate to call or write.

Tim
Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

The following information is a repeat from Round 1 to have for reference.

Note: Please do not provide your unique identifier or survey links to other persons. This will ensure confidentiality of your information and integrity of the survey inputs. The study is now closed to additional participants.

In the interest of saving you time, your Informed Consent applies to all 3 rounds and I will reuse your demographics from Round 1.

Previously Signed Informed Consent
Dear Prospective Delphi Study Participant,

My name is Timothy M. Lewis and I am a student at the University of Phoenix working on a doctorate degree. I am conducting a study entitled ORGANIZATIONAL STRUCTURE EFFECT ON COMMUNICATION EFFICIENCY FOR MANAGEMENT INFORMATION SYSTEM SUPPORTED ORGANIZATIONS: A DELPHI STUDY. The purpose of the study is to ascertain the viewpoints of the participants as they relate to organizational communication effectiveness as a function of physical design of organizational structures.

Your participation will involve response to three rounds of an online survey spaced over several months. The survey will be composed of rating several questions and an open response question to collect your views on the topic. Total time anticipated for review and response of each round is less than one hour (three hours total for all three rounds). Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, you can do so without penalty or loss of benefit to

yourself. The results of the study may be published but your identity will remain confidential and your name will not be disclosed to any outside party.

In this research, there are no foreseeable risks to you for participating. Although there may be no direct benefit to you, a possible benefit of your participation is sharing information that may guide future considerations to communication management and organizational design paradigms. If you have any questions concerning the study, please call me at *xxx-xxx-xxxx* or timothy.m.lewis@<*Company*>.com.

As a participant in this study, you should understand the following:
1. You may decline to participate or withdraw from participation at any time without consequences. Send an email to researcher indicating your desire to withdraw by stating, "Please remove me from participation of the study."
2. Your identity will be kept confidential.
3. Timothy M. Lewis, the researcher, has thoroughly explained the parameters of the study and all of your questions and concerns have been addressed.
4. The researcher will structure a coding process to assure that anonymity of your name is protected for the open response question.
5. Data will be stored in a secure and locked area. The data will be held for a period of three years, and then destroyed.
6. The anonymous research results will be used for publication and presentation.

You understood the above statements and gave consent for your information to be used in the study.

Additional Information

I am working on a graduate degree and part of my graduation requirement requires that I conduct a study and write a paper on the results. My study is titled Organizational Structure Effect on Communication Efficiency for Management Information System Supported Organizations: A Delphi Study. I have chosen a Delphi Method developed by the Rand Corporation to complete my study because the method uses an anonymous panel of experts to assess a topic to reach a conclusion. I have attached the introduction to the paper that gives an overall representation of the purpose of the study.

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Frequently Asked Questions

Q: Why does the survey require I put in my name?

A: Due to the type of study, legally I have to be certain that each person signs the informed consent as a separate document and to ensure each person participates in all three rounds to include their input in the final analysis.

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A: The number is used so your responses and your name are not on the same survey to ensure protection of your Personally Identifiable Information (PII).

Q: How do I know my data is protected?
A: Your information is stored on the <*Company*> Survey Tool and access to the data is protected by the <*Company*> Survey Team. At no time will the information you provide be stored with your name, instead a unique numeric identifier will be used to track your participation.

Q: How do I know my information is safe?
A: Per <*Company*> guidelines, I am using the corporate survey tool to protect the data. Via <*secured user authentication*>, I am the only person who has access to the responses. When I download your inputs from the survey tool, they will have a unique identifier to keep your responses confidential. Following completion of the survey (and the academic three year waiting period) I will delete the survey and subsequently your information (the back-up of the data will be wiped 30-days later though normal system maintenance). My process for protecting the PII has been reviewed and approved by <*Company*> Global Diversity and Employee Rights and Global Data Privacy Office.

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Q: Can I discuss the survey with other people?

A: The intent of the Delphi method is to obtain individual viewpoints. Discussing the survey openly with others would skew the integrity of the information provided.

Q: What if I change my mind or personal obligations prevent me from completing all 3 rounds?
A: Notify the researcher, Tim Lewis. There will be no penalty and your responses (if any) will not be used in the final study.

Q: Who else is participating in the survey?
A: The names of participants are confidential. The most that can be said is that they represent individuals ranging from subject matter experts to program directors from organizations in the St. Louis and Huntsville Metropolitan areas.

Q: What if I have different interpretation of the questions or my organization interprets the meaning differently?
A: Either call the researcher Tim Lewis to discuss, or add these comments and observations in the open-ended question at the bottom of the survey.

Appendix M: Round 3 Follow-Up Email

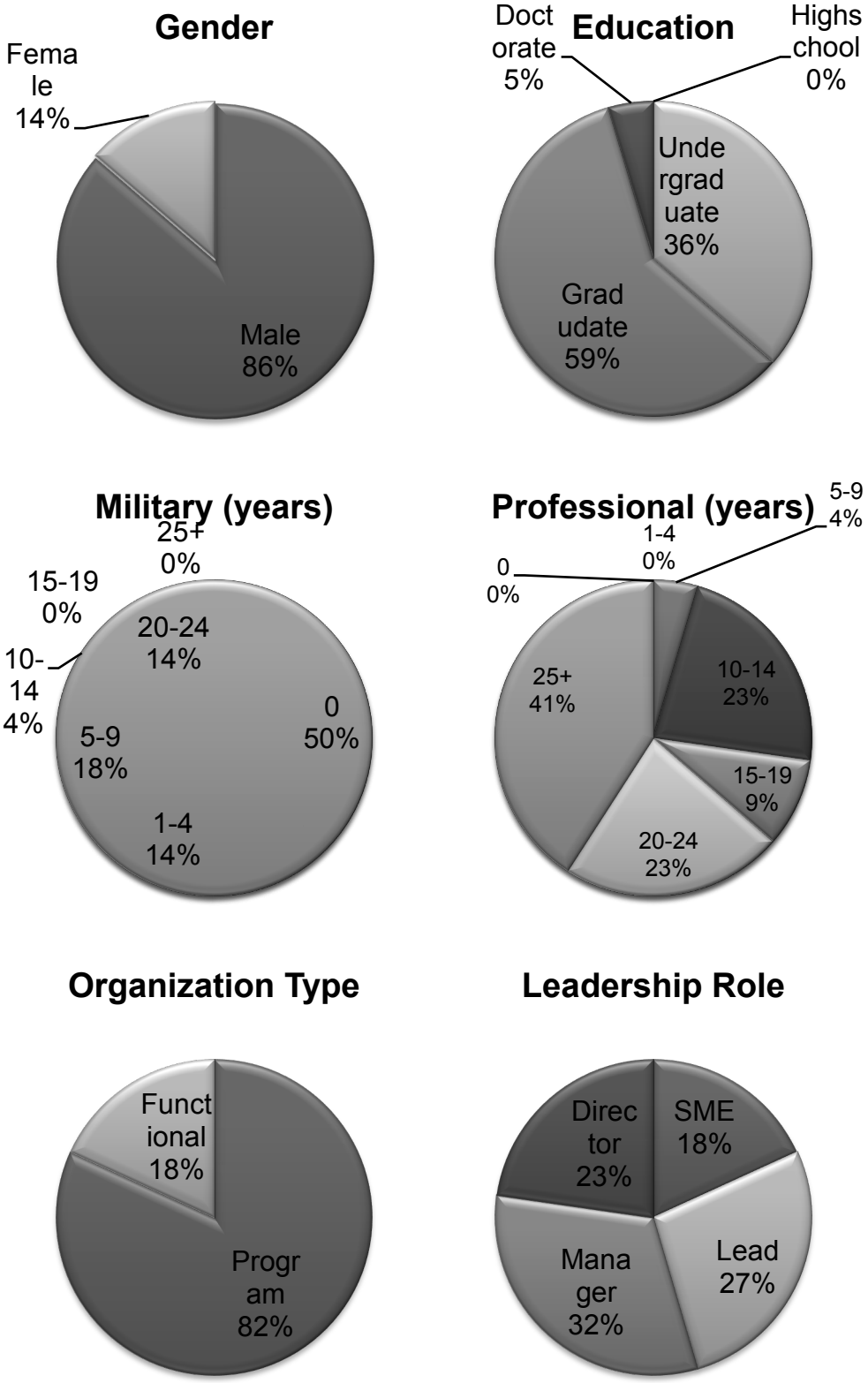
<Name>,

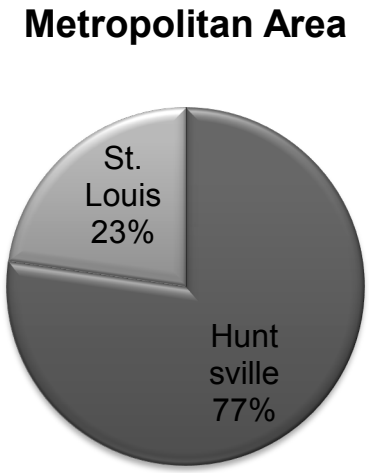
I know I did not request this until tomorrow, but I am trying to catch people before they leave for the holiday. If you are still interested in participating and have a few minutes I put the link to the survey below. I am hoping the final round will address the concerns you mentioned in Round 2.

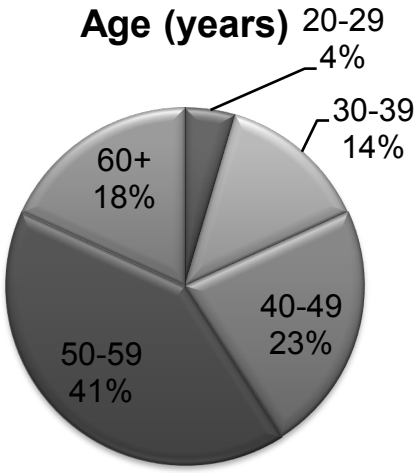
Link to Round 3 Survey
<Link>
Your Unique Identifier: XX,XXX

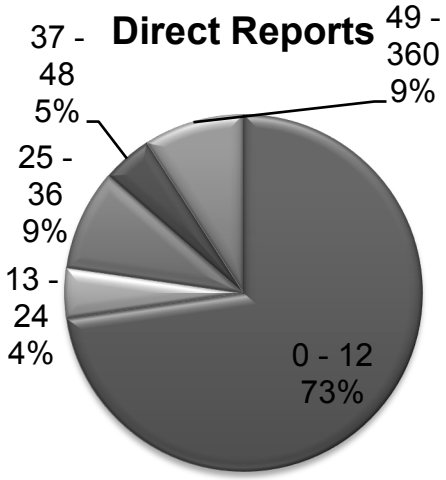
Tim
Timothy M. Lewis, Office: xxx.xxx.xxxx | Cell: xxx.xxx.xxxx

Appendix N: Demographics




Metropolitan Area
St. Louis 23%
Hunt sville 77%


Age (years)
20-29 4%
30-39 14%
40-49 23%
50-59 41%
60+ 18%


Direct Reports
0 - 12 73%
13 - 24 4%
25 - 36 9%
37 - 48 5%
49 - 360 9%

Appendix O: Round 1 Raw Data

5-Point-Likert-Type Question Responses

SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

Respondent	Likert 1	Likert 2	Likert 3	Likert 4	Likert 5
Resp1	SA	N	N	N	SA
Resp2	SA	A	A	SA	A
Resp3	A	A	A	SA	SA
Resp4	A	SA	D	D	SA
Resp5	SA	A	A	A	SA
Resp6	A	A	N	N	SA
Resp7	A	A	D	A	SA
Resp8	SA	A	SD	D	SA
Resp9	A	A	D	D	A
Resp10	SA	A	N	N	SA
Resp11	A	A	D	SA	SA
Resp12	A	A	N	A	A
Resp13	SA	N	D	A	A
Resp14	SA	A	SA	A	SA
Resp15	A	A	N	N	SA
Resp16	SA	SA	A	A	SA
Resp17	A	N	A	SA	SA
Resp18	SA	D	A	D	SA
Resp19	A	A	SA	A	A
Resp20	SA	A	D	D	SA
Resp21	SA	N	A	D	SA
Resp22	SA	D	A	N	A

Open-Ended Question Themes

Theme 1	Theme 2	Theme 3
Open Culture	Commonality/Resistance to Change	Required Proper Use of Effective MIS Tools.

Appendix P: Round 2 Raw Data

5-Point-Likert-Type Question Responses

SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree.

Respondent	Likert 1	Likert 2	Likert 3	Likert 4	Likert 5
Resp1	A	A	A	A	N
~~**Resp2**~~					
Resp3	SA	SA	N	D	A
~~**Resp4**~~					
Resp5	A	A	SA	SA	N
~~**Resp6**~~					
~~**Resp7**~~					
Resp8	N	A	A	A	A
Resp9	A	SA	A	A	A
Resp10	N	A	A	A	A
Resp11	A	SA	SA	SA	A
Resp12	A	A	A	A	A
Resp13	A	N	N	N	N
Resp14	A	A	A	N	D
Resp15	A	A	A	N	A
Resp16	D	A	A	SA	SA
Resp17	A	SA	N	N	A
Resp18	A	D	D	D	SD
Resp19	A	A	A	A	A
Resp20	A	A	SA	SA	A
~~**Resp21**~~					
Resp22	N	A	N	N	N

Observations and Comments Themes

Question	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5
Common Theme	Individuals given RAA to use MIS	Leadership setting the standard	Clear Communication Plan	Organizational Support	Collaboration of Tools and People with a Common MIS
Sub-Themes Question A	RAA to use tools 53%	Leader/Manager support to reinforce 35%		Integration of functional and program 18%	Collaboration 24%
Sub-Themes Question B	RAA to use tools 41%		Comm Plan 18%		Collaboration of Tools a People 41%
Sub-Themes Question C	RAA across groups 53%		Comm Plan 6%		Collaboration of Tools and People 29%
Sub-Themes Question D		Lead by Example 53%		Obtrain Organization Support 47%	
Sub-Themes Question E			Program Plan 76%		
Average	49%	44%	33%	32%	31%

Appendix Q: Round 2 Survey Instrument

Please read the Round 1 Summary (attached to your invitation email) before beginning Round 2.

The survey begins below. The following are definitions and details to refer back to as you complete the survey.

- *Functional Organization*: Organizations designed around dependence on the specialized skills of the employees and structured around the skills. Used primarily for core activities and skills to support product organizations.
- *Information Technology (IT)*: Digitally based tools designed to assist in the management of workflow, communication, and decisions within an organization to improve performance capabilities.
- *Horizontal Boundaries*: Implied lines across an organizational chart denoting separation between layers of leadership
- *Management Information Systems (MIS)*: A system used to provide management with needed information on a regular basis. For the purpose of the study, the system definition is expanded to include groups, tools, and individuals who create or support program reporting, health metrics, decision-making, data mining analysis, and prognostic analysis for performance based management. (e.g. *<company tools>*, etc)
- *Organization*: A system of roles and stream of activities designed to accomplish shared purposes. In the study, the term will be repeatedly used to describe groups within a company and not limited to the single organization for the entire company. For example, a CEO has an organization; his VP has an organization, and continues to the lowest grouped team in the company.
- *Organizational Design*: The theory behind development of an organization so that the organization can create, accumulate, integrated and disseminate, and hence manage the resources within the organization . The term is used repeatedly through the study to describe to the initial stages of creation of the organization, or planning stage.
- *Organizational Structure*: The physical layout of an organization is the action to denote horizontal and vertical lines of reporting to express the linkages of communication within an organization. The term is used repeatedly through the study to describe the final product of the organizational design, or implementation stage.
- *Product Organization*: Organizations with a defined contractual deliverable(s) and generally derive funding from a customer.
- *Responsibility, Accountability & Authority (RAA)*: The three major interrelated components that imbue an individual with the capability to complete a task, and often used when delegating assignment to give individuals or a group autonomy to complete the assignment.
- *Vertical Boundaries*: Implied lines between organizational groups or integrated product teams

The Unique Identifier was provided to you in an eMail from Tim Lewis. If you did not receive an identifier or need the email resent, please send a request to timothy.m.lewis@*<Company>*.com.

Unique Identifier (*required) 

Organizational Communication

The following statements are used to assess your opinion on the effect of organizational design

on communication with regard to support or creation of tools, process, and management of management information system (MIS). Please select the level to which you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. For MIS Teams driving change, the vertical boundaries between groups impede adoption of best/common practices. (*required)	☐	☐	☐	☐	☐
2. Vertical boundaries between dissimilar groups (engineering vs technician, vs management, etc) create communication challenges and is compounded when not using the same MIS tools. (*required)	☐	☐	☐	☐	☐
3. Horizontal boundaries can be overcome or improved by establishing single/common MIS tools at all levels of the organization. (*required)	☐	☐	☐	☐	☐
4. Horizontal boundaries can be overcome by MIS services that are common across all teams within the organization. (*required)	☐	☐	☐	☐	☐
5. To encourage an open culture of communication, mandating use of common and efficient MIS solutions is necessary for effective communication. (*required)	☐	☐	☐	☐	☐

General Observations and Comments

A. How would you address the organizational design to ensure integration of MIS throughout an organization to support communication? (*required)

B. What organizational design might exist within a traditional bureaucratic structure to provide the horizontal communication necessary for MIS effectiveness? (*required)

C. How can leaders manage RAA for MIS Teams across vertical and horizontal barriers in multiple organizational structures? (*required)

D. How can a highly structured organization change to new theories of structural design to promote effectiveness of groups supporting MIS? (*required)

E. How can cross-functional teams at the lower levels of an organization be effective to have the RAA to drive MIS tools, processes and procedures horizontally across the organization at the user-level in order to drive those changes from the bottom-up of the organization? (*required)

Thank you for taking the time to complete Round 2. Tim Lewis will be in touch with the analysis and instructions for completing the final round.

Appendix R: Round 3 Survey Instrument

The following questions represent a culmination of the participant`s inputs from Rounds 1 and 2. The intent is the statements will address the variables and concerns presented in previous rounds to provide an answer to the research questions.

The survey begins below. The following are definitions and details to refer back to as you complete the survey.

- *Functional Organization*: Organizations designed around dependence on the specialized skills of the employees and structured around the skills. Used primarily for core activities and skills to support product organizations.
- *Information Technology (IT)*: Digitally based tools designed to assist in the management of workflow, communication, and decisions within an organization to improve performance capabilities.
- *Horizontal Boundaries*: Implied lines across an organizational chart denoting separation between layers of leadership
- *Management Information Systems (MIS)*: A system used to provide management with needed information on a regular basis. For the purpose of the study, the system definition is expanded to include groups, tools, and individuals who create or support program reporting, health metrics, decision-making, data mining analysis, and prognostic analysis for performance based management. (e.g. *<company tools>*, etc)
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- *Product Organization*: Organizations with a defined contractual deliverable(s) and generally derive funding from a customer.
- *Responsibility, Accountability & Authority (RAA)*: The three major interrelated components that imbue an individual with the capability to complete a task, and often used when delegating assignment to give individuals or a group autonomy to complete the assignment.
- *Vertical Boundaries*: Implied lines between organizational groups or integrated product teams

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Unique Identifier (*required) 

Research Question 1: How does leadership currently address the organizational design integration requirements of MIS throughout an organization to support communication?

1. **Program and functional leadership must jointly support a single MIS Team to design a cross-integrated MIS to meet the needs of the organization by establishing clear accountability through a program plan to integrate the tools at all levels of the organization. (*required)**

   ☐ Strongly Disagree

   ☐ Disagree

   ☐ Neither Agree nor Disagree

   ☐ Agree

   ☐ Strongly Agree

Research Question 2: What organizational design might be more beneficial to exist within a traditional bureaucratic structure but provide the horizontal communication necessary for MIS effectiveness?

2. **A centralized MIS team is needed to facilitate a closed-loop plan of tools, services, and people coordinated with leadership and the RAA to collaborate with users at the working level to integrate solutions horizontally and vertically throughout the organization. (*required)**

   ☐ Strongly Disagree

   ☐ Disagree

   ☐ Neither Agree nor Disagree

   ☐ Agree

   ☐ Strongly Agree

Research Question 3: How can leaders manage effectively and efficiently the communication of responsibility, accountability, and authority (RAA) for MIS across multiple organizational structures?

3. **Leadership from the highest levels to the working levels must support the MIS Team's mission as the single authority to implement the integrated solution plan to support all levels of the organization. (*required)**

   ☐ Strongly Disagree

   ☐ Disagree

   ☐ Neither Agree nor Disagree

   ☐ Agree

   ☐ Strongly Agree

Research Question 4: How can a highly structured and formalized postmodern organization adapt to new theories of structural design to promote communication in groups supporting MIS?

4. **MIS Teams need to demonstrate success and benefit of solutions through actual test cases within the organization that are actively adopted by leadership to set the example and thereby obtain willing support of all individuals throughout the organization. (*required)**

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neither Agree nor Disagree
- ☐ Agree
- ☐ Strongly Agree

<Optional> If you answered "Neither Agree nor Disagree" to any of the statements above, please provide your reasoning. Also if you wish, share any additional thoughts about your responses.

Thank You

I would like to extend you my deepest appreciation for supporting me through all of the rounds. Your views and experience will add tremendous value to the final body of work. If you would like to be kept informed about the survey results or see the final paper, please select any of the following two statements. - Tim Lewis

Select the Yes radial button if you would like to receive a copy of the final results and analysis of Round 3.

- ☐ Yes, send a copy.

Select the Yes radial button if you would like to receive a copy of the final dissertation.

- ☐ Yes, send a copy.

Appendix S: Round 3 Raw Data

5-Point-Likert-Type Question Responses
SD = Strongly Disagree, D = Disagree, N = Neither Agree nor Disagree, A = Agree, SA = Strongly Agree

Respondent	Likert 1	Likert 2	Likert 3	Likert 4
~~Resp1~~				
~~Resp2~~				
Resp3	A	N	SA	A
~~Resp4~~				
Resp5	A	SA	A	SA
~~Resp6~~				
~~Resp7~~				
Resp8	SA	A	SA	SA
Resp9	A	A	A	A
Resp10	SA	A	SA	A
Resp11	A	A	SA	A
Resp12	N	SA	A	A
Resp13	A	A	A	SA
Resp14	A	SA	SA	A
Resp15	A	A	N	A
Resp16	SA	SA	SA	SA
Resp17	SA	SA	SA	SA
Resp18	A	D	SD	A
Resp19	SA	SA	A	A
Resp20	A	A	A	SA
~~Resp21~~				
~~Resp22~~				

Summarized Comments (Optional)

Centralized MIS teams are good to create commonality for both enterprise solutions and program unique solutions, but require periodic assessment to ensure the tools provided will continue to be the best support capability meeting the needs of the organization.

There is no “one size fits all” solution and the MIS must be adaptive to support the specific needs of the organization and predominately support the end-user for the solutions.