IDENTIFICATION OF REMOTE LEADERSHIP PATTERNS IN ACADEMIC AND PUBLIC LIBRARIES

Mary Jo Venetis, B.S., M.L.S.

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APPROVED:

Brian C. O'Connor, Major Professor
Julie Beth Todaro, Committee Member
Philip M. Turner, Committee Member
Herman L. Totten, Dean of the School of Library and Information Sciences
Sandra L. Terrell, Dean of the Robert B. Toulouse School of Graduate Studies

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Seminal works on leadership, including those in librarianship define a traditional model of interaction between leaders and followers without reference to the information technology-driven environment. In addition, remote leadership indicates a different model from the traditional model, one that is focused on the interaction of leaders and their staff through digital technology. Although leaders still use face-to-face interaction, due to varied work schedules or job responsibilities, they also recognize the need to lead employees remotely.

Leadership studies in library literature have not addressed how library leaders use information technology to lead employees remotely, nor have these studies addressed remote leadership and remote employees, except for some articles on telecommuting. As a result, this research was conducted to address this gap, providing an exploratory foundation of emergent patterns of remote leadership with its associated leadership dimensions rooted in personality traits, behaviors, and skills.

Quantitative and qualitative data were obtained from a small sample size of academic and public-library leaders in the United States who participated in a Web-based survey designed specifically for this study, limiting generalizations. Factor analysis was the principal methodology used to obtain findings. Its composite factor scores were also used in the *t*-test and chi-square analyses.

This study identifies some emergent patterns of remote leadership in the library and information-science field, exploring whether library leaders use information

technology to be effective remote leaders in a technology-driven environment, and whether existing leadership attributes could be identified as part of the remote-leadership model. Because this study's findings indicated that library leaders are not quite the traditional leader but are not fully integrated into remote leadership, it becomes apparent that they would function with a blend of both face-to-face and electronic interactions, due to the nature of library work. Additionally, this research revealed underlying issues and challenges faced by library leaders as they transition from a traditional-leadership model to a blended model of face-to-face and remote leadership. Future research could include increasing the sample size and response rate to conduct factor analysis properly, and conducting longitudinal studies.

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CHAPTER 1

INTRODUCTION

What do we know about library and information-science (LIS) practitioners and remote leadership? We know that libraries have remote employees housed in academic satellite campus libraries or public branch libraries. We also know that library employees work different shifts, overseeing the library's operations beyond the normal 8-hour workday. Some librarians use technological tools to lead employees remotely. In addition, we also know that librarians use technology to provide services. Librarians use the Internet, the World Wide Web, and databases containing content on a wide variety of subjects to locate and retrieve data for users. They also use e-mail and cell phones to exchange information, mobile media players and CDs to listen to music or narrated novels, and many other communication tools or information technologies for a variety of purposes. But we do not know how LIS practitioners are modifying their face-to-face (FTF) leadership skills by using available technology in leading remote employees.

Evans and Ward (2007) recently wrote a book chapter on virtual leadership in their publication on library leadership. They acknowledged that library systems with off-site branch operations have existed and functioned well without digital technology. Although libraries, unlike corporations, do not have off-site operations across the continent of North America, the authors did recognize that digital technology has made it necessary for librarians to modify some of their leadership skills in leading remote employees (Evans & Ward, p. 172).

The term *remote* refers to employees or team members who are either physically colocated in the same building but are separated by different work schedules or who are

geographically dispersed in various locales, such as branch libraries. Since the hours and locations are so diverse, librarians may have no choice but to manage and lead remotely using information technology.

This study is concerned less with the actual attributes of leadership than with the exploration of whether library leaders are using information technology to be effective remote leaders. I investigated how LIS leaders use and apply their FTF leadership skills to technology-driven environments present at their libraries. Since no clear distinction between FTF and remote leadership attributes exists in the LIS field, this study's goal was to gain a better understanding of how LIS leaders are leading their employees remotely.

Concept of Remote Leadership

Seminal works on leadership, including those in librarianship (Bennis & Nanus, 2003; Burns, 1978; Gardner, 1993; Hernon, Powell, & Young, 2003; Riggs, 1982; Sheldon, 1991; Zaleznik, 1977) define a traditional model of interaction between leaders and followers without reference to the Internet, the information technology-driven environment, or physical proximity. Burns defined "leadership as leaders inducing followers to act for certain goals that represent the values and the motivations—the wants and needs, the aspirations and expectations—of both leaders and followers" (p. 19). As Burns noted, leadership is an interactive process between leaders and followers striving to accomplish common goals. In these leadership studies, it is implied that the interaction between leaders and followers is conducted in person. Conversely, remote leadership suggests a different leadership model. Remote leadership focuses on the interaction between leaders and their team members through the use of various

information technologies in order to work together because these team members either are geographically located in other areas or may work in different time zones or shifts and may not see their leaders on a daily basis (Avolio & Kahai, 2003; Cascio & Shurygailo, 2003; Hart & McLeod, 2003; Zaccaro & Bader, 2003; Zigurs, 2003). Two common terms used in the literature to describe the technology-driven environment are *digital* or *virtual environment.*

Recent remote-leadership studies discuss the use of information technologies or communication tools, digital or virtual environments, the Internet and technology, and advances in technology. Researchers may use certain phrases in their studies, and these phrases include bricks and mortar to indicate a traditional business model and clicks and mortar to indicate an online business model. They may also add the letter “e,” signifying electronic, to traditional words, such as in the terms e-business or e-leadership. In the corporate world, remote leadership is sometimes referenced as e-leadership (Avolio, Kahai, & Dodge, 2000).

As indicated by the efforts of researchers and scholars who have explored, developed, and implemented strategies for leaders to be effective in leading remote employees, the traditional model of leadership may need to be altered because of the leaders’ use of information technology. These findings are not limited to the corporate world (Andrews, 2004; Burtha & Connaughton, 2004; Kayworth & Leidner, 2000; Kerber & Buono, 2004) but include other fields such as the military (Fair, Connaughton, & Daly, 2004; Marzano, 2006; Shamir & Ben-Ari, 1999); engineering (Jurrens, 2005); health care (Farmer, 2005), and sales (Maurer, 2006).

To further illustrate the concept of remote leadership, when Fiorina (2006) took over as the chief executive officer at Hewlett-Packard in 1999, she recalled asking how she could communicate with her employees worldwide. She wanted to ensure that her employees received the same information at the same time when data such as revenues or stock prices were released. She also wanted to use information technology to lead her employees by establishing a common framework of values and ideas, encouraging all employees to collaborate. With Fiorina at the helm, Hewlett-Packard developed a global communications system (Fiorina, pp. 204, 264), using e-mail, an intranet website, voice mail, and video conferencing to relay the same information to all employees globally simultaneously. Although Fiorina used these tools as part of her leadership by being constantly accessible and available, she did not lose sight of the most valuable component of leadership: interacting with her employees by building relationships and harnessing their strengths.

A 2007 Web-based article explained how leaders needed to recognize that they "are never out of reach" (CNN.com, 2007, para. 18) because of the availability of information technologies that enable them to "juggle e-mails, blogs, and integrity." As an indication of how people are tethered to information technologies, the Pew Internet and American Life Project released a March 2008 report, noting that "62% of all Americans are part of a wireless, mobile population that participates in digital activities away from home or work" (Horrigan, 2008, p. 1). Horrigan explained that 58% out of 2,054 surveyed U.S. Americans indicated that they would use their cell phones or personal data assistants to send or receive text messages (p. 2). Horrigan also reported that 64% of the respondents conducted online activities away from home or work (p. 3). While the

Pew researchers did not specify where the users conducted their online activities, they assumed that the activities took place at libraries and/or in hotel rooms (p. 3). Horrigan then provided statistical data that 41% of all Americans had the ability to connect to the Internet wirelessly (p. 3).

The symbiotic relationship of remote leadership and information technology raised the question of whether LIS practitioners have adapted their FTF leadership attributes in remote situations using available information technology. Further what is the role of remote leadership in librarianship, the corporate world, and the military world?

Personal Narrative

A brief personal narrative illustrated the importance of remote leadership in librarianship. I attended two library conferences in my second month of employment at the University of Texas at Dallas as an associate library director of technical services. The timing of the conferences coincided with a crucial development at the library. I was taking over the leadership of my department, and I was scheduled to be out of the office for almost 3 weeks. I did not want to put my efforts on hold in building teamwork among my department managers and fellow administrators, nor did I want to cease building my personal relationships with these colleagues. Furthermore, I did not want to stop the momentum of rebuilding the motivation and morale of my staff.

I parlayed my knowledge of available information technology and took steps to provide continued leadership even though I was 1,000 miles from the campus. My involvement with the reshaping of the technical-services department continued, though I was physically absent. In an effort to create an open and interactive dialogue during the

transition, I kept in touch with my colleagues through e-mail because staff members were not comfortable using instant messaging (IM). By keeping in touch, I solidified close relationships with my colleagues, which continue to this day. While I do not know whether my absence affected the reorganization process, comments from my colleagues and meeting the reorganization goals suggest that information technology kept me in the process. A quotation from “Today’s Leaders” (CNN.com, 2007) aptly summarizes my experiences with remote leadership:

> the best of this new breed of leaders—in business, politics, technology, health, and entertainment—have been able to adapt to the changes, evolving their styles to meet modern needs. . . . They’ve developed qualities and skills that guarantee results among their employees, constituents or customers. (CNN.com, 2007, para. 9)

In other words, regardless of technology, remote leaders still need to have the same quintessential attributes as traditional leaders—vision, integrity, and adaptability to change.

Concept of Information Technology

Information technology has greatly increased the types of communication made available in today’s world. Information technologies refer to an array of communication tools people use to convey messages to one another, such as the World Wide Web, e-mail messages, mobile cell phones or pagers, radios, videos/television, and fax machines. Casey and Savastinuk (2007), Farkas (2007), and Stephens (2006, 2007) provided a list of “Library 2.0” tools, such as blogging, community sharing in Web sites, IM, podcasting, online social networks, tagging and social bookmarking, and wikis. Avolio et al. (2000) added other communication tools, such as electronic list discussions or “message boards . . . [and] knowledge management systems” (p. 616) to the list of

tools. Avolio et al. (2000) noted that a tailored information-technological system provides a similar structure that enables people to share information. The information-technology system or knowledge-management system makes it possible to input, share, and transmit information. An institution's secure or restricted intranet Websites and library automated systems with its various components are examples of knowledge-management systems.

Information technology has minimized physical distances, including time-zone differences, in the world. For example, today breaking news is available 24 hours a day, 7 days a week, whether it originates from a particular locale, from countries across the ocean, or from outer space. Military leaders have coined the ease of accessing readily available information in real time as "the CNN effect" (Avolio & Kahai, 2003, p. 327–328). Military leaders realize that information technology could instantly transmit information to large groups of people without FTF interaction with one another. As noted by Glogoff (2001), "information technology is driving changes influencing society, education, business, and the economy" (p. 61). Information technology not only alters the way we communicate, but affects social structures inherent in our society and organizations' internal hierarchies as well.

Today, businesses often have both physical and online entities while others may exist only as online organizations. This diversity has led to the development of new phrases in the business world, such as "bricks and mortar" (Coovert & Burke, 2005), which indicates traditional organizations housed in building structures, or "clicks and mortar" (Kanter, 2001), which indicates a business that has both online and physical entities. Other businesses may exist solely as online or virtual organizations, resulting in

other terminology, such as “e-commerce” (Kanter) or “e-business” (Kissler, 2001). Business leaders now realize that customers may prefer to shop online without FTF interaction. Consequently, leaders of organizations and institutions have adapted their services or products, giving customers the option to shop online or visit retail stores in person. By using information technology, business leaders also realize that they can lead their employees without FTF interaction.

Recent Studies in Remote Leadership

Leadership itself is evolving in today’s world because of the technology-driven environment. In the last decade researchers began to study the use of information technology in conjunction with leadership. The word *e-leadership* appeared in articles by Avolio et al. (2000) and Kissler (2001). Avolio et al. (2000) further defined e-leadership “as a social influence process mediated by [advanced information technology] to produce a change in attitudes, feelings, thinking, behavior, and/or performance with individuals, groups, and/or organizations” (p. 617). However, studies are still in their infancy in determining how leadership is being conducted in situations without FTF interaction, specifically in remote situations, as noted by George and Sleeth (2000, p. 288).

In 2000, the Center for Creative Leadership (CCL) and Forrester Research formed a partnership to explore and to address issues arising from the relationships among leadership, technology, and organizations (“CCL teams up,” 2000). (The CCL and Forrester researchers and their study are referenced as the CCL researchers and the CCL study for brevity.) As part of this partnership, the CCL researchers conducted a survey, asking 546 business leaders in the United States to determine which leadership

attributes were necessary for leaders to be successful in a technology-driven environment (Pulley & Sessa, 2001; Pulley, Sessa, Fleenor, & Pohlmann, 2001; Pulley, Sessa, & Malloy, 2002). The findings from the CCL survey indicated that leadership itself was changing due to the complex interaction between people and technology. CCL researchers "learned that the foundation skills traditionally associated with leadership—such as communication, retention, motivation, direction setting—still apply but are changing" (Pulley et al., 2002, p. 36). The researchers also realized that the transformation of leadership skills in the technology-driven environment creates complications for leaders (Pulley & Sessa, 2001, p. 226). The authors further explained that technology has created challenges for leadership in that the workplace has rapidly increased the need for change, resulting in uncertainty for both employees and leaders (Pulley et al., 2002, p. 36).

In 2002, Horner-Long and Schoenberg surveyed two groups, traditional or FTF chief executive officers (CEOs) and "e-leaders," better defined as remote leaders in the United Kingdom. The researchers asked the CEOs to rank personality traits, leadership behaviors, and skills in importance; they statistically established that traditional and remote CEOs ranked leadership attributes differently.

In 2003, a special issue of *Organizational Dynamics* was devoted to e-leadership (Avolio & Kahai; 2003; Cascio & Shurygailo; 2003; Hart & McLeod, 2003; Zaccaro and Bader, 2003; Zigurs, 2003). The authors asserted that information technology is indeed influencing leadership and that this theme is common among business leaders; however, the extent of that influence has not yet been determined. The ever-increasing, interlocking relationship between information technology and leadership creates

challenges for leaders who are pressured to act, “[al]though no precedents, prescriptive solutions, or correct answers exist” (Pulley et al., 2002, p. 37).

Problem Statement

Currently, a lack of knowledge exists concerning how LIS practitioners use information technology in leading their employees remotely. Although there have been leadership studies in the LIS field (Hernon, Powell, & Young, 2003; Riggs, 1982; Sheldon, 1991; Woodsworth & von Wahlde, 1988), these studies have not addressed how library leaders use information technology to lead their employees remotely nor have these studies addressed remote leadership and remote employees. A dearth of information about LIS leaders’ attributes in the area of remote leadership comes from a lack of previous research conducted in the LIS field. More specifically, information is lacking as to how LIS leaders apply their FTF leadership abilities in remote situations and whether their leadership abilities differ in that area. Evans and Ward (2007) merely provided an overview of virtual leadership in their publication, encouraging readers to start preparing “slowly and thoughtfully” for the change in the leadership paradigm “before [change] becomes imperative.” They said that time will determine “what will and will not work in a given set of circumstances” (p. 185).

Based on studies of leadership, including library literature, researchers describe common leadership attributes in FTF situations in terms of the capacity to communicate, to build trust, and to motivate; to make decisions and to set priorities after developing strategic planning; and the ability for leaders to be change agents (Bennis & Nanus, 2003; Gardner, 1993; Hernon et al., 2003; Riggs, 1982; Sheldon, 1991; Woodsworth & von Wahlde, 1988; Zaleznik, 1977). Some case studies and anecdotes have emerged

in the business- and military-leadership fields because leaders began to explore and identify strategies in leading remote employees. Business and military leaders have similar leadership attributes for both FTF and remote leadership with some marked differences for remote leadership discussed in various studies conducted by Fair et al. (2004), Horner-Long and Schoenberg (2002), Kayworth and Leidner (2000), Kerber and Buono (2004), and the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002). These researchers identified and compared leadership attributes, such as the ability to strategize, to visualize, to communicate, and to create team cohesion, for both FTF and remote leadership. Generally, those leadership attributes that differ for remote leaders indicate that they had the ability to develop social capital or relationships with their colleagues remotely even without FTF contact (Andrews, 2004; Burtha & Connaughton, 2004) and were "more entrepreneurial and risk-taking, and less conservative" (Horner-Long & Schoenberg, p. 615). Another noteworthy difference between traditional (FTF) and remote leaders was that some of the traditional leaders were not comfortable using information technology, even though 72% of the 546 business leaders surveyed in the CCL study understood the importance of incorporating technology in their organizations (Pulley et al., 2001, pp. 4–5). Avolio et al. (2000) concurred that leaders need "to integrate human and information technology systems in their organizations" for effective leadership in the technology-driven environment (p. 617).

Purpose of the Study

The purpose of this study was to better understand how LIS leaders use and apply their leadership skills to the technology-driven environment at their libraries.

Specifically, the study's goal was to understand how library leaders, using information technology, make modifications to their FTF interactions when leading their employees remotely. These remote employees may be either colocated in the same building yet have different work schedules or be located in different buildings. Further, the study compared the remote leadership attributes of successful and effective corporate leaders in the technology-driven environment (Horner-Long & Schoenberg, 2002; Pulley et al., 2001) to those leadership attributes identified by LIS leaders.

Research Questions

It may be obvious in the corporate world that the traditional leadership model is being redefined in the context of a technology-driven environment, but there is a lack of knowledge about whether similar patterns of remote leadership exist in the LIS field. Three research questions framed this study:

Research Question 1. How and to what extent have LIS leaders modified their FTF interactions to lead their employees remotely using information technology?

Research Question 2. What are the essential attributes of remote leadership in the LIS field?

Research Question 3. How do the remote leadership attributes of successful and effective LIS leaders compare to those corporate leaders' identified attributes in remote leadership?

Participants in the Study

To identify library leaders, a study of middle and top management is necessary, because LIS colleagues view those who hold these positions as leaders (Gertzog, 1990, p. 46). In addition, these positions are usually classified as the "'director' or [the] 'head librarian'" (p. 46), the department head, the department or branch manager, the dean, the senior administrator, or the associate and/or assistant library director. By sampling a group of librarians who hold administrative and/or management positions, I identified an accessible population for my study by selecting MDR (Market Data Retrieval)®∗, a company with a database of librarians throughout the United States. The MDR database allows buyers to create mailing lists based on specific criteria, such as job titles in specific types of libraries, for example academic and public libraries in urban, suburban, or rural areas.

The MDR demographics of targeted library administrators and managers are further detailed in the methodology chapter. For this study, the library leader sampling was drawn only from academic and public libraries due to the prevalence of remote employees in these libraries; generalizations about school and special librarians cannot be made without additional research.

Significance of the Study

This study is significant because it will be the first to identify emergent remote leadership attributes in the LIS field and to determine whether these characteristics are comparable to those identified as FTF leadership attributes. This study will build on several studies, specifically the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001;

∗ MDR (Market Data Retrieval), www.schooldata.com

Pulley et al., 2002) and Horner-Long and Schoenberg's (2002), as well as other relevant leadership studies in the corporate (Bennis & Nanus, 2003) and the LIS (Hernon et al., 2003; Sheldon, 1991) fields.

The CCL research (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) discussed how corporate leaders faced leadership challenges in dealing with emerging information technologies. CCL corporate leaders began assessing which attributes, skills, and traits were needed to conduct their leadership activities. They recognized that they had to modify their traditional leadership models to stay competitive in the business world. Horner-Long and Schoenberg (2002) demonstrated how to identify some of the necessary leadership attributes needed to be successful remote leaders. Although these two studies were based on corporate leaders, Sheldon's (1991) study identified FTF leadership attributes found in library leaders, and compared them to those found in corporate leaders in the Bennis and Nanus (2003) study. Hernon et al. (2003) provided extensive and detailed lists of leadership attributes needed by academic and public library directors. All of these studies provided a solid foundation for my study in shaping the concepts of traditional and remote leadership models. These studies assisted in identifying and extracting common leadership attributes described in the LIS field, also reiterated recently by Evans and Ward (2007). I extrapolated these attributes by asking LIS leaders whether they were modifying their FTF leadership skills, and whether they were using these leadership skills in remote situations.

By following a similar framework to that found in the CCL research (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002), Horner-Long and Schonenberg's (2002) and Sheldon's 1991 research, leadership challenges and remote leadership

attributes of library leaders were identified and compared to those noted by corporate leaders. The results of my study identified some remote leadership patterns that are emerging in the LIS field. In turn, essential remote leadership attributes were also identified, which may assist LIS leaders to identify and modify their own FTF essential leadership skills that they are already practicing in remote situations.

Background

Although the corporate world is exploring and articulating strategies in leading remote or virtual employees, little discussion exists in the LIS profession about leading remote employees. Although library literature is replete with many works on leadership, there is no information related to remote leadership. The same could be said for research related to e-leadership and distance leadership. Out of four articles found, one was determined to be relevant when a search was conducted using the phrase virtual leadership. The lone article was written by Glogoff (2001) who advised library administrators to plan ahead by identifying how information technology may transform their libraries, urging librarians to take the lead in shaping their libraries in a digital-technology environment. There is also a dearth of research associated with remote or virtual colleagues and employees, other than Putnam's (2001) article, which discussed the development of teamwork among telecommuters for some information professionals in global corporations.

Library literature searches retrieved some information related to telecommuting (Carr, 2006; Jaskowski, Sobey & Sutton, 2001; Minor & Dunning, 2006; Reid, 1994, Schneider 2000, 2003). Only one of these works discussed remote leadership: Schneider (2003) focused on skills and behaviors needed to lead remote employees.

Instead, articles discussed how librarians could work at home, and whether there were advantages in working at home such as increasing productivity.

Schneider (2003) provided a checklist of strategies to institute a virtual library organization, *Librarians' Internet Index.* She emphasized the need to communicate with "employees, several stringers, and over 100 volunteers" (Schneider, 2003, p. 24), scheduling frequent conference calls or electronic chats through e-mail and IM. Schneider led these employees, stringers, and volunteers remotely, establishing a successful virtual library. Schneider focused on management skills in her article, but these skills were actually leadership skills that enabled her to lead the *Librarians' Internet Index* virtually. Prior to the 2003 published article, Schneider (2000) interviewed librarians who telecommute occasionally by working at home. These telecommuting librarians noted that they were able to increase their productivity by doing their work without any interruption at home.

A recent article by Duncan (2008) focused on her experiences as a remote employee. Duncan secured the approval from library administrators at the Utah State University Library to work remotely in Washington, D.C. because her husband was awarded a fellowship to work at the Library of Congress. Duncan, as an electronic resources librarian, gave details how she successfully continued her work remotely, and she concurred that her productivity increased as well.

While Evans and Ward (2007) discussed virtual leadership as a possibility in librarianship, they also referred to telecommuting as one of the scenarios that leaders must address as part of their virtual-leadership skills. Like Schneider (2003), Evans and

Ward (2007) provided pointers for interested leaders, such as building teamwork and trust, and establishing FTF relationships prior to having virtual relationships.

Presence of Remote Employees in Libraries

The following section discusses both libraries that serve students and faculty members in an academic environment and libraries that serve the public. This knowledge of a library's basic operations comes from my working experiences in both academic and public libraries. Often, both academic and public libraries operate longer than an 8-hour workday, providing services around the clock through their virtual reference services and other services.

Generally, library employees work 8 hours a day. They may have different work schedules; for instance, they may work a schedule from 8 a.m. to 5 p.m., or they may work in staggered hours or different shifts, such as evenings or weekends. Library employees may also work in centralized departments where they frequently work directly with their supervisors. Other library employees may work in highly decentralized locations, located in remote facilities such as campus-satellite (branch) libraries or public branch libraries. Other employees may work in the same building as their supervisors with their offices located in different areas in the same building. LIS leaders' offices may not be physically situated near their employees' offices. A majority of library employees may not engage in FTF interaction with their LIS leaders on a daily basis. As a result, this group of library employees could be considered remote employees.

Library leaders can no longer rely solely on FTF interaction in leading remote employees. However, some LIS leaders may not recognize that the traditional FTF leadership model may have changed due to the prevalence of information technology. It

may lead the library leader to fail to establish interpersonal relations with their remote employees for a variety of reasons, including geographical distance and lack of time to use information technology to transmit information. Further, LIS leaders may not realize or understand the need to choose the appropriate technology to relay their support, empathy, and other nonverbal meanings in their messages. To establish team cohesiveness and social connection or relationships (social capital), it is important to choose the appropriate information technology, such as e-mail, telephone, or other media. Information technology could provide an atmosphere of interactive and rich communication flow, as indicated in Lengel and Daft's 1988 study. Although Lengel and Daft conducted their study prior to the availability of current information technology, their study remains relevant because the researchers examined how leaders selected the appropriate medium, such as sending e-mails, writing memos, or conducting FTF meetings in handling routine or nonroutine incidents (Lengel & Daft, p. 227). If there were nonroutine problems, such as dealing with personnel conflicts, leaders chose the FTF communication method as a way to provide social cues. On the other hand, if incidents were routine, such as requesting reports, leaders made the request using memos or e-mails. However, according to the researchers, not every leader knew when to use the appropriate tool for routine or nonroutine situations.

Because of rapidly changing technology-driven work environments, library leaders should be able to use their FTF leadership skills effectively with their remote employees. Are LIS leaders leading their FTF colleagues differently from their remote employees? For example, how do LIS leaders motivate their remote employees? In addition, how do LIS leaders promote team building when their employees are not in

physical proximity? These questions relate to this study's research questions, centered on whether LIS leaders have adapted their FTF leadership attributes and applied them to remote situations.

A Theoretical Framework

Leadership studies are replete with theories about leadership attributes, ranging from the Great Man theory (Carlyle, 1908/2001) to transactional and transformational leadership originated by Burns (1978) and further refined by Bass (1985) with emphasis on followers. For example, some leadership theories include specific traits and abilities needed by leaders (Bass, 1990; Northouse, 2004). Other theories focus on the decision-making styles exhibited by leaders. Yet other theories discuss whether situations or environments influence leaders. The result is that there is no "widely agreed upon theory or framework for the study of leadership that received a great deal of empirical support and which offered helpful advice to practitioners" (Bryman, 2004, p. 756).

Because of this multiplicity of leadership theories, Chemers (2000) provided an overview to show the commonality of desirable attributes (p. 27) needed by leaders through researching the traits, styles, abilities, and behaviors successful leaders exhibit. Chemers also reviewed the various situations leaders face and their performances in these situations. He further detailed leaders' effectiveness in dealing with tasks. As a result, Chemers proposed an integrated leadership theory based on "key functions performed by effective leaders" (p. 27). Chemers' theory is that an effective leader should have the ability to instill trust and develop relationships with their team members (p. 37). Chemers further explained that an effective leader also needed to understand

their team members' level of training and knowledge to accomplish a common goal as a team (p. 37).

Five years after Chemers' study, Wagner and Hollenbeck (2005) also proposed the use of an integrated model of leadership to encompass "several theories of leadership that vary in breadth and emphasis" (p. 301). The authors emphasized the need for the effective leader to understand their own leadership style, whether a person prefers an autocratic style or prefers to encourage participation from their colleagues. Wagner and Hollenbeck further explained that effective leaders must understand the characteristics of their colleagues to recognize which trait, behavior, and style would work best in a variety of situations, such as having the authority to change the organizational climate or dealing with an economic crisis (Wagner & Hollenbeck, p. 302). The graphical representation shown in Figure 1 illustrates the various components of leadership that will be further detailed in the literature review chapter. Chemers' (2000) integrated leadership theory along with Wagner and Hollenbeck's (2005) integrated leadership model frame this study, which discusses some aspects of leadership theory.

Limitations

Researchers usually studied managers by assessing their leadership traits, skills, or behaviors that may not necessarily reflect actual behaviors of leaders in their studies (Bass 1990; Lowe & Gardner, 2000). Generally, librarians, such as department managers, assistant deans/directors, or deans/directors are often perceived as library leaders, as indicated by Gertzog (1990). Gardner (1993) believed that leaders sometimes manage employees and focus on management issues (pp. 3–4). He coined

a phrase, the leader/manager (p. 4), stressing that these leaders/managers are leaders because they do not focus on management issues per se. The phrase, leader/manager, may be more appropriate in describing this study's participants. Further, the study's findings may rest upon the LIS practitioners' perceived leadership attributes, and therefore cannot be generalized to all LIS leaders.

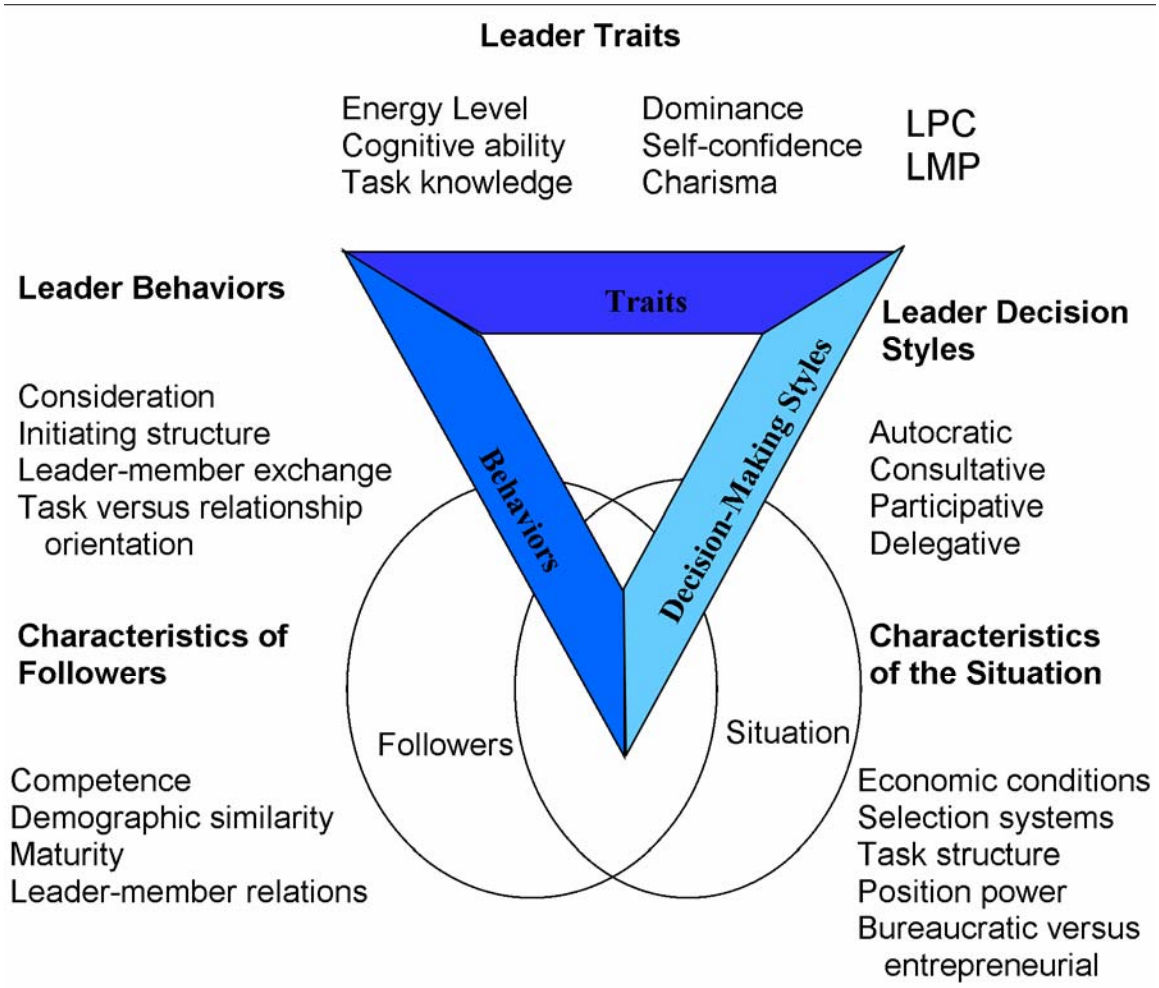

Figure 1. Wagner and Hollenbeck's "The fully articulated integrated model of leadership."
From *Organizational Behavior* (p. 302), by J. A. Wagner and J. R. Hollenbeck, 2005, Mason, OH: South-Western. Copyright © 2005 by Thomson Learning. Reprinted with permission of South-Western, a division of Thomson Learning. All rights reserved.

By purchasing the MDR sampling frame or published list of postal addresses (Creswell, 2003, p. 156; Gall, Gall, & Borg, 2003, p. 168; McBurney & White, 2007, p. 249), I identified the librarians who held administrative and/or management positions in academic and public libraries. In turn, the MDR database randomly selected the targeted librarians, specifically the library deans and directors, assistant/associate deans and directors, and branch managers (department heads) through a stratified sampling method that ensured "certain subgroups in the [library] population are adequately represented in the sample" (Gall et al., 2003, p. 173). However, by drawing samples only from academic and public libraries, generalizations cannot be used for all types of librarians.

I also developed and conducted a Web-based survey as a part of this study. According to some literature, Web-based surveys have lower response rates (Dillman, 2007; Fricker & Schonlau, 2002), but Kaplowitz, Hadlock, and Levine (2004) disagreed, noting that their research showed Web surveys presented similar response rates to those of mailed surveys (p. 100).

Summary

While FTF leadership attributes will remain essential, it may be necessary to modify or adapt these attributes in the current technology-driven environment. Therefore, the goal of this study is to better understand how library leaders, using information technology, make modifications to their FTF interactions when leading their employees remotely. These possible modifications necessitate the need to identify whether emergent remote leadership patterns exist in the LIS field. If these LIS remote-

leadership attributes have emerged, they could be compared to those described in the corporate world.

The next chapter focuses on relevant leadership studies dealing with FTF and remote leadership. The chapter also includes selected leadership theoretical aspects covered in Chemers' (2000) integrated-leadership theory, along with the graphical integrated-leadership model suggested by Wagner and Hollenbeck (2005).

CHAPTER 2

LITERATURE REVIEW

Leadership has many definitions. According to the *Oxford English Dictionary* (Murray, 1989), *leadership* is defined as,

> The dignity, office, or position of a leader, esp[ecially] of a political party; ability to lead; the position of a group of people leading or influencing others within a given context; the group itself; the action or influence necessary for the direction or organization of effort in a group undertaking.

Chemers (2000) concisely defines "leadership … as a process of social influence in which one person is able to enlist the aid and support of others in the accomplishment of a common task" (p. 27). Chemers' definition fits this study's purpose because he emphasized the collaborative spirit needed by leaders in remote leadership, which is one of the leadership attributes highlighted in this study.

This chapter presents a review of previous research conducted in the area of leadership in the corporate, library and information science (LIS), and military fields. The first section examines core leadership attributes in face-to-face (FTF) situations; the focus then shifts to remote leadership attributes. The second section of this review discusses the information technology leaders choose in order to communicate through an interactive and rich flow of information. The third section describes recent leadership studies, examining how to apply selected leadership attributes in remote situations. The final section presents the integrated-leadership model that encompasses an array of leadership theories and attributes.

Pulley, Sessa, and Malloy (2002) observed that previously researched core-leadership skills are still applicable today; however, the current technology-driven

environment makes modifications of some of these attributes necessary. Avolio, Kahai, Dumdum, and Sivasubramaniam (2001) emphasized that it is necessary to investigate leadership attributes in today's technology-driven environment to answer the following question: "Does the emergence of leadership in this context parallel what has been observed in teams working face-to-face?" (p. 338).

Numerous studies have examined core leadership skills in many fields, including the LIS field. However, these LIS leadership studies (Hernon, Powell, & Young, 2003; Riggs, 1982; Sheldon, 1991; Woodsworth & von Wahlde, 1988) have not addressed remote leadership attributes nor referred to situations concerning the leadership of remote employees. No investigations related to remote leadership currently exist in the LIS leadership studies, research, or literature. Evans and Ward (2007) discussed remote leadership as a concept in librarianship, noting that library organizations should take the time to prepare for the transition from a traditional FTF-oriented service to a virtual service (p. 185). George and Sleeth (2000) commented that when studies do not refer to the use of information technology in the framework of leadership, a lack of knowledge results. Because of this lack of knowledge, this study aims to determine whether emerging remote-leadership attributes exist in the LIS field. Common FTF leadership attributes are identified in both the corporate and LIS fields described in previous research (Bennis & Nanus, 2003; Evans & Ward; Gardner, 1993; Hernon et al.; Riggs; Sheldon; Woodsworth & von Wahlde; Zaleznik, 1977). By extracting common FTF leadership attributes, I then surveyed LIS leaders, specifically the targeted group of academic and public-library deans and directors, assistant/associate deans and directors, and branch managers (department heads) randomly selected within the MDR

(Market Data Retrieval) database, to learn whether they have adapted their leadership attributes to remote situations using current information technology.

Leadership attributes that deal with remote employees and/or situations using available information technology have emerged in both the corporate and military worlds (Andrews, 2004; Burtha & Connaughton, 2004; Connaughton & Daly, 2005; Fair, Connaughton, & Daly, 2004; Kayworth & Leidner, 2000; Kerber & Buono, 2004; Marzano, 2006). Examining relevant corporate and military studies on remote leadership, most notably the studies conducted by the researchers in the Creative Center for Leadership and Forrester Research (CCL; Pulley & Sessa, 2001; Pulley et al., 2001; Pulley, Sessa, Fleenor, & Pohlmann, 2002) and Horner-Long and Schoenberg (2002), will help to identify similar remote leadership patterns in the LIS field, if they exist. By asking LIS leaders how they rate leadership attributes in importance, I will be able to compare their remote leadership attributes to those of corporate leaders. These remote leadership studies will help answer research questions of how LIS leaders have adapted and applied their FTF leadership attributes in technology-driven environments.

FTF Leadership Attributes in the Corporate World

Substantial and seminal studies on FTF leadership attributes in the corporate world abound (Bennis & Nanus, 2003; Burns, 1978; Gardner, 1993; Zaleznik, 1977). Initially publishing their findings in 1985, Bennis and Nanus informally interviewed a group of chief executive officers (CEOs) for several hours in an effort to understand the state of leadership in corporate organizations. In 2003, Bennis and Nanus updated their seminal work and added introspective comments to their earlier study. When Bennis and Nanus carried out these informal interviews, they observed the CEOs' actions and

recorded them as part of their study. The authors selected 90 leaders; 60 leaders from the corporate world, and 30 representing the nonprofit sector. Bennis and Nanus posed three questions to the 90 leaders:

> What are your strengths and weaknesses? Was there a particular experience or event in your life that influenced your management philosophy or style? . . . What were the major decision points in your career, and how do you feel about your choices now? (Bennis & Nanus, 2003, p. 22)

By engaging in ongoing conversational dialogues with these corporate leaders, Bennis and Nanus (2003) obtained a rich source of data. After analyzing the results, the researchers developed a list of core leadership attributes, which they termed the major four strategies practiced by leaders. The core leadership attributes were (a) vision, (b) communication, (c) trust and ethics, and (d) personal self-regard or self-confidence (p. 25). Although many other leadership attributes exist, it is beyond the scope of this study to examine each attribute. I selected the core leadership attributes in FTF situations frequently discussed by Bennis and Nanus and Sheldon (1991). I also extracted leadership attributes, such as environment scanning and social capital, which are currently referred to in recent literature (Andrews, 2004; Burtha & Connaughton, 2004; Evans & Ward, 2007; Hernon et al., 2003; Pulley et al., 2002). This smaller list of selected core leadership attributes in FTF situations are vision, communication, decision making, self-confidence, trust and ethics, social capital, environment scanning, empowerment, and change.

Vision

When making plans for the future, leaders need a visual image of how to achieve something tangible. This visual image is often called envisioning, visualization, or vision

and is one of the primary core leadership attributes. Bennis and Nanus (2003) explained that “a vision always refers to a future state, a condition that does not presently exist and never existed before. With a vision, the leader provides the all-important bridge from the present to the future” (p. 83). Although individuals could plan effectively for their future up to a year, leaders differed in their ability to visualize years ahead (Sashkin, 1995). Leaders take the time to identify emerging trends, to determine whether they are viable, and to plan strategies prior to incorporating them into the workplace. Respondents in the Bennis and Nanus study often referred to their passionate beliefs and confidence in achieving their dreams and goals, both personal and organizational, explaining how it may take several years to achieve some of them.

Communication

However, it is not enough to have vision. Leaders also need the ability to communicate by sharing their vision with others. While not all of the leaders in the Bennis and Nanus (2003) study communicated articulately by verbal means, they conveyed their messages nonverbally. For example, one of the 90 corporate leaders interviewed in the study had a reputation for being taciturn (Bennis & Nanus, p. 32). Yet this leader had no trouble conveying his messages to his employees using visual methods, such as models or drawings (p. 33). The researchers noted that leaders often find a way, by using metaphors, to bring subjects to life (p. 33). As Zaleznik noted (1977), “to be effective . . . the leader needs to project his images into ideas that excite people, and only then [can the leader] develop choices that give the projected images substance” (p. 72). In many leadership studies, researchers used the most visible and well-known leaders as examples of effective leadership, often public and political

leaders. These effective leaders include Winston Churchill (Gardner, 1993, p. 7); Mahatma Gandhi (Burns, 1978, p. 20); and Dr. Martin Luther King, Jr. (Kouzes & Posner, 2007, p. 146). Former presidents of the United States also abound as examples in leadership studies: Thomas Jefferson (Gardner, p. 6); Abraham Lincoln (Bennis & Nanus, pp. 29–30; Burns, 1978, pp. 390–392; Gardner, p. 29); Franklin D. Roosevelt (Burns, p. 37), John Kennedy (Zaleznik, p. 72), Jimmy Carter (Fallows, 1979; Hargrove, 1984), and Ronald Reagan (Bennis & Nanus, p. 34). While this paper does not focus on presidential leaders or political leaders, some of their leadership attributes are discussed in this chapter. As noted in this section, successful public leaders often had communication as one of their leadership strengths because they had the ability to convince people to support their ideas and/or political agendas through their messages. These political leaders painted visual images verbally by using metaphors and analogies. They conveyed other nonverbal meanings in their messages, such as support, empathy, and values, in efforts to bring unity to a nation or group of people. They succeeded in bringing people together to share the same goal or reality, as in the case of Lincoln who wanted to unite the fractured United States or of Dr. King who argued for racial equality.

The communication styles of Presidents Ronald Reagan and Jimmy Carter further illustrated the importance of an effective delivery of information as one of the core leadership attributes. According to Bennis and Nanus (2003), President Ronald Reagan, nicknamed the Great Communicator by the media during the years of his presidency (Cannon, 2004; CNN.com, 2001), demonstrated an influential communication style. Bennis and Nanus commented that President Reagan used

metaphors and analogies in his speeches. He invoked visual images and captured people's imaginations and/or emotions. For example, President Reagan, in his February 18, 1981 economic address before Congress, helped United States citizens visualize a trillion dollars by comparing that amount it to "a stack of thousand-dollar bills 67 miles high" (CNN.com, 2001, para. 5). On the other hand, President Jimmy Carter lacked the ability to express himself even though he was well educated and well informed (Bennis & Nanus; Fallows, 1979; Hargrove, 1984). Although President Carter lacked communication skills in public, he excelled in negotiating with others due to his high level of respect for others and his thorough understanding of the dilemma itself (Fallows; Hargrove). Negotiation involves communication skills on a personal level, which is the ability to persuade others and to compromise by coming to terms with the best possible solution.

Decision Making

Hargrove (1984) noted that President Carter exhibited a different leadership style than previous presidents. President Carter placed more importance on providing leadership through decision making, whether to establish an energy policy or to intervene in the volatile situation in the Middle East, which led to the Camp David peace treaty. Additionally, President Carter made correct or right decisions regardless of how the public viewed them (Hargrove, pp. 289–290).

Similar to President Carter, some of the participants in the Bennis and Nanus (2003) study also exhibited strong confidence in their decision-making ability, even though a decision may have proven to be wrong later. Gardner (1993) agreed, saying that "the leader knows that information is incomplete, knows that mistakes will be made,

[and] knows that hostility will be aroused. The clock ticks on" (p. 110). Gardner further explained that leaders often hear differing viewpoints with various viable options. Each path has consequences because there is no perfect solution in resolving a dilemma (p. 110). Leaders recognize that they need to select the path with the fewest consequences to maximize the best results in short- and long-term planning. Burns (1978) stated leaders often have to understand the problem, assess and reassess facts, suggest various strategies, analyze repercussions for each strategy, and make decisions in selecting the best course of action (p. 408). Some of the leaders in the Bennis and Nanus study provided similar anecdotes when they discussed decisions they made. However, these leaders also indicated that they did not worry about being wrong because they did not consider mistakes failures. Instead, they learned from these mistakes, putting emphasis on learning as a valuable lesson.

Self-Confidence

By placing value on learning, the 90 corporate leaders were not prone to the Wallenda factor, or the fear of falling or failure (Bennis & Nanus, 2003, p. 64). The term Wallenda refers to Wallenda family members who walked aerial tightropes without a safety net (Schaefer, 2006). Wallenda family members knew if they put fear above their livelihood, they would plunge to their deaths, for they would be focused on slipping from the aerial tightropes. By using this analogy, Bennis and Nanus discovered that most of the leaders did not consider the word *failure*. Instead, they had confidence in their ability to carry out their vision and goals, whether they were personal or organizational. They were persistent and consistent in finishing what they set out to do. Most of the respondents also did not seek constant approval and recognition from others (Bennis &

Nanus, p. 63). Alternatively, they focused on their own personal values with self-confidence. They valued their own work, including that of their colleagues and subordinates. By relying on their own interpersonal relationships with colleagues and subordinates, the leaders in the Bennis and Nanus study emphasized the need to "[create] a trusting, cooperative work atmosphere … [to build] an effective team" (Hackman & Johnson, 1995, p. 429).

Trust and Ethics

In their own words, the various leaders in the Bennis and Nanus (2003) study indicated the need to behave honestly, to be consistent, and to provide credibility. Double standards, lying, dishonesty, and cheating are unethical practices in the workplace and society itself. For example, the Enron administration, Kenneth Lay, CEO and founder; Jeffrey Skilling, president and CEO; and Andrew Fastow, chief financial officer, misrepresented Enron's financial profits and losses in their accounting records to falsely portray Enron as a solvent and successful company (Byrne, France, & Zellner, 2002; Seeger & Ulmer, 2003; Sims & Brinkmann, 2003). According to these researchers, Skilling and Fastow created an organizational culture that encouraged employees and financial partners alike to focus on earning money, specifically personal wealth, at any cost, by circumventing or breaking the laws (Byrne et al.; Sims & Brinkmann). These Enron leaders gave a clear message to employees by tolerating this unethical behavior (Seeger & Ulmer). Even when unethical practices emerged, resulting in Enron's demise, Lay and Skilling both sold stocks to protect their wealth (Seeger & Ulmer; Sims & Brinkmann), and both refused to admit any wrongdoing. At the heart of

the Enron story was the apparent lack of ethics on the part of the Enron leaders (Seeger & Ulmer).

On the other hand, the leaders surveyed in the Bennis and Nanus study (2003) would have acted differently because the leaders indicated in the interviews the need to gain trust among their colleagues and subordinates. These interviewed leaders stressed the importance of behaving in a credible manner, communicating their morals both verbally and nonverbally. The 90 leaders also valued cooperation by engaging in interactive conversations with their colleagues and subordinates and formulating strategies when setting achievable goals in the organization. Bennis and Nanus concurred with the surveyed leaders, saying, “The capacity to generate and sustain trust is the central ingredient in leadership” (p. xiv). They further explained that “the trust factor is the social glue that keeps any system together” (p. xiv).

Social Capital

The term *social glue* is best defined as social capital in today’s world. Participants in the Bennis and Nanus (2003) study illustrated their interpersonal skills and their ability to develop strong relationships among their staff members and colleagues. Leaders often build strong relationships with staff, community groups, and officials inside and outside their organizations and/or institutions and with other stakeholders. Bennis and Nanus defined this ability to build relationships as social architecture, while I use the term *social capital*, another core-leadership characteristic.

Throughout their conversations with Bennis and Nanus, these 90 leaders related their stories about people in their organizations, such as how they shared ideas, how they listened to people’s issues, and how they encouraged colleagues and/or

subordinates to expand their job knowledge. These leaders demonstrated their interpersonal skills by engaging in a two-way interaction or information-exchange flow with their colleagues. Underlying these stories was a theme of respect for people and their ideas. By building social capital or social architecture, these leaders built an atmosphere of caring, collaboration, and teamwork, a common trait shared by both corporate and library leaders. Social capital or social architecture is

> the "culture of work"—those intangibles that are so hard to discern but are so terribly important in governing the way people act, the values and norms that are subtly transmitted to individuals and groups and that tend to create binding and bonding. (Riggs, 1982, p. ix)

Social capital is also a component of an employee's commitment to the organization or institution after going through a socialization process. Morrison (2002) explained that each organization has an informational, often informal, network where newcomers learn the various aspects of an organization from insiders who provide the history of the organization and the roles people play in that organization. Employees then blend into the organization's culture and values; they understand how the organization is structured and understand their own roles and duties because they now share the same norms and values.

Environment Scanning

While developing internal social architecture or organizational culture, leaders recognize that communication through listening and scanning is essential to gather information from people and even the surroundings. As discussed previously, people engage in a socialization process, conversing and creating an information-exchange flow. By scanning their surroundings, leaders identify emerging developments "about

events, trends and relationships in an organization's external environment" (Choo, 1999, p. 21) and plan accordingly. As an illustration, a CEO in the Pulley and Sessa (2001, p. 227) study explained how he developed insight in understanding the status of a locale's economic stability by observing the number of people present in bars and restaurants. If the bar and/or restaurant were filled to capacity, the CEO determined the success of the location's economy and could effectively establish new businesses in that area (Pulley & Sessa, p. 227). As this example illustrates, leaders create opportunities to position their companies accordingly when they understand "the convergence of many environmental forces" (Bennis & Nanus, 2003, p. 145). In turn, leaders can make decisions by comparing their own personal knowledge to the various situational factors, such as economic or demographic indicators. Using skills similar to environment scanning, leaders also know how to evaluate motivations, feelings, and/or actions from individuals and groups to understand what they need and how to meet those needs.

Empowerment

As noted throughout this paper, leaders develop a unique set of interpersonal and collaborative skills, "[relating] in more intuitive and empathetic ways" to others (Zaleznik, 1977, p. 73). Leaders also learn to assess their colleagues' set of interpersonal and collaborative skills, teaching them to rely on their own strengths and helping them to minimize their weaknesses. The 90 corporate leaders in the Bennis and Nanus (2003) study exhibited confidence in their colleagues' ability to handle situations on their own by encouraging them to do better or helping them to improve. Leaders share information by giving colleagues authority and discretion in handling situations

and by entrusting them with the responsibility to be accountable for mistakes (Kouzes & Posner, 2007). In that aspect, leaders accept people as they are, focusing on their current relationships without dwelling on past mistakes (Bennis & Nanus), which usually results in a productive relationship. This leadership attribute is better known as empowerment, which allows colleagues and staff members to make decisions with support from their leaders. In turn, by permitting colleagues and staff members to share ideas and to make decisions, these colleagues and staff members (or followers) can commit to the leaders' vision, which is related to the social-capital attribute.

Change

Throughout the ongoing conversations between the researchers and the leaders in the Bennis and Nanus study (2003), it was evident that corporate leaders thrived on change or on challenging situations that occurred because of external forces, business decisions, and/or organizational decisions (Beckhard & Pritchard, 1995). In their set of interviews with leaders, Kouzes and Posner (2007) discovered that leaders often discussed their stories related to change, challenging the status quo (p. 18), and questioning why tasks are done in a particular way, in efforts to improve something—a product, customer service, policy or procedure, or a decision. Beckhard and Pritchard explained that leaders, through environment scanning, are constantly aware of external forces, knowing that they will have to take risks and make strategic decisions, even though they may not have the luxury of time to assess the situation (p. 398). Although change is not listed as one of the core leadership attributes in the Bennis and Nanus study, leaders often cited examples in their stories of adapting to changing environments and situations. They illustrated how essential it was to remain constant in

their own beliefs or visions, even if the path to reach the elusive goal differed from the original strategy.

As shown in this review of leadership attributes in FTF situations, these core leadership attributes can be found in the corporate world. Sometimes these leadership attributes overlap one another. To determine whether these attributes also existed in the LIS environment, Sheldon (1991) conducted a study similar to the one performed by Bennis and Nanus (2003).

FTF Attributes in the LIS World

Sheldon Study

Sheldon (1991) read Bennis and Nanus' study in 1987 while Dean of the School of Library and Information Studies at Texas Woman's University, Denton, Texas. Sheldon conducted a similar study to that performed by Bennis and Nanus, except she interviewed LIS leaders to determine whether their leadership attributes were similar to the identified attributes of corporate leaders. The main goal for Sheldon was two-fold: (a)"to gain an understanding of the qualities [or attributes] held in common by leaders in the library profession" (Sheldon, p. 2); and (b) to determine "that the differences, if any, between corporate and library leaders [were] insignificant" (p. 2).

Sheldon (1991) selected a representative group of 60 LIS leaders, modeling her criteria on corporate CEOs by describing library CEOs as the deans or directors at academic and public libraries. Sheldon included school and state librarians in the group, identifying only those who were well known in the LIS field. Finally, she included some executive directors from various library associations, such as the American Library

Association. Sheldon used the same set of questions Bennis and Nanus (2003, p. 22) asked and added questions about mentoring and the future of the LIS profession:

> What are your strengths and weaknesses? Was there any particular experience or event in your life that influenced your management philosophy or style? What were the major decision points in your career, and how do you feel about your choices now? . . . What, if any, has been the influence of mentors on your career? How do you feel about the future of the profession? (Sheldon, 1991, p. 3)

Like Bennis and Nanus (2003), Sheldon (1991) engaged in ongoing conversations with these 60 LIS leaders, obtaining in-depth responses. Sheldon was able to replicate Bennis and Nanus's findings in the LIS profession by discovering the same core-leadership attributes in LIS leaders: vision, communication, decision making, self-confidence, trust and ethics, social capital, empowerment, and change. Similar to the Bennis and Nanus study, Sheldon's study shows that these core leadership attributes often overlap. However, Sheldon noted that there was one difference between corporate and library leaders in that profits were a major concern for corporate leaders. Sheldon suggested that library leaders found it rewarding to provide excellent services to customers.

Like corporate leaders, LIS leaders related their stories in visualizing and making things possible. For example, Elizabeth Stone, one of the LIS leaders interviewed, visualized the use of a library symbol sign, similar to street signs like the stop sign. She proposed the use of these library symbol signs to be used as location indicators, alerting people where to find libraries. Like corporate leaders, Stone had the patience and persistence in seeing the symbol project come to fruition after several years (Sheldon, 1991, p. 8). Stone had the charisma to draw in a group of library colleagues who lobbied for the symbol to become a reality.

Unlike corporate leaders, Stone and her library colleagues placed little value on receiving monetary compensation for their hard work. Instead, LIS leaders had the "[dedication] to service rather than profit" (Sheldon, 1991, p. 82), due to the nature of their LIS work. Sheldon discovered that LIS leaders had deep job satisfaction because of their philosophy of providing services to the public and sharing knowledge and information. On the other hand, corporate leaders in the Bennis and Nanus study focused on profit as the ultimate reward for their products or services.

LIS leaders in the Sheldon study (1991) exhibited similar self-confidence levels when compared to the leaders in the Bennis and Nanus investigation. Sheldon noted that LIS leaders' self-confidence was tied to their work in providing services to patrons and that this attribute was "a powerful force in enabling them to achieve their goals" (Sheldon, p. 13). Because of this self-confidence, these LIS leaders were flexible and creative in how they achieved goals and often used different solutions to solve problems.

Like the corporate leaders, the LIS leaders in the Sheldon study (1991) engaged in decision making. Some corporate and library leaders tied decision making to empowerment. Several LIS leaders mentioned that to be effective leaders, they enabled staff members to do what was necessary to succeed, whether it was to hire personnel or to implement a project (Sheldon, pp. 27–28). LIS leaders also demonstrated flexibility by allowing their staff members and colleagues the freedom to decide how they designed their projects even when their methods differed, as long they were able to achieve similar results (Sheldon, p. 14).

While LIS leaders valued their communication skills, they did not place importance on communication itself, unlike the corporate leaders who were involved in the Bennis and Nanus study. Sheldon (1991) commented that the most common characteristic among the 60 LIS leaders was the importance they placed on “listen[ing]” (p. 25) and “interact[ing]” with others (p. 25). By relating their experiences with individual patrons or small groups of patrons (or students), colleagues, or staff members, LIS leaders also showed themselves to be genuinely interested in people. In turn, these LIS leaders had a knack for developing social capital. In general, Sheldon said that LIS leaders put “much more emphasis on creativity, risk-taking, innovation, and even intuition” (p. 5). However, Sheldon’s statement does not mean that corporate leaders lacked these skills, because corporate leaders are known for risk taking and innovation (Bennis & Nanus, 2003). Environment scanning was not mentioned in Sheldon’s interviews with the 60 LIS leaders.

Sheldon (1991) inquired whether LIS leaders had mentors, and if so, asked them to describe their mentors’ influence on their careers. Most of the LIS participants mentioned that they had strong mentors who took the time to help them in developing networking skills along with other leadership skills needed to succeed. Consequently, Sheldon was able to demonstrate the critical aspect mentoring plays in developing leadership skills. Due to Sheldon’s educational background, she was interested in finding methods to improve leadership-development aspects in the LIS curriculum.

Sheldon’s seminal study (1991) on leadership extrapolated core-leadership attributes in the LIS field, matching them to the corporate leaders’ identified characteristics. Further, Sheldon suggested that the differences were insignificant

between the FTF leadership attributes of corporate and LIS leaders, other than the interest in profits.

Hernon, Powell, and Young Study

The leadership study by Hernon et al. (2003) did not compare LIS leadership attributes to the corporate field. Instead, Hernon et al. focused their study on determining leadership attributes needed for future librarians to succeed as LIS leaders, due to upcoming retirements.

Hernon et al. (2003) provided extensive and detailed lists of leadership attributes needed for future academic and public-library directors. According to a companion article summarizing the study's main ideas, the researchers embarked on a 5-year study, analyzing leadership attributes and using a combination of research methods (Young, Hernon, & Powell, 2004, p. 33). They interviewed "more than 70 library directors . . . assistant and associate directors" in academic libraries who were either members of the Association of Research Libraries or the Association of College and Research Libraries (Young et al., 2004, p. 33). They also interviewed library directors and assistant directors in public libraries, focusing on those who led medium and large-sized public libraries (Young et al., 2004, p. 33). Finally, these researchers extrapolated common leadership attributes by reviewing job announcements from *College and Research Libraries News* between 1994 and 2000 (Young et al., 2004, p. 33). After listing all of the leadership attributes, the researchers asked the selected LIS leaders to rank leadership attributes based on importance. Hernon et al. also conducted follow-up interviews with a smaller group of selected participants who reviewed the ranked list of leadership attributes among academic and public-library directors, asking them again to

rank them in importance. Throughout the process, the researchers used a Delphi-based instrument to prioritize these rankings (Young et al., 2004). The researchers discovered that the most common leadership attributes

> clustered at the top by participants were a commitment to service, a results orientation, effective communication with the staff, building a shared vision for the library, managing and shaping change, the ability to function in a political environment, priority setting, planning for life cycles in information technology and services, and responsiveness to the needs of various constituencies. (Young et al., 2004, p. 34)

After reviewing the results of their investigation, the researchers provided extensive lists (Hernon et al., 2003, pp. 24–31, 97–125) on leadership attributes or competencies similar to those that Bennis and Nanus (2003) and Sheldon (1991) had discovered in their studies. Hernon et al. listed vision as a means to identify and implement long-range goals. Hernon et al. determined that LIS leaders need strong interpersonal skills to develop their staff's abilities, along with negotiating and establishing working relations with interested parties. Additionally, LIS leaders need to be articulate to communicate and to show empathy and respect for self and others, to gain support for organizational values and vision (Hernon et al., pp. 97–125). Similar to Sheldon's study, Young et al. (2004) noted that LIS leaders mentioned mentoring as one of the needed competencies to prepare future LIS leaders.

Hernon et al.'s study (2003) also focused on various qualities in the context of leadership, such as personality, leadership styles, and skills needed in running libraries. Although the lists are extensive, LIS leaders do not need to possess every attribute but should possess the majority of such traits. For example, academic-library deans and public-library directors should have the following personality characteristics: "honesty, resiliency, intelligence, intuition, optimism, and enthusiasm" (Hernon et al., p. 21).

Additional characteristics are included in several tables (Hernon et al., pp. 38–39, 115–119). The following list of individual personality or personal traits is randomly selected, and match similar traits noted by Bennis and Nanus (2003) and Sheldon (1991): analyzes and solves problems, is articulate, is comfortable with ambiguity, is creative, is flexible, inspires trust, has networking skills, has organizational skills, is persuasive, has reasonable risk taking skills, is self-confident, has a service orientation (commitment to public service), and has team building skills (Hernon et al., pp. 116–117).

The following list (Hernon et al., 2003), again selecting similar behaviors to those noted in the Bennis and Nanus (2003) and Sheldon (1991) studies, focuses on leadership behaviors LIS leaders should possess:

1. Builds a shared vision for the library
2. Changes and shapes the library's culture
3. Creates an environment that fosters accountability
4. Develops collaborative skills
5. Develops and fosters partnerships
6. Identifies trends
7. Leads in a shared decision-making environment
8. Motivates and inspires staff
9. Plans, implements, and assesses strategic goals (Hernon et al., 2003, pp. 115–116)

The authors also listed various skills related to the library workplace, such as hiring, retaining, and developing staff, creating and maintaining policies, and planning and budgeting, which are all essential in running a library smoothly (Hernon et al., pp. 24–

25). Other leadership attributes include political and negotiating skills in dealing with the public and other stakeholders in the library's community along with the ability to raise funds (pp. 27–29).

Recent work by Evans and Ward (2007) provides similar findings to the leadership attributes and traits noted by Sheldon (1991) and Hernon et al. (2003). Evans and Ward indicated that they conducted several surveys and interviews in 2004 and 2005 to obtain data from library leaders (pp. ix–x). However, Evans and Wards' work showed some discernible differences from the research of Sheldon and Hernon et al. For example, Evans and Ward acknowledged the influence of technology on library organizations, explaining that library leaders will have to deal with a different set of "challenges and changes in the 21st century" (p. ix). The authors noted that libraries will need to compete with other information services such as Amazon and Google (p. ix). Additionally, Evans and Ward noted that library leaders will need to understand that Generation X and Generation Y staff will be more comfortable with change, including their ease in using information technology (pp. 62–64).

Further, Evans and Ward (2007) discussed environment scanning, self-assessment, emotional intelligence, and political skills as part of a leader's developmental growth. These attributes were not covered in Sheldon's (1991) work and the Riggs (1982) and Woodsworth and von Wahlde (1988) collections of essays on library leadership. However, common leadership attributes could be located in the collection of essays. For example, Gapen (1988) noted that the academic-library dean needed to develop a tough skin to deflect criticism from external forces, such as the university president or provost, staff, and other stakeholders in the academic

environment (p. 62). At the same time, the academic library leader also needed to develop a tolerance for chaos (Gapen, p. 62) due to changes in governance, university procedures and/or policy, and staff turnover.

Shaw (1982), on the other hand, focused on the library's resources, instead of on individual leadership traits. Shaw cautioned that LIS leaders needed to maximize the library's resources, as in "human, physical, information [and] financial resources" (p. 55). Evans and Ward (2007) and Lynch (1988) concurred, stressing that library leaders should be aware of the environment surrounding their library in order to prepare their personnel to maximize resources and to adjust to external changes. Lynch's thinking is similar to the environment scanning mentioned in the Bennis and Nanus (2003), Evans and Ward, and Pulley and Sessa (2001) studies. While Lynch's work predates the recent advances in technology, Lynch illustrated how technology, in the form of library automation systems, altered the organizational structure when the library online catalog was developed. Lynch further illustrated how technology altered the workforce itself by explaining that the number of professional librarians decreased while the number of paraprofessionals increased when automation became established (p. 71). The online library catalog also changed how librarians provided services because users could use the online catalog to search for materials without assistance from librarians. According to Evans and Ward, current library leaders need to stay abreast of what is taking place inside and outside of the library to develop realistic objectives to make libraries vital and viable in today's world.

Summary of FTF Leadership Attributes

These seminal works on leadership provide a list of foundational or core leadership attributes. As indicated by the Sheldon (1991) and the Bennis and Nanus (2003) studies, no apparent differences exist between the identified characteristics exhibited by corporate and LIS leaders in the context of FTF leadership except that corporate leaders place value on profits in their organizations. However, external forces, specifically technological advances, have resulted in a changing workforce, as indicated by Pulley et al. (2001), Pulley et al. (2002), and Evans and Ward (2007). In the corporate world, staff members do not have to be physically situated in the same space or building, as they did in the past. A lack of physical proximity, though, has created new problems for leaders. Due to this ever-changing environment, many corporate and military leaders ask how they can lead geographically dispersed staff members or remote employees when they cannot see them (Gerke, 2006, p. 102).

While remote leadership may be a new issue in the corporate world, it is common in the political world to have physical distance between leaders and followers. Political leaders illustrate good examples of remote leadership because they are not in physical proximity with their constituents (Antonakis & Atwater, 2002). Furthermore, libraries, especially public libraries with off-site branch locations have functioned well for many years (Evans & Ward, 2007). These libraries also have remote employees who are located in geographically distant branches or who may work different work shifts. However, detailed information on how LIS leaders are leading these remote employees is not available in any LIS leadership study or research. To close this gap, remote leadership attributes in the LIS field were investigated. Because the corporate and

military fields have examined remote leadership attributes in order to understand leadership's evolution in the technology-driven environment, I will identify these attributes to determine whether remote leadership attributes are emerging in the LIS field.

Remote Leadership Emerging in Other Fields

Because information technology allows organizations to have geographically distant employees or employees working different shifts, the corporate world and the nonprofit sector, including the military, are exploring and articulating strategies in leading remote employees. Researchers and scholars often review studies and strategies developed in fields other than their own, thus enabling them to draw parallels to develop strategies that meet their specific needs.

According to Fair et al. (2004), the military has developed strategies for preparing current and future commanders with the ability to lead their battle forces remotely across physical distances and time zones. The researchers used the term *leading from afar* to describe remote leadership. The capability to use video screens to communicate already existed in the military in 2004, as Franks (2004) pointed out in his memoirs. Franks, as the commander of the United States Armed Forces, often held conference calls with his superiors, including the President of the United States and the Secretary of War, using a "secure telephone [line] or video telephone conference" (p. 263). Franks wrote that technological advances changed various aspects of military life, such as providing commanders the ability to track vehicles (p. 175), develop virtual war games (pp. 174, 414), and deliver and receive data across communications bandwidths (pp. 175, 414). Marzano (2006), a Lieutenant Commander in the United States Navy, said,

“the days of an operational commander issuing face-to-face orders on the battlefield are over” (p. 11). Marzano also said, “long distance [or remote] leadership is a required element of modern day combat” (p. 11).

In 2005, a television series called *E-Ring*, starring Dennis Hopper and Benjamin Bratt (Biller, 2005), portrayed the use of information technology in the fictional military world. In this television show, both actors played military commanders who communicated orders through information technology. The military leaders (actors) gave commands to their troops (cast) as they viewed battles taking place on video screens from a control room, far removed from FTF contact with their troops. The *E-Ring* television series depicted a military control room with video screens, as shown in Figure 2, which was similarly described by Franks (2004, pp. xi–xii, 287–288).

The United States Army leaders recognized the need to provide effective training in remote leadership (Fair et al., 2004, p. 3). This need for training may have arisen due to a decision made by Franks in March 2002 to lead his troops remotely from his military headquarters in Tampa, Florida (Franks, 2004, pp. 377–381; Grossman, 2004a, 2004b; Marzano, 2006). Franks decided to deploy the United States military troops in the Shahikot Valley, Afghanistan, to eliminate Al Qaeda and Taliban cells, in a battle called Operation Anaconda (Franks, pp. 377–381; Grossman, 2004a, 2004b; Marzano). Although the United States military prevailed (Franks, pp. 377–381; Grossman, 2004a, 2004b), Marzano explained that Operation Anaconda also provided valuable lessons in remote leadership. Marzano listed the following lessons for military commanders: (a) develop proficient communication skills; (b) learn how to use information technology, for example, video-telephone conferencing; (c) learn how to be accessible in the leader’s

Figure 2. A photograph still of a military control room from the television series, *E-Ring.* From *E-Ring* [Television series], Burbank, CA: Warner Brothers Television. Copyright © 2005 by Warner Brothers Television. Reprinted with permission. All rights reserved.

time zone as well as the battle troop's time zones; (d) schedule time slots for meetings and limit the frequency of those meetings; and (e) empower troop commanders without micromanaging (pp. 12–17). Fair et al. provided remote-leadership strategies for the military by drawing parallels from the corporate world, emphasizing the need for military leaders to learn essential skills such as teamwork and trust building to create a work climate conducive to establishing successful working relationships among geographically distant team members.

In contrast to military strategies, businesses focus on profit; corporate "organizations use dispersed work settings in order to maximize productivity, lower costs, serve international customers, and capitalize on globally dispersed talent" (Connaughton & Daly, 2005, p. 188). As a case in point, virtual meetings reduced the cost of travel expenses at Frito-Lay; an executive reduced her travel time in 2006 by

holding video conferences instead of FTF meetings (Marta, 2006). Advances in video conferencing have also allowed business companies to hold simultaneous meetings with team members located at various sites.

A prevailing concern in the current research is how leaders can effectively lead these remote employees and/or organizations. To address this concern, researchers and scholars are examining remote leadership strategies in popular and scholarly literature.

Remote Leadership Attributes

Fair et al. (2004) provided a checklist of essential skills needed to strengthen military remote leadership. Researchers and scholars also provided similar lists for the corporate world (Andrews, 2004; Burtha & Connaughton, 2004; Kayworth & Leidner, 2000; Kerber & Buono, 2004; Sessa, Hansen, Kossler, & Prestridge, 2001). These corporate researchers offered pointers on how to handle geographically distant team members to reduce costs and increase productivity and efficiency. Experts in other fields, such as engineering (Jurrens, 2005), health care (Farmer, 2005), and sales (Maurer, 2006), presented additional strategies to function with remote or virtual team members. Throughout these cited works (Andrews; Fiorina, 2006; Kayworth & Leidner; Kerber & Buono; Marta, 2006; Nardi, Whittaker, & Bradner, 2000; Pulley et al., 2001; Pulley et al., 2002), each remote team used various forms of information technology, such as e-mail, instant messaging (IM), institutional intranet Websites, telephone conference calls, telephone messages, video conferencing, virtual meetings through the Internet or intranet forums (chat sessions), and voice mail. Recent works in library literature refer to Library 2.0 tools being used in libraries including blogging, community

sharing on Websites, IM, podcasting, online social networks, tagging, social bookmarking, and wikis (Casey & Savastinuk, 2007; Farkas, 2007; Stephens, 2006, 2007). Boule (2008) explained that information technology could increase efficiency and productivity to handle committees, projects, and task force work through the establishment of virtual teams. She emphasizes the need for virtual (remote) team leaders who could identify the appropriate use of information technology best suited to virtual (remote) employees and situations (p. 29).

An examination of the works authored by Andrews (2004), Burtha and Connaughton (2004), Farmer (2005), Jurrens (2005), Kayworth and Leidner (2000), Kerber and Buono (2004), Maurer (2006), and Sessa et al. (2001) revealed a distinctive pattern of essential leadership attributes in leading team members remotely. Ironically, a prevailing common strategy in establishing successful remote teams is to have FTF meetings at the beginning of any project. Appendix A details other common strategies discussed in each work.

The prevalent issue observed by remote team members is the feeling of isolation. According to these researchers, remote leaders must find a way to develop social relationships with their remote team members. As Appendix A and all of the research indicate, this skill of building social capital or social interaction is an essential attribute needed by remote leaders.

Hart and McLeod Study

Hart and McLeod (2003) conducted a field study to examine the formation of social relationships among remote team members. The researchers selected 126 pairs from seven remote teams; each team had 4 to 12 members (pp. 352–353). The

researchers made no distinction between the terms of “virtual team and geographically dispersed team” because team members met FTF infrequently (p. 352). Each pair of team members provided Hart and McLeod copies of their data, such as “e-mail messages, diary reports of one-on-one conversations and occasional face-to-face meetings and transcripts of audio conferences” (p. 353). Each team member ranked their partner and other members in their group by the degree of closeness in their relationships with one another to establish a baseline of weak to strong interaction (p. 353). The researchers also interviewed team members individually, asking them about their interactive conversations.

Hart and McLeod (2003) studied the messages and their content as a means to assess the strength of the bonds between each pair of team members. After analyzing the content of each message, the researchers developed a typology of communication messages based on the nature of the message itself (Hart & McLeod, p. 355). For example, if a team member sent a humorous message unconnected to the work itself, the researchers categorized that message as digression and play (Hart & McLeod, p. 355). In another example the researchers classified a message as opinion and feeling (p. 355) when a team member made comments about work, an idea, or a task. Overall, the researchers developed seven groups of communication types, ranging from informational to helping and learning (p. 355). After analyzing the interactions among the participants, the researchers learned that

> sixty-eight percent of the total message exchanges between pairs with the strongest relationships were focused on exchanging task information . . . while only 43% of messages between pairs with the weakest relationships involved information exchange. Coworkers with the weakest relationships, on the other hand, exchanged significantly more personal and non-task-related messages

> (20%) than did coworkers with the strongest relationships (8%). (Hart & McLeod, 2003, p. 356)

Messages were often frequent yet short among the pairs with strong relationships. Hart and McLeod (2003) stated that the team members with the strongest relationships often initiated personal contact to obtain support from one another, to obtain assistance related to the project, or to resolve a common problem, such as clarification of the meaning after receiving information. Upon establishing that social connection, team members developed common norms and values, creating shared bonds among themselves. These team members also shared a common mental picture to accomplish their tasks. The researchers said the following:

> When messages are limited by media, time and distance, as in the case of geographically dispersed [or remote] teams, the interpretation of interaction becomes a significant part of the interaction itself, and shared meaning emerges from the content of the communication. (Hart & McLeod, 2003, p. 355)

Following their field study, Hart and McLeod (2003) realized that initial personal contact was essential in developing a relationship among team members, resulting in better information exchange. In most cases, team leaders took the responsibility to establish the framework of communication at the beginning of a project. They used a blend of physical and virtual meetings along with a variety of communication tools to emphasize project goals. Providing such a framework of support allowed team members to develop social ties and enabled them to work together to complete their project. Further, those team members who had strong relationships also used a variety of communication tools.

A January 2006 research study entitled *The Strength of Internet Ties*, conducted by Pew Internet and American Life Project researchers, also substantiated the strong

relationship or bonding developed by physically colocated and geographically distant members (Boase, Horrigan, Wellman, & Rainie, 2006). A summary of the Pew researchers' findings indicated "that email supplements, rather than replaces, the communication people have with people who are very close to them—as well as those . . . not so close" (p. ii). Boase et al. also learned that people used e-mail without reducing their in-person visits or telephone contact (p. iv). In fact, the researchers realized that people use different information technology to stay in touch, while also using the telephone or meeting FTF (Boase et al., p. i). For example, people use information technology to form and/or maintain friendships with people who live at a distance or even nearby, and to seek assistance from widely dispersed social networks such as message boards if they need information related to health, finances, consumer products, and so forth (Boase et al., p. iv). Overall, the Pew researchers confirmed that people formed strong relationships or bonding using information technology in technology-driven environments.

Kerber and Buono (2004) concurred that developing high-quality relationships leads to the success of remote team projects. As part of ongoing interaction with remote members, team leaders needed "to establish, develop, and sustain *lavish information flow* among all team members, despite their geographic distance and virtual presence" (Kerber & Buono, p. 9). The researchers stressed the need for remote leaders to provide FTF conversations and to relay to remote members the same information at the same time if possible.

Remote leaders should also communicate the project goals or mission concisely and frequently, as noted in Appendix A. In addition, remote leaders should use more

than one communication tool to deliver the same message (Andrews, 2004; Burtha & Connaughton, 2004; Kayworth & Leidner, 2000; Kerber & Buono, 2004) to team members who may interpret the messages differently.

Lengel and Daft Study

As noted earlier in this chapter, communication is an essential leadership attribute. Leaders need to articulate their messages effectively, conveying them in a meaningful manner. According to Zaleznik (1977), leaders should have the ability "to take in emotional signals and to make them mean something" (p. 73). Leaders should communicate their messages, not only in an effective method, but also in a meaningful way, conveying empathy as well as invoking imagination or images. Gardner (1993) agrees, affirming, "the leader's style, timing, and symbolic acts all carry messages" (p. 27).

At the time of their study in 1988, Lengel and Daft noticed an increase in the use of electronic communications, most notably e-mail. The researchers developed their study due to an overlying concern that e-mail or any written message did not convey the necessary social cues, such as the tone of voice, facial expressions, or gestures typically conveyed in FTF situations. Lengel and Daft asked if leaders could provide meaningful messages to their subordinates, conveying the needed social, nonverbal, and emotional cues through information technology. Although the researchers focused on written messages, specifically memos and e-mails, their study's findings continue to be relevant today because people deliver messages through emails, online postings in Web blogs or message boards, and instant (text) messages. Lengel and Daft further explained that "each channel of communication—be it written, telephone, face-to-face,

or electronic—has characteristics that make it appropriate in some situations and not in others" (p. 25).

Lengel and Daft (1988) explored how these communication channels, such as FTF meetings, telephone calls, e-mails, reports, and memos, provided an interactive information flow that allowed the sender and receiver to exchange cues with one another. These cues may be verbal, such as the tone of voice, or nonverbal, such as body language, gestures, facial expressions, or eye contact. During the entire communication process, both the sender and receiver participate in an interactive information flow, exchanging verbal and nonverbal cues as to what is being said along with what is not being said. For example, the sender can obtain feedback immediately when a puzzled expression appears on the receiver's face, causing the sender to phrase the message differently. The researchers investigated whether written communication could provide similar characteristics.

According to Lengel and Daft (1988), FTF communication is the richest medium (p. 226) because cues are transmitted immediately and synchronously. Telephone calls are also similar to FTF communication. However, written words in memos, reports, and e-mails fall under lean media (p. 227) because these messages lack the immediate feel of synchronous and interactive feedback.

Lengel and Daft (1988) also asked whether the appropriate communication channel or information technology would make a difference in conveying messages effectively. By interviewing a number of executives, Lengel and Daft compiled a list of over 200 incidents. The researchers eliminated duplicate incidents and narrowed the list to 60 incidents. A panel of 30 executives rated these 60 incidents to determine whether

the situation was routine or nonroutine. Finally, Lengel and Daft compiled the list, categorizing the incidents into routine and nonroutine incidents. One example of a routine incident was asking employees to attend meetings, whereas nonroutine incidents included handling personality conflicts between two subordinates (p. 232). The researchers then selected another group of 95 executives in a petrochemical company. By completing a questionnaire, these 95 executives chose the information technology they would use for each routine and nonroutine incident. The findings indicated the following:

> Preference for rich, face-to-face communication increased rapidly as communication topics became nonroutine. In fact, managers used face-to-face 88% of the time for nonroutine communications. The reverse was true for written media. When the topics were considered routine and well understood, 68% of the managers preferred notes, memos, or other written modes, while only 32% preferred face-to-face or telephone. (Lengel & Daft, 1988, p. 227)

Lengel and Daft (1988) also reviewed the 95 executives' media selections and identified 15 executives in the original group who consistently matched the appropriate communication tool to the situation at hand. The researchers labeled this group of 15 executives "'media sensitive' because they selected rich media [FTF or telephone calls] for nonroutine messages and lean media [written messages] for routine messages" (Lengel & Daft, p. 229). The researchers labeled another group of 15 executives as media insensitive because of their inappropriate use of media (p. 229). For example, media-insensitive executives sent written reports or e-mails to avoid personal contact (Markus, 1994; Timmerman & Harrison, 2005), emotionally distancing themselves from their subordinates when giving bad news or handling an emotionally charged incident. These media insensitive executives used e-mail or any other information technology as

a way to avoid dealing with people they were intimidated by or with people they did not like in person (Markus, p. 123).

However, media-sensitive executives who exhibited good leadership behavior often handled emotionally charged incidents or topics using FTF meetings. These executives (leaders) exhibited interactive and collaborative interpersonal skills by relating to people and by providing them the means to engage in an interactive conversation. As Lengel and Daft noted, leaders should focus on both the message itself and the selection of the appropriate tool:

> Communication is more than simply using the right words to describe something, or reading a message carefully. Effective communication depends on the selection of a medium that has the capacity to engage both the sender and receiver in mutual understanding of the message at hand. (Lengel & Daft, 1988, p. 229)

While Lengel and Daft's (1988) findings indicated that FTF communication should be the primary communication tool, they mentioned that if FTF meetings were unavailable in remote locations, then media-sensitive leaders would use other media such as videotaped presentations, taped audio interviews or conversations, and/or telephone conferences to convey their messages (p. 230).

Instant Messaging Studies

Recent research studies provided by Nardi et al. (2000) and Nardi (2005) disputed the claim that FTF communication is the only viable communication channel that provides the needed social cues. The researchers investigated IM, a popular tool that allows two or more people to type their conversations and to engage in ongoing dialogues in real-time. IM is similar to FTF meetings in that users exchange social and emotional cues in near synchronicity. Nardi et al. noted that some IM software programs

feature audio alerts when users go online, alerting other colleagues of their availability to chat (p. 80). Further, when messages are sent to colleagues, immediate responses appear as text messages such as away to lunch or busy right now, alerting the original colleague of their unavailability.

Based on my personal knowledge of IM, colleagues also can exchange social context cues in the form of emoticons or graphic icons, such as smiley or sad faces, indicating emotions. While these emoticons do not replace FTF facial expressions, these graphical icons can provide similar social cues, and some IM forums provide audio cues matching these expressions. However, senders cannot send emoticons for the unconscious aspects of FTF, such as inadvertent gestures, facial expressions, or vocal inflections related to specific feelings or moods. Receivers also cannot pick up similar unconscious aspects of other social cues apparent in FTF situations.

Nardi et al. (2000) interviewed and observed 20 people and their IM habits. These 20 participants covered a wide spectrum of users, from coworkers who were physically colocated in nearby cubicles in the same office to family members who lived across continents (p. 80). The researchers reported that “the general tenor of instant messages is typically casual, informal, and friendly” (p. 81). One of the participants interviewed commented that

> the give and take of a conversation in IM is much more immediate than [e-mail] and you can tell by the way it’s evolving what people’s intentions are or what they probably mean because you have context. That helps to shape a context be it light and bantering or certain statements that are meant to be tongue-in-cheek. (Nardi et al., 2000, p. 81)

While IM cannot replace FTF in portraying tone, inflexion, and other nonverbal cues, Nardi et al. noted that IM could provide social cues after users established their social connection with one another and set the tone in their messages (pp. 82, 85).

Additionally, users do not always have to respond immediately in the IM environment, similar to the e-mail format. Users have the option of conducting their conversation synchronously or picking up the dialogue at their convenience. As part of the findings, Nardi et al. (2000) also realized that people liked the use of IM "for clarifications, coordination, task delegation, asking and granting social favors . . . tracking others' schedules and arranging social meetings" (p. 82).

One of the key findings Nardi et al. (2000) noted is that IM allows users to negotiate availability (p. 83) in that a colleague can contact another colleague by checking the availability list. The IM availability list uses on-screen alerts for people signing in and out or being away. Users can informally ask whether it would be a good time to discuss an issue or even to inquire whether their colleagues would be available for a telephone call or an FTF meeting. IM is perhaps the only format that allows users to switch communication channels. As illustrated in the study by Nardi et al., when users noticed that they have to provide lengthy answers, they would request the switch to a telephone call or an in-person visit to discuss issues in detail (pp. 85–86).

The researchers presented their findings that IM, considered one of the lean media channels, could provide "feelings of connection with others for the purpose of continued interactions over time" (Nardi, 2005, p. 92). Additional studies reflecting substantial work on "media richness theory . . . [and] social presence theory" (Nardi, 2005, p. 91) can be found in the literature.

In an examination of the works detailed in Appendix A, the Hart and McLeod (2003) and Lengel and Daft (1988) studies revealed that leaders use different information technology for communication to provide direction and guidance to remote team members. The consensus among these researchers, as noted in this section and in Appendix A, is that successful and effective remote leaders need to

1. Build social capital to establish team cohesiveness
2. Clarify team members' roles and responsibilities
3. Create an information flow among team members
4. Deliver the same messages to team members by using different information technology to get the message across
5. Delegate responsibilities by empowering team members to participate in decision making
6. Foster an atmosphere of collaboration, credibility, and trust
7. Listen attentively
8. Overcommunicate and provide continuous feedback
9. Understand cultural diversity

Summary of Remote Leadership Attributes

Remote teams have "the characteristics, demands, and challenges of more traditional organizational teams" with two key differences (Zaccaro & Bader, 2003, p. 377). The first distinguishing feature is that team members who work on different schedules do not see each other often even though they are physically colocated in the same building or because they work in various locations. The second feature is that

interaction among team members is often performed in the technology-driven environment using a variety of information technologies.

In Zaccaro and Bader's (2003) work, the authors shared their experiences working with colleagues who were located at other universities (pp. 377–378). Zaccaro and colleagues worked on a project while using information technology. Evans and Ward (2007) have had similar experiences to Zaccaro in that they collaborated in creating three library-oriented publications in 6 years, working virtually by using e-mail as their primary means of communication (p. 184). Based on Zaccaro's experience, Zaccaro and Bader provided a theoretical framework for remote leadership. The researchers discussed the common and different characteristics in both FTF and e-teams (Zaccaro & Bader, p. 377). The researchers also discussed the leaders' responsibilities in both types of teams. Based on their knowledge, the researchers believed that leaders in the technology-driven environment, like their counterparts in the FTF environment have the responsibility to develop team unity by communicating and articulating the team's purpose and goals. Zaccaro and Bader noted that remote leaders have "three roles: *team liaison, team direction setter,* and *team operational coordinator*" (p. 381), illustrated in Figure 3.

Zaccaro and Bader (2003) believed remote leaders need to understand their responsibilities to ensure the success of their remote teams. Leaders need to play all three roles to be successful remote leaders. As Figure 3 indicates, remote leaders, either as team liaisons or as team operational coordinators, should develop social capital to establish team cohesion. According to these researchers, remote leaders cannot function effectively if they ignore one or more of these three essential roles and their respective courses of action (Zaccaro & Bader, p. 381).

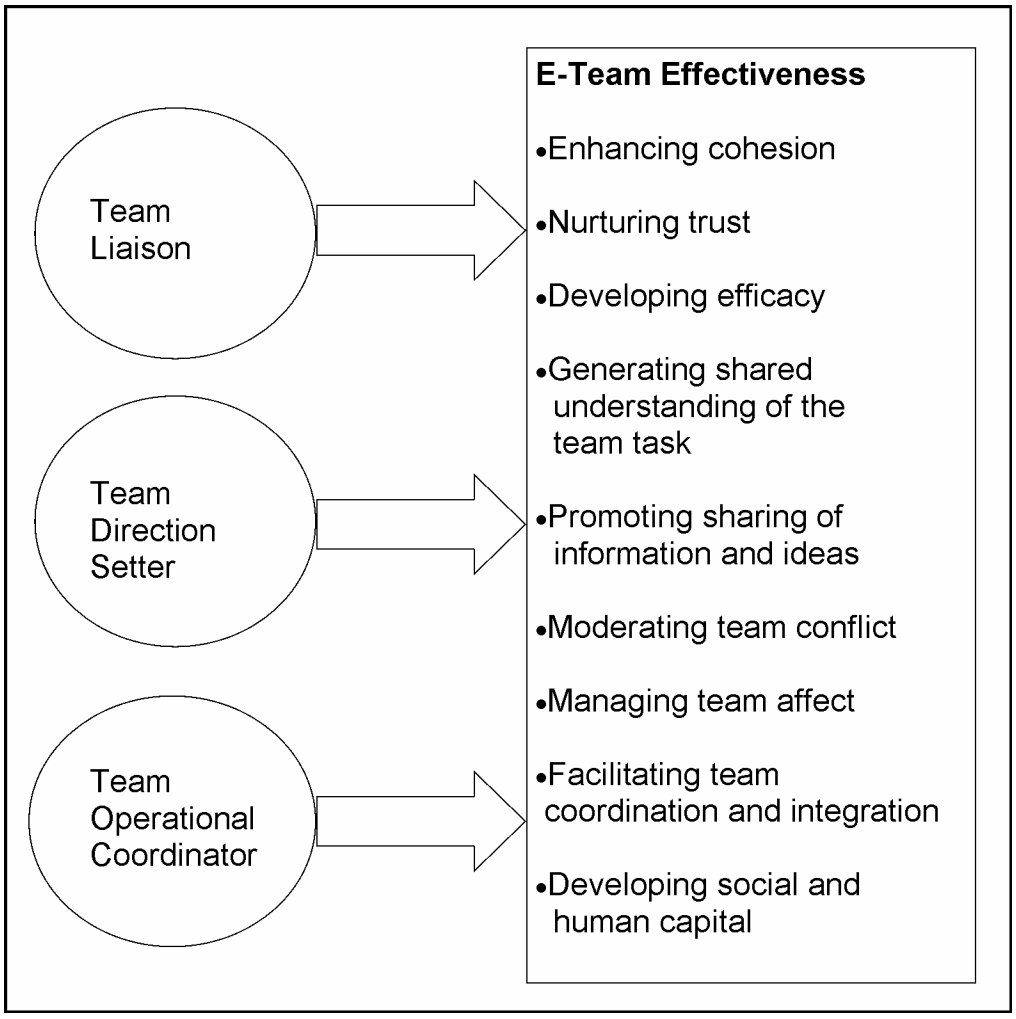

Figure 3. Zaccaro and Bader's "E-leader roles and e-team effectiveness." From "E-Leadership and the Challenges of Leading E-teams: Minimizing the Bad and Maximizing the Good," by S. J. Zaccaro and P. Bader, 2003, *Organizational Dynamics, 31*, p. 382. Copyright © 2003 by Elsevier. Reprinted with permission. All rights reserved.

By thoroughly examining popular and scholarly literature, leaders could apply their FTF leadership attributes to remote leadership situations. For example, core FTF leadership attributes, such as credibility and trust, excellent interpersonal skills, and adapting to change or being flexible, are still applicable in remote leadership situations. However, because of the nature of the remote leadership environment, leaders need to accentuate certain leadership attributes, such as the need to overcommunicate and to build social capital.

Adapting FTF Leadership Attributes to Remote Leadership

As noted, little empirical investigation exists about remote leadership, especially in library literature. However, several relevant leadership studies (Horner-Long & Schoenberg, 2002; Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) fit the context of this study's main research questions. By examining these studies, leaders in general may be able to adapt their FTF attributes to the technology-driven environment, allowing them to lead their organizations and employees effectively from remote locations.

Horner-Long and Schoenberg Study

Horner-Long and Schoenberg (2002) asked the following question in their research: "Does e-business require a different leadership profile compared to traditional bricks and mortar organisations?" (p. 612). They hypothesized that e-leaders or remote leaders would have a different set of leadership attributes as compared to those held by the traditional FTF or bricks and mortar leaders (p. 614). To answer that question, Horner-Long and Schoenberg randomly selected 200 leaders in the traditional bricks and mortar environment and 200 e-business leaders in the technology-driven environment.

Horner-Long and Schoenberg's (2002) methodology included administering a survey questionnaire and conducting semistructured interviews with selected participants (p. 614). They mailed identical questionnaires to 400 leaders, specifically CEOs or managing directors in United Kingdom organizations (p. 614). The researchers created a Likert-type scale, ranking the importance of leadership traits, behaviors, and skills. The 5-point scale ranged from not important to very important. Out of the 400

questionnaires sent out, 29 traditional leaders and 30 e-leaders completed 59 surveys, indicating a 15% response rate (p. 614). Finally, the researchers selected 20 leaders from both subsets to answer three open-ended questions to complement the survey (p. 614).

The researchers did not include the questionnaire or the open-ended questions in their article. However, by analyzing the Likert-scale tabular results and reviewing the article, I determined that Horner-Long and Schoenberg (2002) asked the surveyed leaders to rank personality traits, leadership behaviors, and skills in importance. Horner-Long and Schoenberg's list of personality traits was similar to the extensive lists found in the Hernon et al. (2003) study. In addition to honesty, other desirable personality traits the leaders listed included being "energetic, adaptable, inspiring, decisive, [and] collaborative" (Horner-Long & Schoenberg, p. 615). The researchers recorded 18 personality traits in all and ranked them in order of importance to the leaders (p. 615). Additionally, the researchers ranked in importance various leadership behaviors: the process resulted in the leaders ranking 15 behaviors from most important to least important. These behaviors included "motivating people, anticipating opportunities, inspiring vision, set[ting] clear expectations, liv[ing] the values, foster[ing] teamwork, [and] exploiting technology" (Horner-Long & Schoenberg, p. 615). Both traditional leaders and e-leaders ranked the most important leadership skills: "communication, strategic analysis, industry knowledge, cross functional experience, [and] international experience" (Horner-Long & Schoenberg, p. 616).

Horner-Long and Schoenberg (2002) learned that both traditional and remote leaders ranked some personality traits similar in importance. These personality traits

were “decisiveness, inspiration, adaptability and intelligence” (p. 615). In contrast, some differentiation existed in the ranking of other personality traits. For example, “e-world leaders were found to be more entrepreneurial and risk-taking, and less conservative, than their counterparts from traditional environments” (Horner-Long & Schoenberg, p. 615). The researchers were surprised to learn that “honesty and collaboration were seen as less important traits among e-world leaders” (Horner-Long & Schoenberg, p. 616).

As for leadership behaviors, Horner-Long and Schoenberg (2002) confirmed “that no significant differences were observed for 11 of the 15 leadership behaviours” (p. 616). The three behaviors that were valued differently were living the values or “lead[ing] by example,” “the ability to set priorities,” and “networking behaviour” (p. 616). Traditional leaders ranked living the values higher in importance than e-leaders. According to some of the traditional leaders’ comments, leading by example was perhaps more important in the traditional environment because leaders were visible in the workplace. On the other hand, e-leaders ranked networking skills as more important. The e-leaders commented that their businesses depend on their ability to build relationships in social networks (p. 616). The final difference was that e-leaders ranked the ability to set priorities higher in importance than did their traditional counterparts because e-leaders needed to prioritize rapid technological changes and to determine if they had the financial resources to handle these changes (p. 616).

Both FTF or traditional leaders and e-leaders or remote leaders valued communication and strategy planning. However, “information technology and project

management skills were more highly valued by e-business executives than their bricks and mortar counterparts" (Horner-Long & Schoenberg, 2002, p. 616).

Horner-Long and Schoenberg (2002) provided quantitative data to describe how the two groups of traditional (FTF) and remote leaders (e-leaders) in the United Kingdom rated the various leadership attributes in FTF and remote situations. By providing the mean and the variability (standard deviation) for the two groups, the researchers were able to indicate which leadership attributes were valued by each group, shown in Table 1. Further, Horner-Long and Schoenberg compared the two groups, and used an independent *t*-test to determine whether the FTF leaders' mean was statistically different from the remote leaders' mean for each leadership attribute. Horner-Long and Schoenberg's descriptive statistics in the form of Likert scales enabled them to quantify each leadership attribute's importance in remote situations. Although my study will not compare two groups of traditional and remote leaders, collected data will be correlated to those found in the Horner-Long and Schoenberg's study.

Overall, Horner-Long and Schoenberg's (2002) findings indicate that the leadership attributes of traditional (FTF) leaders and e-leaders (remote leaders) are equally valued except for certain leadership attributes. Both FTF and remote leaders agreed that the following leadership attributes were important: the ability to inspire, to share and communicate vision, and to make decisions. As shown by the consensus in Appendix A, remote leaders rate networking or building social capital higher than do bricks and mortar leaders due to the nature of the technology-driven environment. While the results in Appendix A indicate that collaborative skills are important among remote leaders, the findings in the Horner-Long and Schoenberg study show the opposite,

Table 1
Leadership Attribute Rankings by FTF and Remote Leaders in the Horner-Long and Schoenberg's (2002) Study

Leadership attribute	Traditional or FTF leaders	E-Leaders or remote leaders
Decisive	Important	Important
Inspiring	Important	Important
Adaptable	Important	Important
Intelligent	Important	Important
Entrepreneurial	Less important	More important
Risk taker	Less important	More important
Honest	More important	Less important
Collaborative	More important	Less important
Conservative	More important	Less important
Motivational	Important	Important
Anticipates opportunities (environment scanning)	Important	Important
Inspires vision	Important	Important
Sets expectations	More important	Less important
Lives the values (leading by example)	More important	Less important
Sets priorities	Less important	More important
Skillful at networking	Less important	More important
Shares knowledge	Important	Important
Communicative	Important	Important
Strategic planner	Important	Important
Skillful using information technology	Less important	More important

emphasizing that collaboration was more important to FTF leaders than to remote leaders. As noted in the Horner-Long and Schoenberg study, both FTF leaders and remote leaders value communication as one of their core leadership attributes, matching the overall findings by other researchers, as demonstrated in the summaries of FTF and remote leadership attributes in this chapter as well as in Appendix A.

CCL Studies

CCL researchers conducted a survey, asking 546 business leaders in the United States to determine “what skills and experiences [were] necessary to function effectively” as leaders in the technology-driven environment (Pulley et al., 2002, p. 36). CCL researchers were interested in obtaining answers to two main research questions:

> What specific leadership challenges do [leaders] face now that employees, customers, and suppliers are using Web-based technologies? What skills, experiences, and traits do [leaders] think are important for being an effective leader in the digital economy [or technology-driven environment]? (Pulley et al., 2001, p. 4)

The CCL study differs from the Horner-Long and Schoenberg (2002) study in that the CCL researchers focused on the challenges facing leaders in a rapidly changing environment due to technological advances. As a result, the findings focused on leaders’ challenges in overcoming their lack of competence in handling technology. The constant change in information technology impeded some of the surveyed leaders’ understanding of how technology could streamline processes in their organizational infrastructures. The following list shows the challenges facing the 546 surveyed leaders and their rankings of those challenges, from their most to their least important concerns:

> Integrating new technologies: 72%
> Changing business models: 65%
> [Meeting] higher customer expectations: 62%
> Mastering new technologies: 61% [and]
> Keeping pace with technology in [their] industry: 53%. (Pulley et al., 2001, p. 5)

CCL researchers noted that some of the 546 surveyed leaders admitted their preference to having FTF meetings, to making telephone calls, or to writing emails. Some of these leaders “rarely use more sophisticated technologies such as videoconferencing, Web conferencing, or instant messaging” (Pulley et al., 2001, p. 4).

Other interviewed leaders used these tools, with one leader remarking that they had recently conducted a meeting via video conferencing (Pulley et al., 2002, p. 36–37).

The CCL researchers also explored the attributes needed by leaders to a lesser extent. Similar to the findings outlined in the Hart and McLeod (2003) and the Horner-Long and Schoenberg (2002) studies detailed below, the CCL researchers learned that the 546 leaders ranked good communication skills as one of the most important remote leadership attributes, giving it a weight of 97% (Pulley et al., 2001, p. 6). Leaders noted that the following skills were important as well:

> Dealing with the accelerating rate of change: 97%
> Retaining talented employees: 96%
> Motivating others: 94%
> Setting a strategic direction in the face of ambiguity: 92%
> Unifying employees around a single, purposeful vision: 91% [and]
> Working collaboratively: 91%. (Pulley et al., 2001, p. 6)

Although the CCL researchers did not discuss social capital as one of the skills needed, the investigators noticed a common pattern of interconnection among leaders and their subordinates. Communication and collaboration enabled leaders to make decisions along with their team members. Another pattern that emerged is the opinion that leaders should adapt to constant changes in their environment and assist support staff around them in adapting as well. The overall impression gained from the CCL study was that leadership itself is evolving because “technology has introduced such complex changes and such rapid change that it may no longer be possible for a single leader to do it all and have all the answers” (Pulley et al., 2001, p. 6).

CCL recently conducted another study in 2007, asking 247 business executives who participated in CCL’s Leadership at the Peak program to present the 10 top trends in leadership (Criswell & Martin, 2007, pp. 3–4). Virtual or remote leadership was one of

the 10 leadership trends selected by these corporate leaders. CCL then asked these executives whether a different set of leadership skills were needed for remote leadership as opposed to FTF leadership, and “92% of 115 executives” substantiated that assessment (Criswell & Martin, p. 7; Martin, 2007, p.13). Additionally, these leaders selected communication as the most important leadership skill with a 71% response rate (Criswell & Martin, p. 8).

OCLC Study

The Online Computer Library Center’s (OCLC) recent study on library directors’ use of Library 2.0 tools indicated similar findings (DeRosa, Cantrell, Havens, Hawk, & Jenkins, 2007) to those reported by the CCL researchers. OCLC’s recent publication reported that 90% of 6,163 participants in Canada, France, Germany, Japan, the United Kingdom, and the United States used the Internet for “four or more years” and “over 50% . . . used the Internet for seven years or more” (DeRosa et al., pp. xi, 1–1). Along these lines, the use of e-mail increased from 73% to 97% and the use of blogs increased 16% to 46% from previously reported usage in 2005 (pp. 1–2).

As a supplement to the general public survey, OCLC researchers also asked 4,000 library directors to participate in the survey and 382 library directors agreed to answer the online survey (DeRosa et al., 2007, p. xiii). In general, 26% of U.S. respondents have used the Internet more than 10 years while 60% of the 382 library directors have used Internet for more than 10 years (p. 4–3). In telling contrast, only 38% of the library directors sent or received IMs while 59% of the U.S. respondents sent or received IMs (p. 4–4). DeRosa et al. also reported that 37% of U.S. respondents used social networking sites in contrast to 22% of the library directors (p. 4–4). The

survey results also indicated that library directors read blogs (68%), more than the U.S. respondents (44%), while the creation and maintenance of blogging was identical for both groups (19%; p. 4–4). Further, the age difference between library directors under the age of 50 (ages 22–49) and over the age of 50 showed the younger library directors (more than 50%) had a minimum of one IM account (DeRosa et al., p. 4–6).

It may be that these leaders, both the library directors in the OCLC study and the corporate leaders in the CCL study, lacked the technical competence to use information technology. If that is the case, they may also lack the knowledge of how to select the appropriate information technology, as shown in the Lengel and Daft (1988) study.

Summary of Applying FTF Leadership Attributes to Remote Leadership

The CCL study findings indicated common leadership attributes, including the necessity of leaders to have excellent communication skills and the ability to adapt to rapid changes in their working environments. CCL researchers (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) explored how the technology-driven environment has modified some leadership attributes. However, CCL researchers also substantiated other works on attributes needed by remote leaders, previously discussed in this chapter, in Appendix A, and in the Horner-Long and Schoenberg (2002) study.

From these studies, leaders could adapt, modify, and apply their FTF leadership attributes to remote situations. FTF and remote-leadership attributes share similarities, such as the need for leaders to communicate effectively, to plan strategically, and to collaborate with subordinates and colleagues while working toward a common vision.

A Theoretical Framework

As indicated in this literature review, previous researchers examined leaders' attitudes, behaviors, traits, styles, and tasks in relationship to their performances and colleagues or subordinates. As a result, the development of leadership theories grew in proportion to the number of studies conducted because leadership itself is difficult to measure. Leadership is an intangible concept that could only be measured in secondary ways. For example, if one were to ask about Winston Churchill and what made him such a great leader, there would be considerable debate. Some might speak of his rhetorical abilities (Adler, 1965; Felton, 1995; Humes, 1980); some may write about his consensus-building abilities (Best, 2001; Jefferys, 1991; Gilbert, 2004); and yet others may ponder his parentage (Keegan, 2002; Manchester, 1983).

By measuring a concept such as leadership in secondary ways, researchers could then could develop a "specified set of conditions" (DeVellis, 2003, p. 15) to evaluate collected data. Similarly, many researchers who have studied leadership did so by selecting and studying well-known leaders like Churchill, then developing a set of essential attributes and components of leadership. These essential attributes, such as personality traits or leadership behaviors, have common characteristics and remain stable in various settings in the corporate, library, and military fields, as shown in this chapter. Because of this continued reliability, leadership researchers were able to analyze leadership attributes and in turn, they theorized and developed models to answer the fundamental question of what makes a leader effective.

Classical Leadership Theories

Remote leadership could be grounded in several classical leadership theories as indicated by Northouse (2004) in his comprehensive work on various leadership theories. For example, Northouse outlines the various personality traits leaders should possess based on the trait approach theory developed by well-known authors such as Stogdill (1948, as cited in Northouse, 2004, p. 18); Mann (1959, as cited in Northouse, 2004, p. 18); Lord, DeVader and Alliger (1986, as cited in Northouse, 2004, p. 18); and Kirkpatrick and Locke (1991, as cited in Northouse, 2004, p. 18). These traits include "intelligence, self-confidence, determination, integrity and sociability" (p. 19). Hernon et al. (2003) provided comparable traits in their extensive lists on personality traits while Horner-Long and Schoenberg's (2002) findings included 18 personality traits. Bennis and Nanus (2003) and Sheldon (1991) enumerated self-confidence, trust, and credibility.

Northouse (2004) then discussed the skills approach theory developed by Robert Katz in 1955 (p. 35). Katz attempted to provide a set of skills that leaders could develop, focusing on three personal skills: handling technical activities (technical), dealing with people (human), and thinking critically in solving problems (conceptual; Northouse, pp. 36–38). Northouse further explained that each skill requires a set of competencies. For example, in dealing with people, leaders need excellent interpersonal skills to understand the needs and motivations of their subordinates. Creating ideas, planning strategies, and explaining vision fit in the category of critical thinking. Technical skills include competence in dealing with technology and its uses. Studies by Hernon et al. (2003) and Horner-Long and Schoenberg (2002) provided similar data in relation to

these skills, as did the CCL survey and other FTF leadership studies, such as those conducted by Bennis and Nanus (2003), Sheldon (1991), and Evans and Ward (2007).

Horner-Long and Schoenberg (2002) briefly described leader behaviors, which included motivating people, living the asserted values or leading by example, and other similar attributes. Hernon et al. (2003) also referred to leadership behaviors such as the ability to plan, to implement, and to assess strategic goals. Other seminal works on leadership attributes also describe these behaviors, including strategic planning, environment scanning, and negotiating, among others (Bennis & Nanus, 2003; Evans & Ward, 2007; Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002; Sheldon, 1991).

Using the style approach theory, numerous researchers and scholars, including Blake and McCanse (1991, as cited in Northouse, 2004, p. 68) and Goleman (2000), have identified various leadership styles, such as autocratic (coercive) or commanding, coaching, delegating, directing, visionary (authoritative), supporting (affiliative), and democratic. Further, Goleman's leadership styles table is frequently cited in recent leadership studies, shown in Table 2.

Some aspects of Goleman's (2000) leadership styles (shown in Table 2), such as the ability to build team cohesion, to visualize, to communicate, and to collaborate, have been presented throughout this paper. Goleman further discussed emotional intelligence, grouping competencies into "four fundamental capabilities: self-awareness, self-management, social awareness, and social skill" (p. 80). By selecting a small sample of these four capabilities, Goleman asserted that social awareness includes the leader's ability to feel empathy for others, to provide service to customers, and to read

or scan the environment to determine what is happening in the climate or situation surrounding the organization (p. 80).

Other researchers and scholars, including Fiedler (1967), as part of their leadership examination focused on the situations leaders would find themselves in, and classified these situations as leadership situational theory (Northouse, 2004, pp. 109–111). Fiedler studied leaders in a variety of situations and assessed their leadership effectiveness. Fiedler realized that “one style of leadership is not in itself better than the other, nor is one type of leadership behavior appropriate for all conditions” (Fiedler, p. 247). Fiedler recommended that leaders maximize their effectiveness by either changing their own leadership style or the situation itself. Fiedler recognized that leaders could not change their own personality traits or styles. Therefore, “effective leadership is contingent on matching a leader’s style to the right setting” (Northouse, 2004, p. 109), which is better known as the contingency theory.

However, leaders cannot always choose their situations, as in the case of Fiorina, a former CEO at Hewlett-Packard (2006). As indicated by Fiorina’s memoirs, Hewlett-Packard needed a leader who had the foresight to reshape its organizational climate, even if it meant terminating some employees for the organization to sustain its position. Fiorina succeeded in transforming Hewlett-Packard when the company reclaimed its position in the telecommunications industry (Fiorina). However, Fiorina was unable to recognize that the company required a different leadership style in sustaining Hewlett-Packard’s growth (Nadler, 2007). According to Nadler, the successful and effective leader would recognize the fundamental shift and adopt a different style to match the situation, echoing Fiedler’s (1967) situational theory.

Table 2
Goleman's "The Six Leadership Styles at a Glance"

	Coercive	Authoritative	Affiliative
The leaders modus operandi	Demands immediate compliance	Mobilizes people toward a vision	Creates harmony and builds emotional bonds
The style in a phrase	"Do what I tell you."	"Come with me."	"People come first."
Underlying emotional intelligence competencies	Drive to achieve, initiative, self-control	Self-confidence, empathy, change catalyst	Empathy, building relationships, communication
When the style works best	In a crisis to kick start a turnaround, or with problem employees	When changes require a new vision, or when a clear direction is needed	To heal rifts in a team or to motivate people during stressful circumstances
Overall impact on climate	Negative	Most strongly positive	Positive
	Democratic	**Pacesetting**	**Coaching**
The leaders modus operandi	Forges consensus through participation	Sets high standards for performance	Develops people for the future
The style in a phrase	"What do you think?"	"Do as I do, Now."	"Try this."
Underlying emotional intelligence competencies	Collaboration, team leadership, communication	Conscientiousness, drive to achieve, initiative	Developing others, empathy, self-awareness
When the style works best	To build buy-in or consensus, or to get input from valuable employees	To get quick results from a highly motivated and competent team	To help an employee improve performance or develop long-term strengths
Overall impact on climate	Positive	Negative	Positive

Note. From "Leadership that Gets Results," by D. Goleman, 2000, *Harvard Business Review, 78*, pp. 82–83.

Chemers' Integrated Leadership Theory

As evident throughout this chapter, leadership itself has many facets related to traits, skills, behaviors, and situations. Leadership theories abound, and Chemers (2000), focusing on the various facets of leadership, proposed an integrated leadership theory as a means to connect these theories.

After analyzing various leadership theories, Chemers (2000) distilled them by connecting them to core leadership functions. Chemers asserted that leaders need

three attributes to be effective and successful: (a) image management, (b) relationship development, and (c) resource deployment (pp. 37–38). Each function also encompasses various traits, behaviors, and styles needed by leaders to function effectively and efficiently. First, Chemers explained that effective leaders must be credible, which in turn invokes trust in their colleagues. A leader could gain credibility only by being honest, by having legitimate authority through their position, and by having the necessary competency skills. Competency skills include critical thinking (conceptual) and technical skills, as noted by Katz (1955, as cited in Northouse (2004, pp. 36–38). Second, Chemers focused on interpersonal skills, stating that leaders needed to develop and sustain relationships with their colleagues. These interpersonal skills enable leaders to develop team cohesion among their colleagues, to motivate and guide their team, and to empower them. Third, leaders need to have a deep understanding of resources made available to them, and these resources include human (staff members and colleagues' ability to perform functions and tasks), financial, or other intangible factors, such as critical thinking. Chemers stressed the need for leaders to understand their subordinates' strengths, such as their knowledge, training, and skills. Avolio (1999), in an earlier work on how to develop a full range of leadership, emphasized a key component of effective leadership, the interaction between people and resources, resulting in optimal leadership performance by individuals or organizations (p. x). Chemers asserted that leaders need self-confidence as well as confidence in their colleagues to carry out tasks to achieve outlined goals. By empowering their colleagues, leaders foster an environment of caring, collaboration,

and credibility in their organization. Only then can leaders assess the situation, make decisions, and deploy the necessary resources.

Chemers (2000) combined elements of all these theories and their supporting competencies. The result of his work provides the foundation for my study.

Wagner and Hollenbeck's Integrated Leadership Model

Five years after Chemers' (2000) study, Wagner and Hollenbeck (2005) designed a graphic model to represent a similar concept of integrated leadership, presented in chapter 1, Figure 1. The graphic model is self-explanatory, as each component of leadership has been discussed in this chapter.

Summary

By using Chemers' (2000) integrated leadership theory along with Wagner and Hollenbeck's (2005) graphic model as a theoretical framework for this study, it is possible for the characteristics of FTF leadership to be applied to the technology-driven environment, when a leader plays the role of remote leader in certain situations. Throughout this examination of extant research on leadership attributes, it is apparent that the core leadership attributes in both FTF situations and remote situations remain similar, although some of these core leadership attributes become essential in remote leadership. Evans and Ward (2007), Hernon et al. (2003), and Sheldon (1991) identified LIS leadership attributes in FTF situations, showing that certain leadership attributes remain relevant for both LIS and corporate leaders alike. When Sheldon identified library leaders' attributes by conducting a similar study to the one conducted by Bennis and Nanus (2003), Sheldon compared library leaders' attributes to those of corporate

leaders. Sheldon confirmed that no significant differences between corporate and library leaders existed other than a stake in profits on the corporate leaders' part. However, the studies conducted by Sheldon and Hernon et al. did not refer to remote employees; therefore, these attributes cannot be applied to remote leadership in the LIS field without further investigation. On the other hand, Evans and Ward have referred to virtual leadership in the context of telecommuting in their publication. Evans and Ward saw the need for further research in the area of remote leadership.

Researchers affirm that business and military leaders have similar leadership attributes for both FTF and remote leadership, as shown in this paper, Appendix A, and in other research studies (Fair et al., 2004; Horner-Long & Schoenberg, 2002; Kayworth & Leidner, 2000; Kerber & Buono, 2004; Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002). Core leadership attributes are vision, communication, decision making, self-confidence, trust and ethics, social capital, empowerment, and change. However, in remote situations, especially situations that involve technological advances, remote leaders need to

1. Communicate and overcommunicate by creating an information flow among team members and colleagues
2. Deal with rapid changes and master the integration of human and technological resources
3. Build social capital to establish team cohesiveness
4. Foster an atmosphere of collaboration, credibility, and trust
5. Delegate responsibilities by empowering team members to participate in decision making

6. Understand the use and selection of appropriate information technology

The Pew Internet and American Life Project researchers have conducted surveys regularly in order to track United States citizens' online (Internet) activities since 2000 (Pew Internet & American Life Project, 2008). The most recent analysis from these surveys showed that 92% of U.S. adults use e-mail while 39% of these people also send instant messages and read other Web blogs (Pew). According to the Pew researchers, 75% of the U.S. population or 302 million people (Population Division, U.S. Census Bureau, 2007) have used the Internet. Lengel and Daft (1988) revealed that when incidents are routine, executives rely on communication tools other than FTF meetings. Conversely, when incidents are nonroutine, executives tend to rely on FTF communication. Lengel and Daft also discussed how communication tools could convey verbal and nonverbal cues between senders and receivers, noting that written messages do not convey these cues.

However, other studies, notably by Nardi et al. (2000) and Nardi (2005) indicated that information technology relying on written messages could convey such cues. Further, other studies, including those by Boase et al. (2006), Hart and McLeod (2003), and Zaccaro and Bader (2003) revealed that the use of information technology along with FTF communication could establish and cement social ties among colleagues. This was true even if these colleagues were separated by geographical distance or time shifts, or whether they were physically situated nearby.

This review of leadership studies also discussed two studies conducted by Horner-Long and Schoenberg (2002) and CCL researchers (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002). Studies by these authors focused on the

leadership attributes needed by both traditional and remote leaders. Horner-Long and Schoenberg studied both FTF (traditional) and remote leaders (e-leaders) to determine whether their leadership attributes differed significantly. They provided an empirical investigation into leadership attributes, such as personality traits, behaviors, and styles. Overall, the leadership attributes for both FTF and remote leaders were similar. Horner-Long and Schoenberg stated that e-leaders "were more entrepreneurial and risk-taking, and less conservative" (p. 616). Sheldon (1991), when comparing LIS leaders to corporate leaders in the Bennis and Nanus (2003) study, noted that LIS leaders were creative, risk takers, and innovative (p. 5).

However, it seems that other researchers and scholars have not yet replicated Horner-Long and Schoenberg's study. Bryman (2004) observed that leadership researchers had the inclination "not to build sufficiently on the studies of leadership conducted by others" (p. 729). Bryman recognized that leadership research might be difficult to replicate. Nevertheless, Bryman emphasized that the fundamental problem of identifying leadership effectiveness continued to exist throughout decades of leadership research (p. 755). After asking the same set of questions outlined in the Bennis and Nanus (2003) study, Sheldon (1991) added her own questions related to the library field and made a valuable contribution to the body of library leadership. Further, CCL followed up on their studies by conducting similar studies asking business leaders to identify the latest leadership trends and to identify how leadership has changed recently (Criswell & Martin, 2007; Martin, 2007). With Bryman's (2004) advice to build upon existing studies in mind, Horner-Long and Schoenberg's (2002) study provided a viable

foundation for me to develop a survey instrument using similar Likert-scale questions, which will be discussed in the methodology chapter.

While the CCL findings are relevant, that study had some limitations (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002). First, CCL researchers mentioned that the leaders came from various industries but did not identify whether these leaders worked in manufacturing, technology, banking, or other industries. As a result, the researchers generalized the findings across industries. Second, the CCL researchers provided a sweeping set of generalizations regarding the 546 surveyed leaders without providing demographical information about these leaders. Finally, the CCL researchers did not mention whether the questionnaires and in-depth interviews contained a lengthy list of questions. Instead, the CCL researchers focused on only two questions throughout their documents. In all, the CCL study lacked sufficient information to assist me in locating data needed for corroboration and comparison to my survey tool for the LIS leaders. Subsequent research revealed that this additional information is located in a Forrester proprietary report written by Pohlmann, Jastrzembski, and Pulley (2001). However, the CCL researchers provided a viable list of core leadership attributes needed by leaders to be effective in remote situations.

I asked similar questions to those posed in the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) when polling LIS leaders about the various skills and experiences needed to be effective leaders in remote situations. Further, I corroborated whether the LIS leaders have adapted their core leadership attributes to their technology-driven environments, and if their leadership attributes are comparable to those of corporate leaders.

My investigation of LIS leaders' remote leadership attributes also incorporated Likert-type scales, as did Horner-Long and Schoenberg (2002). By corroborating and comparing the leadership attributes discussed in the studies conducted by CCL, Horner-Long and Schoenberg, and other researchers cited in Appendix A, a set of leadership attributes may emerge for LIS leaders to identify and to address in remote situations.

The next chapter defines the research methodology chosen for this study. The chapter also outlines the procedures followed in determining how relevant studies shaped the creation of a survey instrument before discussing the procedures to be used in collecting and analyzing data.

CHAPTER 3

METHODOLOGY

The purpose of this study was to better understand how library and information science (LIS) leaders use and apply their leadership skills to the technology-driven environment at their libraries. Specifically, this study's goal was to understand how library leaders, using information technology, make modifications to their face-to-face (FTF) interactions when leading their employees remotely. This chapter described the procedures and methods used to answer the following research questions:

Research Question 1. How and to what extent have LIS leaders modified their FTF interactions to lead their employees remotely using information technology?

Research Question 2. What are the essential attributes of remote leadership in the LIS field?

Research Question 3. How do the remote leadership attributes of successful and effective LIS leaders compare to those corporate leaders' identified attributes in remote leadership?

This chapter includes the (a) identification and selection of LIS leaders for the survey, (b) research design, (c) instrument construction, (d) research methodology, (e) subject-matter-expert (SME) review process, (f) administration and evaluation of the pilot test, (g) administration of the final study, (h) data-analysis procedures, and (i) a summary.

By providing a comprehensive review of prior leadership research (Bass, 1990; Bennis & Nanus, 2003; Burns, 1978; Gardner, 1993; Zaleznik, 1977), along with library

leadership studies, notably those conducted by Sheldon (1991), Hernon, Powell, and Young (2003), and Young, Hernon, and Powell (2004), I have identified FTF leadership attributes for this study. Since I have already listed the essential attributes of leadership used in FTF and remote situations found by other researchers in the literature review, this study is concerned less with the actual attributes of leadership than with the exploration of whether library leaders are using information technology to be effective remote leaders.

Identification and Selection of LIS Leaders

Gall, Gall, and Borg (2003) caution researchers that it is not feasible "to draw a sample from a very large, geographically dispersed target population. . . . Instead, [researchers] draw their samples from an accessible population, which is all the individuals who realistically could be included in the sample" (p. 168).

According to the American Library Association's (ALA) fact sheet 2, approximately 150,000 librarians are employed in the United States (American Library Association [ALA], 2008, para. 4). The ALA fact sheet does not identify those librarians who hold administrative and/or management positions. Library Administration and Management Association (LAMA), a division of ALA, includes librarians who hold administrative and/or management positions as members, and LAMA does allow students and other librarians who are interested in administration to join the organization. However, ALA and LAMA prefer not to share their membership lists with current members to promote any type of research because both ALA and LAMA recognize that some members have provided their home e-mail addresses and home postal addresses. On the other hand, ALA and its divisions sometimes allow members

to solicit survey participation when ALA members use electronic mail lists or message boards. Further investigation reveals that the *ALA–APA Handbook of Organization* provides e-mail addresses only for current ALA committee members. Although the *American Library Directory* provides a directory for all libraries and their postal addresses, this directory does not always list the e-mail addresses for the targeted population of library professionals needed to participate in this study's survey. Finally, the online version of the *American Library Directory* does not allow researchers to select specific criteria, such as population or enrollment ranges, without labor-intensive measures being taken to examine each library listing. Schonlau, Fricker, and Elliott (2002) noted that,

> For general populations, it is usually impossible to contact potential respondents by e-mail because e-mail lists of the target populations do not exist. This limitation implies that respondents must be initially contacted in a traditional way, such as by U.S. mail, which would then reduce the cost savings and timeliness benefits one achieves with an Internet survey. (Schonlau et al., 2002, p. 75)

Since this study must abide by the University of North Texas Institutional Review Board policies, private (home) addresses cannot be used due to privacy issues. As a result, it was necessary to contact survey participants by using a different mailing list other than the membership lists within ALA and LAMA. Although it may be paradoxical to notify potential library professionals by traditional mail when this study used a Web-based survey, postcards became the only mode to contact library professionals, echoing the assessment made by Schonlau et al. (2002, p. 75).

MDR Universal Database

After investigation, I located MDR (Market Data Retrieval) which allows researchers to purchase mailing lists of academic and public libraries' addresses. MDR

has a universal database listing librarians and their titles in academic, public, school, and special libraries in the United States. Although MDR does not provide general demographics such as age and gender, the MDR database allows researchers to select criteria, such as population or enrollment ranges, specific job titles, and locale preferences (urban, suburban, rural, or all three). The MDR database also provides postal work addresses, adhering to the University of North Texas Institutional Review Board policies and omits the use of private (home) postal addresses as well as private e-mail addresses. While the MDR database provides a subset of work e-mail addresses, that subset is not as robust as the full database containing postal addresses.

MDR Sampling Group Bias

By purchasing the MDR mailing list targeting librarians who may have remote employees housed in academic satellite campus libraries or public branch libraries, some bias may have existed because library leaders were randomly selected throughout the United States without ascertaining whether they had remote employees. Statistically speaking, published mailing lists as provided by the MDR database and/or electronic mail lists provided by ALA and LAMA are defined as sampling frames to allow researchers to draw a sample from a target population (Creswell, 2003, p. 156; Gall et al., 2003, p. 168; McBurney & White, 2007, p. 249). Another potential bias may result when the published mailing lists do not reflect the librarian's latest job status, such as when librarians change positions, relocate and change their postal address, reclassify job titles or resign or retire from the field. As a result, MDR may not provide up-to-date postal addresses.

MDR Sampling Group Analysis

Prior to purchasing the mailing lists, MDR allowed me to select criteria from their universal database, narrowing the librarian population to a targeted group of library professionals who hold administrative and/or management positions. By using a stratified random sampling method, MDR provided a sampling frame of library directors (which also included library deans), assistant directors (including associate directors and deans) and branch managers/department heads needed for this study.

To illustrate how MDR selected the targeted group of library professionals, their universal database (as of February 1, 2008) consisted of 18,795 library directors, assistant directors, and branch managers/department heads in public libraries in urban, suburban, and rural areas in the United States. Out of these 18,795 library professionals in public libraries, MDR randomly selected 4,114 public library participants, using a stratified sampling method, based on my selected criteria. The public-library criteria were as follows:

1. Urban and suburban areas in the United States
2. Areas serving populations starting with a range of 80,000 to over 500,000
3. Specific job titles: library directors, assistant directors, and branch managers

Of 6,359 academic library deans/directors, assistant or associate deans/directors, and campus (branch) department heads, MDR randomly selected 1,735 academic library participants. This time, MDR followed my specific set of criteria:

1. Community colleges and universities
2. Enrollment ranges above 5,001 to over 25,000 in urban and suburban areas in the United States;

3. Specific job titles, library deans/directors, assistant or associate deans/directors, and department heads in satellite campus libraries

After MDR collected a total of 5,849 library participants in academic and public libraries, they provided a Microsoft Excel®∗ spreadsheet software with postal addresses. I took this list to FedEx Kinko's®∗, along with my designed postcard. FedEx Kinko's services merged the postal addresses onto postcards before mailing them to the targeted population of library directors, assistant directors, and branch managers/department heads.

Selection of MDR-Targeted Group of Librarians for Study

The 5,849 targeted librarians from the MDR database met this study's criteria by holding administrative and/or management positions in their libraries. While there were some limitations such as incorrect postal addresses or incorrect job titles due to reclassification and promotions, the MDR group provided a realistic target and accessible population, drawing a representative sample. Additionally, individuals also had the ability to elect whether to participate in the online study.

The MDR sampling frame allowed me to make inferences about the library leaders in the survey population as remote leaders currently employed in academic and public libraries, but inferences should not be made for every librarian holding administrative/management positions in the United States until further research is conducted (Creswell, 2003; Gall et al., 2003; McBurney & White, 2007). Further,

∗ Microsoft, www.microsoft.com
∗ FedEx Kinko's, www.fedex.com/us/officeprint/main

generalizations cannot be made for school or special librarians without additional research.

Research Design

I examined two studies that seemed to hold some relationship to this study: instruments from the Center for Creative Leadership (CCL) researchers (Pulley & Sessa, 2001; Pulley, Sessa, Fleenor, & Pohlmann, 2001; Pulley, Sessa, & Malloy, 2002) and the Horner-Long and Schoenberg (2002) study. I could not secure the actual survey instruments used in these studies (J. Fleenor, personal communication, January 30, 2007; R. Schoenberg, personal communication, March 14, 2007 & April 2, 2007), however, I could use the authors' published research as a foundation for this study.

According to Gall et al. (2003, p. 42) and Bryman (2004, p. 755), researchers would contribute to the body of knowledge in any field by building and improving on other research studies, although Bryman noted that leadership researchers do not always build on prior research. By building on the CCL research (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) and Horner-Long and Schoenberg's (2002) study, my research served to identify emergent patterns of remote leadership that existed in the LIS field.

Instrument Construction

I constructed my survey instrument by designing a self-administered questionnaire. The composition of the questionnaire included a blend of closed-ended questions and open-ended questions. Closed-ended questions ask respondents to select answers predesigned by the developers (Fowler, 1995, pp. 46; Gall et al., 2003,

p. 227; McBurney & White, 2007, p. 238). Closed-ended questions are easier to code, but respondents may not provide in-depth answers (Fowler, p. 46; Gall et al., p. 227; McBurney & White, p. 238). Researchers noted that open-ended questions require extensive coding and analysis. Krippendorff (2004) and Neuendorf (2002) further explained that content analysis enables researchers to examine and interpret data by identifying common patterns and themes with in-depth answers given by respondents.

Since I was assessing the library leaders' use of information technology in leading their employees remotely, it was appropriate that I use a Web-based survey as part of my research. I investigated online survey tools and selected SurveyMonkey.com®.* SurveyMonkey.com allows researchers to select the appropriate question type, such as rating scales, giving researchers the opportunity to design the question as a closed-ended question or an open-ended question. SurveyMonkey.com also allows respondents to select more than one choice per item or limits respondents to one choice per item. Using SurveyMonkey, researchers can collect raw data and import them into a Microsoft Excel spreadsheet software or similar software. I kept detailed notes, including the changes in survey item numbering, recording them in Appendix B. This ensured that data-collection procedures were followed when recording data for analysis.

General Guidelines

I followed general guidelines in constructing my survey instrument, containing questions rephrased as statements, open-ended questions, and scalar ratings. According to Dillman (2007), researchers should not ask demographic questions at the

* SurveyMonkey.com, www.surveymonkey.com

beginning of a questionnaire. Instead, researchers need to choose the first question carefully (Dillman, p. 92) to help draw respondents' attention and encourage their willingness to participate in the survey. Dillman goes on to explain that the first question should be (a) inclusive, (b) concise, and (c) appealing (p. 92). Further, the first question needs to connect the respondents to the survey topic (Dillman, p. 94).

I decided to begin my survey with a definition of remote employees in librarianship, and asked participants whether they led remote employees. By giving the survey participants the definition, they would have a better understanding of my research's purpose, as suggested by Fowler (1995, p. 86). Further, if the survey participants answer the first question, whether they lead remote employees, by replying none, the Web-based survey will take them to the end of the survey, thanking them for their participation.

Other Guidelines

There are other general guidelines for creating good questions (Creswell, 2003; DeVellis, 2003; Dillman, 2007; Fowler, 1995; Gall et al., 2003; McBurney & White, 2007). Fowler, in his seminal work on improving survey questions, provides numerous examples on how to word questions with clarity. Fowler's recommendations, as well as those made by DeVellis and McBurney and White assisted me in designing questions and scalar items with only one issue or concept each to avoid double-barreled items (DeVellis, p. 68; McBurney & White, p. 239). Fowler (1995, p. 103) emphasized the need to avoid ambiguous statements. If a statement is ambiguous, the respondent may not be able to agree or disagree, resulting in the respondent selecting the neutral point of a scale continuum (Fowler, 2002, p. 94).

If the researcher decides to use scalar items in the form of Likert scales, commonly used in attitude, belief, or opinion surveys (DeVellis, 2003; Gall et al., 2003; Powell & Connaway, 2004), the researcher must design the scale continuum in a consistent manner. For example, the scale could list items from positive to negative, or conversely, from negative to positive (DeVellis, p. 79; Dillman, 2007, pp.127–128; Fowler, 1995, pp. 49–50). The scales also need to indicate consistency through visual positioning even if the scales indicate different ratings. Visual positioning assists respondents in checking the appropriate rating in a vertical or horizontal format (Dillman, p. 110). DeVellis prefers a neutral midpoint as neither agree nor disagree or agree and disagree equally (p. 79).

Additionally, McBurney and White (2007) cautioned researchers to keep social desirability (p. 240) in mind when respondents answer questions because they want to be perceived as socially acceptable (p. 240).

Research Methodology

Bryman (2004) and Lowe and Gardner (2000), in their examination of leadership research, observed that leadership researchers commonly designed their studies by using one of the three methodologies, qualitative, quantitative, or a combination of both methodologies. Questionnaires designed to focus on qualitative research use open-ended questions (Creswell, 2003; Gall et al., 2003), whereas quantitative questionnaires rely on close-ended questions (Creswell, 2003; Gall et al., 2003). The third methodology, a combination of qualitative and quantitative research, a mixed-methods approach (Creswell, p. 22), allowed me to gather and collect both quantitative and qualitative data needed to identify patterns of remote leadership in the LIS field.

Survey-Item Construction

I developed my survey items by creating Likert scales (DeVellis, 2003; Fowler, 1995; Gall et al., 2003). DeVellis (pp. 63–66) advised researchers to create a large pool of items for each concept. If the concept itself, such as leadership, could not be directly measured or directly observable, other secondary ways or a specified set of conditions (DeVellis, p. 15) can be created to measure these intangible concepts. Throughout the construction of my survey instrument, each survey item indicates the linkage between the concept of remote leadership and the use of information technology. Each survey item is based on a thorough examination of various published studies, shown in Appendix B.

Part A: LIS leaders' use of technology in remote situations. I designed the first part of my study's instrument to answer the first research question by asking how and to what extent LIS leaders have modified their FTF interactions when leading their employees remotely using information technology.

Part A asked survey participants about their use of information technology in remote situations, assessing whether they, as library leaders, have modified their FTF leadership skills. Information technology has been identified and used in leading employees remotely (Andrews, 2004; Burtha & Connaughton, 2004; Casey & Savastinuk, 2007; Fair, Connaughton, & Daly, 2004; Farkas, 2007; Fiorina, 2006; Hart & McLeod; 2003; Kayworth & Leidner, 2000; Kerber & Buono, 2004; Nardi, 2005; Nardi, Whittaker, & Bradner, 2000; Pulley & Sessa, 2001; Pulley et al., 2002; Stephens, 2006, 2007). These tools include e-mail, instant messaging (IM), institutional intranet Websites, telephone-conference calls, telephone messages, video conferencing, virtual

meetings or virtual chats through Internet or intranet forums, voice mail, online social networks, and wikis.

Each LIS leader was asked to rate the frequency of using information technology available in their workplace, selecting the appropriate frequency, ranging from daily to never. They selected their top three preferred tools as well.

Each LIS leader also indicated their degree of agreement or disagreement as to whether they have modified their FTF leadership attributes in leading their employees remotely through information technology. They selected one of the points on the 5-point agreement rating scale, with 1 being rated as *strongly disagree* and 5 being *strongly agree*. The agreement rating scale also indicates a neutral midpoint, using the phrase *neither agree nor disagree* (DeVellis, 2003, p. 79).

Part B: Rating remote-leadership attributes. My study's second research question asked LIS leaders to rate essential leadership attributes in the LIS field. Part B is a composite of leadership attributes that have proven to be valid.

Each Likert scale contained one leadership attribute, asking LIS leaders to rate them in importance of facilitating a successful and effective remote leader. The pool of leadership attributes consisted of scaled items based on personality traits, leadership behaviors, and leadership skills based on the work of Bennis and Nanus (2003), Evans and Ward (2007), Hernon et al. (2003), Sheldon (1991), and Young et al. (2004) with emphasis on the study conducted by Horner-Long and Schoenberg (2002).

Instead of repeating the same question to rate a remote leadership attribute in importance, these attributes are constructed in an item-in-a-series format (Dillman, 2007, p. 101) for participants' ease of reading the statements and of rating these items.

The importance rating scale indicated 5 points, with 1 being rated as *not at all important* and 5 being *very important.* This scale also included a neutral midpoint.

Part C: Open-ended questions. I designed the third part of my instrument to ask LIS leaders to provide additional information about leadership skills and experiences needed in remote situations. The first two open-ended questions are based on the CCL study, specifically the Pulley et al. (2001) study. CCL researchers surveyed 546 corporate leaders asking two questions:

> What specific leadership challenges do [leaders] face now that employees, customers, and suppliers are using Web-based technologies?
> What skills, experiences, and traits do [leaders] think are important for being an effective leader in the digital economy [or technology-driven environment]? (Pulley et al., 2001, p. 4)

One of the themes provided by the surveyed leaders in the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) was that some corporate leaders lacked the technical skills to keep up with the constant technological changes. By modifying these relevant questions to fit the LIS context, general patterns of library leaders' skills may be revealed, and may be corroborated with those found in the CCL study.

The use of content analysis (Krippendorff, 2004; Neuendorf, 2002) revealed the presence of leadership concepts in library leaders' comments when answering the following modified questions:

1. What specific leadership challenges do you face now that everyone is using information technology?*

2. What skills, experiences, and traits do you think are important to be an effective remote leader in the LIS field?*

The third open-ended question is based on the studies conducted by Nardi (2005) and Nardi et al. (2000) on IM and social and emotional cues. This question asked participants, “How do you convey these similar aspects by using information technology, such as e-mail, IM, and other similar forums in remote situations?” Collected data allowed me to compare the leadership attributes to those corporate leaders’ identified attributes in remote leadership to answer the third research question. In order to obtain more information in relation to the first research question, the fourth question asks participants, “How do you apply your face-to-face leadership skills to motivate your remote employees?”

Part D: Demographics. The demographic section comprised the fourth section of my study’s survey instrument. The pool of items were developed based on general demographic data, such as age, gender, the number of years in the LIS field, the type of library where the participant works, position title, and the number of years in the position. This section contained 6 demographic questions.

Part E: Final comments. The last section in the survey instrument asked participants to provide their feedback about the pilot survey during the pilot testing phase. In the final survey, participants shared their final comments, and provided their e-mail address if they were interested in obtaining a summary of the survey results.

* Adapted from Pulley et al. (2001).

Subject-Matter-Expert Review Process

Prior to asking the library subject-matter experts (SMEs) to review my instrument, I requested and received approval from the University of North Texas Institutional Review Board to conduct research involving human subjects.

Because I developed a new survey instrument, confirming reliability and validity may have been problematic, but this difficulty was overcome through addressing it properly. Prior research in leadership studies has provided overall validity and reliability for my study's survey instrument. However, to ensure my survey instrument's usability (Fowler, 2002, p. 112), pretests were recommended to determine the instrument's content validity by asking participants to review the questions for relevancy and clarity (Dillman, 2007, pp. 140–141; Fowler, 2002, pp. 112–115; McMillan, 2004, p. 196). The purpose of pretesting the instrument was to evaluate each question and to discover any potential problem in each question (Presser et al., 2004, pp. 110–111). There are several methods to pretest an instrument:

1. Focus groups (Fowler, 1995, pp. 105–110, 2002, pp. 106–107)
2. Interviews (Converse & Presser, 1986, p. 65; Fowler, 1995, pp. 110–114, 2002, pp. 112–113)
3. Self-administered questionnaires with researchers present to observe test taking (Fowler, 2002, p. 114)
4. Rating forms for feedback included in Web-based surveys (Ma & McCord, 2007, p. 15)
5. A panel of experts (DeVellis, 2003, pp. 85–87)

To distinguish management items from leadership items (Bennis, 1994, pp. 44–47; Zaleznik, 1977), in my questionnaire, I decided to follow DeVellis' (2003) recommendation by creating a panel of experts who are well versed in library leadership to pretest my survey instrument. Since I had no working knowledge of the survey participants' leadership skills, I decided to recruit well-known leaders in Texas libraries. I selected Texas librarians based on their work in Texas Library Association committees or related work to serve as library SMEs. These library leaders met three specific criteria. First, these Texas librarians are active and acknowledged as library leaders based on their work both in Texas and outside of Texas. Second, they held the title of dean or director, associate or assistant dean/director, or served as the branch manager or coordinator in various types of libraries. Third, they practiced remote leadership because they had remote employees or had done committee work remotely. Although this sampling of SMEs was purposeful (Creswell, 2003, p. 185; Gall et al., 2003, p. 165), the small group served its purpose in reviewing my survey instrument (DeVellis, pp. 85–87).

To ensure the appropriate representation of library types, I selected library leaders from four different types of libraries (academic, public, school, and special) across Texas (see Table 3). I contacted 15 library leaders to participate as SMEs; out of 15 SMEs, 12 library SMEs agreed to examine my survey instrument, resulting in an 80% response rate.

SMEs' Evaluation of Survey Items

The 12 library SMEs had the opportunity to question whether the items actually measured what the researcher intended (Creswell, 2003; DeVellis, 2003; Gall et al.,

2003). The SMEs evaluated each survey item as to how well the questions related to the use of information technology in remote leadership situations by using two rating scales.

Table 3
Selection of SME Participants, n = *12*

Type of Library	Participated in SME Review Process
Academic—over 25,000 student enrollment	Yes
Academic—over 25,000 student enrollment	Yes
Academic—under 15,000 student enrollment	Yes
Academic—under 15,000 student enrollment	No
Public—over 500,000 population	No
Public—over 500,000 population	Yes
Public—less than 250,000 population	Yes
Public—less than 250,000 population	Yes
School—grades K to 12	Yes
School—grades K to 12	Yes
Special—corporate, law, medical, etc.	Yes
Special—corporate, law, medical, etc.	Yes
Special—corporate, law, medical, etc.	Yes
Other—library school	Yes
Other—library school	Yes

The 12 SMEs reviewed each item's clarity, rating them on a scale of 1 to 5, with 1 being *poorly phrased* and 5 being *very clearly written*. The second rating scale provided the SMEs the means to determine the items' relevance, rating each survey item on a scale of 1 to 5, with 1 being *not relevant* and 5 being *very relevant*.

I recorded the SME's rating scores using Microsoft Excel spreadsheet software before they were tabulated to obtain the mean and SD. Then composite scores for clarity and relevance means were derived by calculating both the clarity and relevance mean scores. The SME results are shown in Appendix C. Data were sorted first by item

number for each part in the survey instrument. Then each item was re-sorted by the highest clarity and relevance composite mean score to the lowest score for each part of the survey instrument.

Additionally, the 12 SMEs selected the appropriate leadership category or factor, statistically speaking, that best fit each survey item. For example, if the survey item indicated teamwork, the SME selected category B for that specific leadership attribute or factor. There were eight categories in all for the SMEs to select; the categories or factors were the following:

1. Factor A—Use of Information Technology
2. Factor B—Teamwork/Social capital
3. Factor C—Communication
4. Factor D—Accessibility/Availability
5. Factor E—Decision making
6. Factor F—Change
7. Factor G—Vision
8. Factor H—Empowerment

If there was no category that suited the survey item, the SMEs were encouraged to suggest other leadership factors. As a result, one of the 12 SMEs added a new leadership factor, staff development (Factor I).

The SMEs' selected categories were cross tabulated to determine how the SMEs decided which items should be grouped together. Further, if the SMEs' factor ratings indicated no agreement was made, the rating was declared as an undetermined category.

Decision-Making Process in Retaining Survey Items for Pilot Test

I reviewed the SMEs' selected leadership categories and correlated them to the column entitled concept and factor code in the survey instrument matrix (see Appendix B). I compared my concepts to the SMEs' selected categories, and they were a match in many items. When the SMEs selected more than one category for the same item, resulting in an undetermined category, I cast the deciding vote. The same can be said if the SME category did not match the published studies, and I had to weigh the category in favor of the SMEs or the citation source based on my examination of the literature review. I also decided to create a last category or factor, Factor J for social capital, by separating that attribute from teamwork (Factor B).

Ultimately, it was my decision whether to retain or remove survey items, using my judgment based on my examination of the literature review and DeVellis' (2003) recommendations (p. 87). I compared the SMEs' comments to the SME clarity and relevance composite mean scores shown in Appendix C. For example, item A63 scored a five for its composite mean score for clarity and relevance. I wrote A63 as "I recognize that my remote employees may not receive the same information as those who are physically located near my office." During the SME review process, some SMEs expressed a concern about geographic locations, asking for clarification on *near* and *away*. To illustrate how I rephrased some of the survey items, using the same example, item A63, I rephrased the statement to "I recognize that my remote employees may not receive the same information as those who work in my location" for the pilot survey (see Appendix B, Item A63). This revised statement was retained as pilot survey A20 (i101),

and recorded in Appendix B. I reviewed each item scoring less than a perfect 5 and rephrased these items on a case-by-case basis.

The SMEs did not provide comments for every item, but when they did, the comments proved to be insightful on various survey items. For example, two SMEs suggested that the item A5 statement be rephrased to ask participants to select their top three communication tools (see Appendix B, item A5 which is now reclassified as pilot survey item A4, i21–i29). They felt item A5 was a duplicate of A4 by asking participants how often they used information technology in the workplace.

I examined these comments using the guiding principles proposed by Krippendorff (2004) and Neuendorf (2002). By analyzing the comments, patterns emerged to assist me in rewording statements. For example, the SMEs commented on ambiguous or poorly written statements found in items A6, A70–A73, and A80–A81, among others. I modified and retained these items or deleted them for the pilot testing. I made notes for each survey item's status, shown in Appendix B, throughout the decision-making process. Some survey items indicated the appearance of social desirability (DeVellis, 2003, p. 87; McBurney & White, 2007, p. 240) as found in items A17, A24, and A31; they were eliminated prior to pilot testing.

The SMEs also suggested that some items be consolidated due to duplication or for easier reading. For example, items A12 through A15 in Appendix B were consolidated into one item, pilot-survey item A6 (i39–i47). Items B18 and B47 were consolidated into pilot-survey item B17 (i162) as were B12 and B36 (as pilot-survey item B9); B23 and B32 (as pilot-survey item B29, i174); B29 and B45 (as pilot-survey item B26, i171); B28 and B42 (as pilot-survey item B38, i183).

Throughout the review process, it became apparent that a substantial number of SMEs struggled with the remote-employee definition used as a prelude to the questionnaire. After some consultation with one of my doctoral advisory committee members and three SMEs, I revised the remote-employee definition and added nine scenarios to assist library leaders to better understand how librarians lead remote employees.

Summary

Overall, Part A in my survey instrument had a range of 3.90 to 5 composite mean scores. I eliminated most of the lower scores, notably those below 4.5; I retained some items, such as pilot-survey item A7 (i48), although the SMEs thought the question of visiting staff members was ambiguous. If I was not certain whether these items had relevance, I retained them. The pilot-test results would indicate whether the survey item was functioning appropriately from a statistical standpoint.

Items in Part B scored between 4.08 and 5. I decided to retain B17 (conservative), the lowest-rated score, in order to compare my results to Horner-Long and Schoenberg's (2002) leadership rankings in importance as presented in chapter 2, Table 1. Overall, leadership attributes have proven to be valid because leadership researchers and scholars Bass (1990), Bennis and Nanus (2003), Burns (1978), Gardner (1993), and Zaleznik (1977), have identified common leadership attributes. Also, researchers have included those in the library field, notably Evans and Ward (2007), Hernon et al. (2003), Riggs (1982), and Sheldon (1991). The leadership attributes identified in these studies have been shown to be consistent or *reliable* (McBurney & White, 2007, p. 129), establishing Part B's internal content validity.

Finally, the SMEs did not report any problems with items in Part C and Part D. Item C3's clarity and relevance mean score of 4.59 rated lower than the other two items, and this item was analyzed during the pilot-test reliability phase. Part D provides general demographics, although one SME commented that a range of years should be given for age, the number of years in current position, and the number of years in the library field, rather than asking participants to specify the number of years.

According to DeVellis (2003), the SME review process should also enable the researcher to reduce the large pool of items. Based on the SMEs' statistical data and overall comments, I reduced the large pool of items from 95 items to 40 items in Part A, from 50 to 44 in Part B, and left the items intact in Part C and Part D.

Evaluation of the survey instrument. Upon completion of the SME formal review process, I revised the survey items as needed. I made comments for each survey item, indicating its status: whether it was retained, rephrased, or eliminated in the questionnaire for pilot testing in Appendix B. I then resubmitted the revised survey instrument to the University of North Texas Institutional Review Board to approve the modifications before administering the questionnaire for pilot testing.

Administration and Evaluation of Pilot Test

Because the survey instrument was designed for this study, further pretesting was needed to further strengthen the instrument's internal consistency by examining the overall instrument and its subscales through Cronbach's coefficient alpha or Cronbach's alpha (Cronbach, 1951; DeVellis, 2003, p. 28; Gall et al., 2003, p. 198; Huck, 2004, p. 80). Huck further explained that the coefficient alpha is suitable for Likert scales as used in my survey instrument. Additionally, pilot testing allows investigators to discover

and to resolve potential problems in the survey items and scales (Creswell, 2003, p. 158; Gall et al., p. 37).

Researchers recommend that a small representative sample drawn from the population being studied should participate in pilot testing (Converse & Presser, 1986, p. 68; Fowler, 2002, p. 112; Gall et al. 2003, p. 230; McMillan, 2004, p. 196). To fulfill this requirement, a sample of library leaders needed to take the pilot test. However, there is no consensus in selecting the number of participants for pilot testing. Sheatsley (1983, as cited in Presser et al., 2004, p. 110) suggested, 12–25 cases while Sudman (1983, as cited in Presser et al., p. 180) suggested 20–50 cases. Fowler (1995) recommended that 15 to 35 interviews take place as part of the pretesting (p. 115) while Nunnally (1978, as cited in DeVellis, 2003, p. 88) opposed the smaller number of cases, recommending that a larger sample of 300 or more participants would be needed. On the other hand, Gall et al. did not list a specific number of participants; instead, they proposed that any response rate below 66% from the pilot sample would necessitate the need to revise the survey instrument (pp. 230–231).

Administration of Pilot Survey

Prior to the pilot testing, I asked the LAMA Marketing Specialist and the ALA Manager for Membership Development (F. Reuland, and J. Chrastka, personal communication, December 11, 2007) for permission to send several e-mails to library administrators and managers through its electronic mail lists. They both agreed that I could send an electronic message to selected message boards because the pilot testing would only be active for few days until the appropriate number of respondents was attained. The electronic message boards included the following:

1. ALA Library Administration Discussion List
2. LAMA Middle Managers Discussion List
3. LAMA Women Administrators Discussion List

E-mails requested that library administrators and managers participate in the pilot testing, giving them an explanation of my study's purpose and detailing why their participation was needed to evaluate the 94-item online pilot survey. I also included the Surveymonkey.com Web address. I closed the pilot testing within 2 days after 87 librarians participated in the survey. Out of 87 participants, 59 respondents completed the survey, a 67.8% response rate, above the pilot response rate of 66% as noted by Gall et al. (2003). Information about the pilot sample group is shown in Table 4.

Table 4
Pilot Sample Group Profile, n = *59*

Characteristic	Group	Frequency	Percentage
Gender	Female	33	75%
	Male	11	25%
No. of Employees	1 to 5	15	30%
	5 to 10	10	20%
	10 to 20	7	14%
	21 or more	18	36%
Position	Asst./Assoc. Dean or Director	6	13.6%
	Dean or Director	24	54.5%
	Department Head	11	25%
	Supervisor	2	4.5%
	Other	1	2.3%
Library Type	Academic	29	65.9%
	Public	13	29.5%
	School		
	Special	1	2.3%
	Vendor		
	Other	1	2.3%

The pilot sample group indicated that 54.5% of the participants were deans/directors while assistant/associate deans or directors accounted for 13.6%, totaling 68.1%. Department heads (25%) also participated in this survey. These participants also worked in academic and public libraries more than any other type of library.

Analyzing Pilot-Survey Results

Both quantitative and descriptive statistics for the pilot-survey results were analyzed using Number Cruncher Statistical Software (NCSS®,* 2000 version, released January 18, 1999) in determining my survey instrument's reliability. Gall et al. (2003) explained that evaluating pilot test results would provide researchers "an item analysis … a set of procedures for determining the difficulty, validity, and reliability of each item in the test" (p. 216), and could be conducted using Cronbach's alpha statistic (Cronbach, 1951; DeVellis, 2003; Gall et al., 2003; Huck, 2004). DeVellis further provided the range of alpha levels as "below .60, unacceptable; between .60 and .65 undesirable; between .65 and .70 minimally acceptable; between .70 and .80, respectable; between .80 and .90, very good; above .90, one should consider shortening the scale" (DeVellis, pp. 95–96).

During the analysis of data, I realized that Surveymonkey.com had a software deficiency in that the pilot-survey results recorded a range of numbers as date ranges. This error took place in pilot-survey Item 1 when participants were asked to list the number of remote employees they led. However, data was not corrupted because they were easily converted from a date range to a numerical range in the Excel software

* NCSS (Number Cruncher Statistical Software), www.ncss.com

spreadsheet. I corrected the problem for the final survey by substituting the word “to” for the hyphen in the number range, e.g., “1 to 5.”

I also discovered another problem, as cautioned by one of the SME reviewers: the pilot-sample group did not always list the age, number of years served in the LIS profession, and the number of years in their current position in the demographics section. As a result, I was unable to list the frequency and percentage, as in Table 4. Instead, the demographics indicated the mean, *SD*, and range for the participants’ age serving 23 years in the LIS profession (see Table 5).

The demographics section has been corrected for the final survey by providing a range of ages starting with “20 to 30” and ending with”71 to 80.” The range of years has been corrected in the final survey, showing preselected responses as “less than 1 year” to “41 to 50,” for the number of service years and number of years served in the position.

Table 5
Pilot-Sample Mean and SD Profiles, n = *59*

Characteristic	*n*	*M*	*SD*	Range
Age	43	51.16	9.91	39
Years in LIS field	44	23.11	9.58	38
Years in current position	42	6.92	5.28	21

Pilot-Survey Instrument’s Reliability Analyses

The results of the reliability analysis focused more on Part A and Part B in the survey instrument because descriptive statistics are obtained for the demographic section (Part D) and comments indicated that the open-ended questions in Part C were easily understood. Raw data were obtained from SurveyMonkey.com and imported into

the Excel software program. Each pilot-survey item along with its multiple choices, if available, was converted into variable items and coded for analysis using NCSS software.

Two sets of reliability analyses were conducted because Part A has a scale that indicates the degree of disagreement to the degree of agreement, whereas Part B has an importance scale. Because the SMEs and I decided how specific items should be grouped for each leadership attribute or factor, each factor subscale's alpha for the two rating scales was analyzed for internal consistency as shown in Table 6.

Table 6
Pilot Survey Reliability Analyses

Subscale	Concept	Coefficient Alpha	
		Agreement Rating	Importance Rating
Factor A	Use of information technological tool		0.73
Factor B	Teamwork	0.90	0.78
Factor C	Communication	0.90	0.43
Factor D	Accessibility/availability	0.90	
Factor E	Decision making		0.75
Factor F	Change	0.85	0.66
Factor G	Vision		0.81
Factor H	Empowerment	0.92	0.73
Factor I	Staff development	0.90	0.56
Factor J	Social capital	0.87	

Note. Factors A, E, and G were omitted in the agreement rating scales; factors D and J were omitted in the importance rating scales.

Overall, each factor subscale in Part A indicated an alpha between .85 and .92 which is very good (DeVellis, 2003, p. 96; see Table 6). There were no items associated with Factors A, E, and G. Also in Table 6, alpha levels ranged from .43 to .81 for the Part B factor subscales, with the majority of these subscales categorized as respectable

alphas (DeVellis, 2003, p. 95). However, Factors C, F, and I had unacceptable alpha levels, and items associated with these factors needed to be examined for modification and/or deletion. There were no items associated with Factors D and J for Part B.

As noted, each item response including the multiple-choice responses was categorized into specific variable items for reliability analysis (see Appendixes D and E). I reviewed each variable item's coefficient alpha and compared it to the overall Cronbach's alpha for that specific factor subscale in Part A. I determined whether the modification or deletion would increase the overall factor subscale's reliability if that specific item's coefficient alpha were higher than the overall Cronbach's alpha. As an example, if the item of i122 (pilot-survey item A33, SME item A84) was modified or deleted for the final survey instrument, the alpha would increase to 0.91 in Part A's Factor B (teamwork) subscale's overall Cronbach's alpha of .90.

The item i122 (pilot survey item A33) was phrased as "I build and sustain remote teams through the use of information technological tools" with two components: build and sustain (see Appendix B, A84 item). I rephrased the item to read, "I sustain remote teams through the use of information technology," now item A18 in the final survey instrument. I followed the same procedures for each reviewed item by analyzing whether the item should be modified, retained, or deleted in the questionnaire, and recorded them in Table 7 in an effort to increase Cronbach's alpha for each factor subscale in Part A.

On the other hand, Part B's importance rating scales indicated a range of alpha from .43 to .81 (see Table 6). Two of the subscales, specifically the Factor C subscale (communication) and Factor I subscale (staff development) indicated an unacceptable

Table 7

Part A's Variable Item Analysis in Order to Increase Alpha

Variable (Survey) Item	Total *M*	Total *SD* if deleted	Coef alpha if deleted	Correlation if deleted	Final status
		Factor B Teamwork			
i122 (A33)	31.26	9.28	0.91	0.29	Modified
		Factor C Communication			
i50 (A9)	94.29	17.51	0.90	0.17	Kept
i51 (A10)	96.40	17.67	0.90	0.03	Deleted
i55 (A11)	93.57	17.69	0.90	0.00	Modified
i62 (A13)	93.91	17.68	0.90	0.01	Deleted
i63 (A14)	95.97	17.67	0.90	0.01	Deleted
i67 (A15)	93.26	17.78	0.90	-0.12	Modified
i73 (A16)	93.31	17.66	0.90	0.02	Deleted
i101 (A20)	94.11	17.84	0.91	-0.16	Deleted
i102 (A21)	94.57	17.54	0.90	0.14	Deleted
i120 (A31)	95.57	17.62	0.90	0.05	Deleted
		Factor D Accessibility			
i42 (A6)	47.12	12.97	0.90	0.30	Kept
i48 (A7)	48.42	12.67	0.90	0.33	Deleted
i108 (A24)	47.18	13.13	0.91	0.01	Kept
		Factor F Change			
i33 (A5)	20.37	7.20	0.86	0.30	Modified
		Factor H Empowerment			
i93 (A19)	19.10	6.71	0.92	0.55	Deleted*
i95 (A19)	17.90	6.94	0.92	0.49	Deleted*
		Factor I Staff Development			
i86 (A18)	17.71	6.78	0.91	0.47	Modified
		Factor J Social Capital			
i116 (A27)	44.30	9.65	0.85	0.27	Deleted
i118 (A29)	44.19	10.23	0.87	-0.22	Deleted
i119 (A30)	44.14	10.19	0.87	-0.19	Deleted

Note. Agreement scales were used in Part A within the survey instrument. Specific items were selected based on their coefficient alpha if omitted. Variables i93 and i95 were relocated to the C section as the fourth open-ended question.

(DeVellis, 2003, p. 95) alpha of below 0.60. The Factor F subscale (change) alpha is .66, and labeled as minimally acceptable according to DeVellis (p. 95). The remaining subscales' alpha indicated a respectable (DeVellis, p. 95) alpha between .70 and .81. Items in the weak subscales were analyzed to improve Part B's reliability. There were no items associated with Factor D (accessibility/availability) and Factor J (social capital).

Since reliability is related to the number of items in a factor, the more items associated with a factor means that reliability will tend to be higher. For factors with three items or less, reliability values less than .70 are common and this is what took place for the Factor C and Factor I subscales. The items from the Factor C subscale, i156 (pilot-survey item B11), i163 (pilot-survey item B17), and i182 (pilot-survey item B37) were deleted, as shown in Table 8. Another method to improve the reliability is to regroup these small factors into another factor, and I did that for the variable items in the Factor I subscale, i167 (pilot-survey item B22), and i168 (pilot-survey item B23). I removed i150 and i173 from the Factor I subscale to increase reliability. The remaining variable items were reviewed and decisions were made to retain, modify, or delete them from the final survey instrument.

Evaluation of pilot survey instrument. In summary, the pilot survey results initially validated my survey instrument's internal reliability, and prepared me to conduct the final phase of my research. Similar to the SME review process, I recorded each pilot-survey item's status as to whether it was retained, rephrased, or eliminated from the questionnaire for the final survey administration. Comments were recorded in Appendix B. Overall, I reduced Part A from 40 items to 26 items; Part B from 44 items to 37 items; increased one item to Part C (from 3 to 4 items); and left Part D intact with 6 items.

Table 8
Part B's Variable Item Analysis in Order to Increase Alpha

Variable (Survey) Item	Total *M*	Total *SD* if deleted	Coef alpha if deleted	Correlation if deleted	Final status
		Factor A Tool			
i176 (B31)	7.73	1.36	0.81	0.39	Deleted
		Factor B Teamwork			
i146 (B1)	22.64	2.07	0.76	0.13	Kept
		Factor C Communication			
i156 (B11)	9.53	0.59	-0.20	0.47	Deleted
i163 (B18)	9.28	0.85	0.13	0.38	Deleted
i182 (B37)	9.05	1.11	0.61	0.02	Kept
		Factor E Decision Making			
i164 (B19)	25.49	2.73	0.77	0.18	Deleted
		Factor F Change			
i154 (B9)	19.91	2.40	0.66	0.26	Deleted
i161 (B16)	22.51	2.18	0.66	0.26	Kept
		Factor H Empowerment			
i165 (B20)	13.64	1.30	0.74	0.38	Modified
		Factor I Staff Development			
i150 (B5)	13.84	1.08	0.48	0.37	Modified
i167 (B22)	13.68	1.27	0.48	0.34	Kept*
i168 (B23)	13.45	1.34	0.49	0.36	Kept*
i173 (B28)	13.64	1.28	0.49	0.34	Modified

Note. Items i167 and i168 have been relocated to Factor B Teamwork.

Administration of the Final Study

Based on the Cronbach's alpha results, survey items were either modified or deleted in the questionnaire. I also revised the remote-employee definition by removing the scenarios and focusing the remote-leadership aspect based on the comments made by the pilot-test respondents and doctoral committee members. Due to these changes, I requested and received the final approval from the University of North Texas' Institutional Review Board to amend my survey instrument (see Appendix F). The MDR

mailing lists were purchased after receiving the university approval for the final survey instrument. FedEx Kinko's services were secured to merge the postal addresses onto my designed postcards and to mail them to the survey population of library professionals. When the targeted librarians received the postcards, they made their choice about whether to participate in the survey.

Selecting Appropriate Sample Size and Statistical-Power Analysis

When conducting survey research, the survey response rate is often a primary concern (Schonlau et al., 2002, p. 9). Researchers generally ask how large the sample should be to obtain satisfactory responses (DeVellis, 2003, p. 137; Dillman, 2007, p. 105; Fowler, 2002, p. 34; Gall et al., 2003, p. 176; Powell & Connaway, 2004, p. 105). Researchers agree that there is no optimal number in determining the precise sample size, noting that a variety of factors play a role in assisting the principal investigator to determine the appropriate size. Dillman noted that the sampling frame needs to draw from an adequate survey population to maximize the coverage by including everyone in the mailing list (pp. 196–198). Powell and Connaway explained that specific statistical methodology requires different sample sizes, noting for example, that "stratified sampling requires fewer cases" (p. 105) while Tinsley and Tinsley (1987, as cited in DeVellis, 2003) provided a rule of thumb for obtaining "5 to 10 subjects per item up to about 300 subjects" (p. 137) for factor analysis. Gall et al. (2003) provided further examples related to a variety of statistical methods based on Olejnik's (1984, as cited in Gall et al., 2003, pp. 142–143) work by determining the appropriate sample size, its effect size, and statistical-power levels. Further, the principal investigator could

terminate the data collection when the same information was being received from respondents, according to Patton (2001, as cited in Gall et al., p. 182).

For this study, the methodology of inferential statistics was conducted to examine relationships between variables and/or groups. While this study's overall questionnaire consists of 74 items, however, each section was designed differently, and should be treated as separate questionnaires.

In the case of analyzing whether gender, age, number of years served in the LIS field, number of years in the current position, and type of library plays a role in the librarians' selection and usage of information-technology tools, a test statistic or *t*-test was conducted (Gall et al., 2003, p. 136; Huck, 2004, p. 237; Vaughan, 2001, p. 61). To achieve the acceptable level of effect size and statistical power, a sample size of 100 was needed with approximately 50 participants per group. This leads to a power level of 0.90 using an alpha of 0.05 and the power to detect a relatively small effect, the effect size of 0.33.

To examine how each item, specifically tangible concepts such as teamwork, is correlated to the overall concept of leadership when items are grouped together, factor analysis was conducted (DeVellis, 2003, pp. 103–106) for this study's Parts A and B. Part A listed 26 items asking survey participants about their use of information technology in remote situations in an effort to assess whether they, as library leaders, have modified their FTF leadership skills. Out of these 26 items, 20 items used the agreement scale. Based on the suggestion of Tinsley and Tinsley (1987, as cited in DeVellis, p. 137), the number of 5 participants was multiplied by the number of 20 items to achieve a sample size of 100. Using the same rule of thumb, the ideal sample size

was 185 for Part B consisting of 37 items, asking the survey participants to rate essential attributes in the LIS field.

Final Study's Sample Size

The first wave of postcard solicitation requested the 5,849 librarians in academic and public libraries participate in this study's Web-based survey, which opened on February 2, 2008. FedEx Kinko's delivered the first batch of postcards on white stock with colored graphics, beginning on February 8, 2008. On February 24, 2008, SurveyMonkey.com, housing the Web-based survey, indicated that 89 respondents or 1.52% of the survey population participated. Out of these 89 respondents, 58 completed the survey, an insufficient number to provide data analysis.

A decision was made to deploy a second wave of postcard solicitation. As a result, FedEx Kinko's mailed another set of 5,849 postcards to the same survey population, reminding them to participate in the Web-based survey, beginning on March 5, 2008. Seventy-six undeliverable addresses, as indicated by the returned postcards in possession on March 1, 2008, were excluded from the second mailing wave. Three additional addresses were also excluded from the second mailing because these three librarians informed me that they received the first postcard and that they completed the survey. This time, postcards were printed on yellow card stock with black graphics. The two waves of postcard distribution are shown in Table 9.

SurveyMonkey.com results were monitored closely to determine whether an adequate sampling would be sufficient to move forward with the data analysis. After conferring with the doctoral committee, it was agreed that the sample size of 240 responses was adequate because survey data indicated that there was no new

information being received (Patton, 2001, as cited in Gall et al., 2003, p. 182). Data collection was terminated on March 27, 2008 after 6 weeks.

Table 9
Two Waves of Postcard Distribution

Postcard delivery	First mailing	Second mailing
Postcards mailed	5,849	5,849
Undeliverable addresses	97	54
Notification of “no longer here”	6	2
Requested name/address removal from mailing list	2	2
Final Response Rate	1.5%	4.2%

This study’s final survey population indicated 5,686 participants received the postcards, excluding the 163 undeliverable addresses. Only 240 library professionals, a response rate of 4.2%, actually participated in the Web-based survey. Further details are provided in chapter 4.

This study’s low response rate may be due to declining survey-response rates as noted by Brennan (2004), Dillman (2007), Larson and Poist (2004), Porter (2004), and Schonlau et al. (2002). The authors provided numerous examples to induce responses by providing monetary incentives, personalizing cover letters and postcards, sending multiple reminders through traditional mail to reach participants, and designing attractive and user-friendly surveys. The authors also noted that the targeted respondents should have an interest in the survey’s topic to participate. However, researchers have experienced increasing difficulty in contacting respondents and respondent cooperation has been continuously declining (Porter, 2004, p. 5).

Data-Analysis Procedures

Several statistical methods were used in analyzing the final survey's results to answer this study's research questions. The methodology included (a) reliability analysis, (b) factor analysis, (c) *t*-test analysis, (d) chi-square analysis, (e) descriptive analysis, and (f) content analysis. The results for each statistical method are discussed in the data-analysis chapter.

Reliability Analysis

Another reliability analysis was conducted to address the continued viability of the overall survey instrument after the final administration of the instrument. The procedures used to analyze the final survey-data results were similar to the procedures conducted during the analysis of the pilot-survey results.

Factor Analysis

When the final survey results were obtained, factor analysis addressed the survey instrument's construct validity. Factor analysis is also the principal methodology in supporting this study's three research questions in identifying the emergent patterns of remote leadership along with its associated leadership dimensions rooted in personality traits, behaviors, and skills. This methodology is chosen because it "is an interdependence technique in which all variables are simultaneously considered, each related to all others, and still employing the concept of the variate, the linear composite of variables" (Hair, Anderson, Tatham, & Black, 1998, p. 91). As indicated in the literature review, leadership itself is the variate that cannot be directly measured. However, leadership has many dimensions that may be directly measured. Hair et al.

also stressed that factor analysis provides primary investigators the opportunity to identify similar variables that clustered together in support of the concept itself, in this case, leadership.

When I began my research, the library SMEs and I identified items that should be grouped together in a theoretical factor subscale, such as Factor B or teamwork (see Table 6). Factor analysis, one of the multivariate statistical methods (Gall et al., 2003, p. 352, Huck, 2004, pp. 92–94), is similar in that it groups items together. However, factor analysis is more powerful than grouping items because

> Factor analysis provides an empirical basis for reducing all these variables to a few factors by combining variables that are moderately or highly correlated with each other. Each set of variables that is combined forms a factor, which is a mathematical expression of the common element in the variables that are combined. (Gall et al., 2003, p. 352).

To reduce the large number of variables (DeVellis, 2003; Hair et al., 1998; Kline, 1994) contained in a lengthy questionnaire, as in this case's study, factor analysis needs to be conducted by extracting factors through principal-components analysis. The purpose of principal-components analysis is to provide composite scores to capture the concept of the original data (DeVellis, 2003, p.128).

Working to reduce the number of factors leads to the question of how many factors should be extracted. According to Hair et al. (1998), researchers could compute several trial analyses (p. 103) to select the proper number of extracted factors by reviewing the factor matrix through the eigenvalue rule. In other words, researchers could run a 10-factor model and examine the eigenvalues; Kaiser (1960, as cited in DeVellis, 2003, p. 114) and Hair et al. (p. 103) explained that the factors' eigenvalues should be greater than 1.0 to indicate the existence of a factor or concept. If the

resulting factor matrix indicates that the data has not been condensed, researchers could redo the factor analysis using a different model, such as a 5-factor model. In turn, the output of the eigenvalue rule would assist researchers to identify items that belong in specific dimensions.

An item is said to load on a factor when the correlation is greater than .30 regardless whether that correlation is positive or negative. On occasions, an item may load on more than one factor, however, researchers should examine the factor matrix and identify the highest loading score in order to create an empirical factor structure that captures the original concept (DeVellis, 2003; Hair et al., 1998; Kline, 1994).

Returning to the concept of leadership used for this study, the items that I theoretically identified as belonging to teamwork should load on a single factor representing “clusters of variables that are all correlated with each other” (Gall et al., 2003, p. 353), after running the procedure through as many iterations as needed.

The mathematical solutions applied from factor loadings could be difficult to identify, and could be infinite according to Kline (1994, pp. 56–57.). Therefore, in order to compute the multiple variances resulting from the factor loadings, factor “rotation achieves clarity by seeking factors that result in each item substantially loading (i.e., correlating with) only one factor” (DeVellis, 2003, p.121). For this study, Varimax rotation or an orthogonal rotation was used to indicate uncorrelated or statistically independent yet interdependent variables (DeVellis, p. 122; Hair et al. 1998, p. 107; Kline, 1994, p. 68).

The methodology of factor analysis obtained empirically recommended groupings of items that may or may not match the theoretical factor subscale shown in Table 6.

Factor analysis was conducted for the 20 scalar items in Part A (A06-A26) and all 37 items in Part B.

Analysis of the *t*-Test

Due to the availability of data obtained from the survey instrument's Parts A and B, computed as factor scores that could be used in other statistical analyses (Gall et al., 2003, p. 354; Hair et al., 1998, p. 119), the *t*-test analysis was conducted to determine whether there were statistical mean differences among two different population samples (Gall et al., 2003, pp. 304–305; Huck, 2004, pp. 243–244; Vaughan, 2001, pp. 114–116). In this study, additional questions asked whether there were any differences between males and females, between younger and older librarians, as well as their service of years, and between public and academic librarians on how they scored on each leadership factor. This analysis focused only on Part D, the demographics section, for items D01 (age), D02 (gender), D03 (service years), D04 (type of library) and D06 (years in current position) in relation to the composite factor scores obtained from Parts A and B. The results of the *t*-test analysis acted as secondary evidence for the overarching theme of whether library leaders recognize the emergent patterns of remote leadership in the library profession.

Chi-Square Analysis

A cross tabulation was performed to run the chi-square analysis, a test to examine whether a relationship exists between two categorical variables (Gall et al., 2003, p. 313; Huck, 2004, p. 468; Vaughan, 2001, p. 77). The cross tabulation was run by recording the frequency counts of two different variables, the different demographic

groups and their use of information-technology tools. Frequency counts were recorded for items D01 (age), D02 (gender), D03 (service years in the LIS field), D04 (type of library) and D06 (years in current position) obtained from the demographics section (Part D). Frequency counts were also recorded for some items in Part A, specifically items A03 (the frequency of using information-technology tools), A04 (the selection of the top three information-technology tools), A06 (the availability of using information technology while away from the office), and A16 (the preference of using information technology to resolve disagreements).

The chi-square analysis was conducted upon the completion of the cross tabulations to determine whether a relationship existed between the variables. The results from the chi-square analysis answered Research Question 1 about whether LIS leaders have modified their FTF interactions to lead their employees remotely using information technology.

Descriptive Analysis

Descriptive statistics (Gall et al., 2003; Huck, 2004) provided information about the survey participants. Additionally, the survey respondents themselves provided information about whether they had remote employees, based on the survey instrument's first two questions. They also supplied the frequency of their FTF and information-technology interactions. Finally, they presented information on the availability of information-technology tools in the work place (item A02), how often they used specific tools (item A03), their preferred three tools (item A04), and whether they introduced new tools (survey item A05). Other frequencies, other items in the

agreement scalar items in Part A, and the demographics section, were recorded and tabulated.

In addition, the results of rating remote leadership attributes from Part B, were obtained by recording the respondent percentages based on frequency counts. These items were also ranked in importance before being compared to Horner-Long and Schoenberg's (2002) results presented in chapter 2, Table 1. The findings answered the second and third research questions by recording essential attributes of remote leadership in the LIS field, and whether they are comparable to those found in the corporate world.

Content Analysis

Open-ended questions in Part C asked LIS leaders their opinions about the challenges they faced using information technology in remote situations. Their comments were examined and interpreted to identify common patterns and themes (Krippendorff, 2004; Neuendorf, 2002). Common words and phrases were first coded then counted for frequent repetition. These results were anticipated to support the results found in the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002), to answer the third research question.

Summary

This chapter presented the research methodology chosen for this study, and outlined the procedures followed in determining how relevant studies shaped the creation of a new survey instrument to assess how library leaders may lead their employees remotely using information technology. The chapter also reviewed the steps

taken to test the survey instrument's validity and reliability. An SME review process was conducted as one of the pretest measurements, using a purposeful sampling of well-known library leaders in Texas libraries. After revisions were made, the questionnaire was sent to a pilot sample group in the ALA and LAMA sampling frames through various electronic mail lists, to strengthen the survey instrument's internal consistency. Based on the pilot-study results, further revisions were made to variable items to increase the Cronbach's alpha for each factor subscale.

As part of the administration of the final study, postcards were mailed to the library deans/directors, assistant or associate deans/directors, and library branch managers based on MDR's stratified random sampling. The targeted library professionals were randomly selected throughout the United States.

Each data-analysis technique was described to support this study's overarching question in identifying whether patterns of remote leadership are forming in the LIS field. While several techniques, such as reliability, *t*-test, and content analyses, were used for this study, factor analysis was the principal methodology to support this study's three research questions in identifying the emergent patterns of remote leadership along with its associated leadership dimensions rooted in personality traits, behaviors, and skills.

Chapter 4 presents the results of the data analyses. Chapter 5 presents conclusions and recommendations for future studies.

CHAPTER 4

DATA ANALYSIS REVIEW

This chapter presents the results of data analysis pertaining to the emergent patterns of remote leadership in the library and information science (LIS) field. Quantitative and qualitative data results are described to answer this study's first research question as to whether library leaders are modifying their face-to-face (FTF) interactions to lead their employees remotely. The findings also reveal the essential attributes in remote leadership in relation to the second research question, and reveal whether library leaders exhibit similar attributes and attitudes as those shown by corporate leaders, to answer the third research question.

This chapter includes the results for (a) the postcard and survey distribution, (b) sample size, (c) descriptive demographic data, (d) reliability analysis, (e) factor analysis (f) *t*-test analysis, (g) chi-square analysis, (h) additional descriptive statistics, (i) content analysis, and (j) a summary.

Postcard and Survey-Distribution Results

Postcards were mailed in two waves to a group of 5,849 librarians in academic and public libraries asking them to participate in a self-administered, Web-based survey housed on SurveyMonkey.com. These librarians' work addresses were selected from MDR's (Marketing Data Retrieval) universal database by using a stratified random-sampling method. As discussed in chapter 3, the MDR database does not provide general demographics such as age and gender. However, MDR provides primary investigators the opportunity to purchase a tailored sampling frame based on selected criteria in academic and public libraries, as described in Table 10.

Table 10
Sample Population Randomly Selected by MDR; N = *5,849*

Type of library	Job title criteria	Stratified Sampling Group
	Public Librarians (*N* = 18,795)	
Public/City/County in United States serving populations from 80,000 to over 500,000	Library directors, assistant directors, and branch managers	4,114
	Academic Librarians (*N* = 6,359)	
Community college, college and university in United States with enrollment from 5,001 to over 25,000	Library deans/directors, assistant or associate deans/directors, and department heads in satellite campus libraries	1,735
		N = 5,849 postcards deployed

The 5,849 targeted librarians had job titles pertaining to administration and management, and the population and enrollment ranges also provided a method to target those who may oversee the off-site branch and campus libraries in urban and suburban areas in the United States. The deployed postcards requested librarians' participation in this study's Web-based survey by listing the Web address, and leaving the choice to them to take the online survey.

Sample Size Results

Out of the 5,849 postcards delivered to the survey population, 163 postcards were returned as undeliverable (see chapter 3, Table 9), resulting in 5,686 participants who should have received two postcards. Data collection ended after SurveyMonkey.com recorded that 240 respondents took the survey, showing a 4.2% response rate. The survey instrument in this study was designed to terminate any respondent who reported that they had no remote employees as shown in Table 11. Out of the 240 participants, 73 indicated that they had no remote employees, leaving 167 respondents who completed the survey.

Table 11
Reported Number of Remote Employees

Remote Employees?	Response Count	Percentage
none	73	30
1 to 5	43	18
6 to 10	38	16
11 to 20	29	12
21 or more	57	24
Total *n*	240	100

However, the examination of data sets revealed that there were missing data because respondents did not provide answers for each survey item. According to Gall, Gall, and Borg (2003) and Vaughan (2001), it is a common scenario for survey respondents to skip items or to decide to stop participating in the survey. It became apparent that the final sample size was smaller than expected. Missing data were not included in any of the analyses, as recommended by Gall et al. (p. 154).

The final sample size for this study ranged between 91 (the lowest *n*) and 103 (the highest *n*) for Parts A, B, and D. Due to the lack of predesigned answers, open-ended questions elicit lower responses and Part C showed the expected low sample size range of 79 (the lowest *n*) to 86 (the highest *n*). The final section asking respondents for their feedback also showed a low sample size of 39 respondents, and 61 participants provided their e-mail addresses to obtain the results of this study.

While the overall sample size of 91 to 103 for Parts A, B, and D, was sufficient for various analyses such as the chi-square, description, reliability, and *t*-test, it fell short of the 185 participants needed for factor analysis.

Descriptive Demographic-Data Results

The demographic-data results outline the respondents' characteristics, indicating how the final survey population was represented. Due to the small sample size, the results cannot be generalized for all academic and public library leaders nor for the entire librarian population.

The library profession is often considered as a female-oriented profession, and the majority of respondents (75.8%) listed their gender as female (see Table 12).

Table 12
Respondents' Gender Profile

Gender	Response Count	Percentage
Female	69	75.8
Male	22	24.2
Total *n*	91	100.0

The majority of the respondents, 55.9%, reported their age to be between 51 and 60, with another 28% reporting their age range to be between the ages of 41 to 50, as shown in Table 13. Only 7.5% of the LIS leaders reported their age range to be between the ages of 31 to 40.

Table 13
Respondents' Age Profile

Age	Response Count	Percentage
20 to 30	0	0.0
31 to 40	7	7.5
41 to 50	26	28.0
51 to 60	52	55.9
61 to 70	8	8.6
71 to 80	0	0.0
Total *n*	93	100.0

Additionally, the respondents reported their service years in the LIS profession as shown in Table 14 with 26.1% serving 11 to 20 years, 45.7% serving 21 to 30 years, and 17.4% serving 31 to 40 years.

Table 14
Respondents' Service Years in LIS Field

Years of service in LIS field	Response Count	Percentage
Less than 1 year	0	0.0
1 to 5	3	3.3
6 to 10	7	7.6
11 to 20	24	26.1
21 to 30	42	45.7
31 to 40	16	17.4
41 to 50	0	0.0
Total *n*	92	100.0

The majority (58.7%) of the 92 library leaders in the survey sample worked in public, city, and/or county libraries, as shown in Table 15. Academic library leaders were also represented, with 39.1% reporting that they worked in college, community college, and university libraries. No one reported that they worked in joint-use or combined libraries. Out of the two "other" library types listed, one respondent stated that she worked as a prison librarian while the other said she was a consultant.

Table 15
Respondents' Library Type

Library Type	Response Count	Percentage
Academic	36	39.1
Public	54	58.7
Joint-use/combined libraries	0	0.0
Other	2	2.2
Total *n*	92	100.0

Out of the LIS leader respondents, 39.1% listed their position titles as dean or director and 14.1% listed their position as an assistant (associate) dean or director. The other largest group was the “other” position with 28.3% reporting (see Table 16). After analyzing the 26 other positions, 18 respondents reported their titles as branch administrator, branch head, branch librarian, or branch manager. The remaining eight respondents listed their titles as assistant branch manager (3), assistant provost (1), library manager (3), and building supervisor (1). These findings indicated that another category needed to be added to the demographics to indicate the branch manager position, which is clearly distinguished from the category of the department head (18.5%).

Table 16
Respondents’ Position Title

Position title	Response Count	Percentage
Asst./Assoc. Dean or Director	13	14.1
Dean or Director	36	39.1
Department Head	17	18.5
Other	26	28.3
Total *n*	92	100.0

The library-leader respondents provided a wide variety of responses when asked about their service years in their current positions. Out of the 92 LIS leaders, 39.1% in the survey population said that they worked between 1 to 5 years, with 31.5% reporting that they were in their current positions 6 to 10 years, as shown in Table 17. The next largest group was 21.7% for those serving 11 to 20 years in their position. The service years in their current position differed markedly from the service years in the profession

(Table 14), indicating that the survey respondents were promoted to administrators after working as librarians in the LIS profession a number of years.

Table 17
Respondents' Years in Current Position

Years in current position	Response Count	Percentage
Less than 1 year	4	4.3
1 to 5	36	39.1
6 to 10	29	31.5
11 to 20	20	21.7
21 to 30	3	3.3
31 to 40	0	0.0
41 to 50	0	0.0
Total *n*	92	100.0

Interactions within FTF and Remote Situations

To answer the overarching question about whether emergent patterns of remote leadership are forming in the LIS field, the library-leader respondents were asked to report the number of their remote employees, and whether they had their remote employees in the same building, working the same schedule, or if these remote employees worked a different schedule (overlapping or different hours) in the same or a different building. Data is recorded in Appendix G.

Additionally, these library leaders also listed how often they interacted with their remote employees in person or FTF when they worked the same, overlapping, or different hours either in the same or a different building (see Table 18). Overall, the survey respondents indicated it was easier to interact with one another in person when they worked in the same building regardless of the hours. For instance, working in the same building allowed 40.4% of the respondents to interact with their employees

several times a day when they worked the same hours; 23.7% of the respondents also interacted several times a day when they worked overlapping hours in the same building. The respondents also interacted FTF several times a week in the same building with 28.8% when they worked the same hours, 40.7% of the respondents when they worked overlapping hours; and 30.2% of the respondents interacted FTF when they worked different hours.

Conversely, the FTF interaction decreased when the respondents worked in different buildings despite working the same hours or overlapping hours (see Table 18). The respondents indicated that they did not visit with their remote employees often when they worked in different buildings. When the respondents worked the same hours in different buildings from where their remote employees were colocated, 19.5% of the

Table 18
FTF Interaction Levels

	Same hours		Overlapping hours		Different hours	
	Same building	Different building	Same building	Different building	Same building	Different building
Once a day	9.6%	4.9%	8.5%	2.8%	7.0%	0%
Several times a day	40.4%*	7.3%	23.7%*	2.8%	4.7%	3.6%
Once a week	5.8%	19.5%**	15.3%	13.9%	7.0%	7.1%
Several times a week	28.8%*	9.8 %	40.7%*	8.3%	30.2%*	0%
Occasional (4x or more a month)	5.8%	14.6%	5.1%	16.7%	16.3%	0%
Seldom (once or twice a month)	0%	19.5%**	3.4%	25.0%**	11.6%	25.0%
Rarely (once every few months)	3.8%	17.1%	1.7%	16.7%	16.3%	32.1%**
Not applicable	5.8%	7.3%	1.7%	13.9%	7.0%	32.1%
Total %	100.0%	100.0%	100.0%	100.0%	100.0%	99.9%
Response count	52	41	59	36	43	28

Note. The high percentages are marked with a single asterisk for those working in the same building and two asterisks for those located in different buildings.

respondents met with their remote employees FTF once a week. Another 19.5% of the respondents also met with their remote employees once or twice a month, falling in the seldom category. When the respondents and their remote employees worked overlapping hours, 25% seldom met with one another FTF except once or twice a month. When the respondents and their remote employees worked different hours, 32.1% of the respondents rarely met with one another FTF once every few months. However, Table 19 data revealed that hours and physical location ceased to be a factor when the respondents listed their interaction through the use of information technology.

Table 19
Information Technology Interaction Levels

	Same hours		Overlapping hours		Different hours	
	Same building	Different building	Same building	Different building	Same building	Different building
Once a day	11.5%	2.5%	12.1%	14.3%	2.4%	0.0%
Several times a day	42.3%*	40.0%**	34.5%	20.0%**	21.4%	10.3%**
Once a week	3.8%	2.5%	1.7%	5.7%	9.5%	10.3%
Several times a week	21.2%	27.5%	37.9%*	31.4%**	35.7%*	24.1%
Occasional (4x or more a month)	11.5%	10.0%	10.3%	5.7%	9.5%	13.8%
Seldom (once or twice a month)	0.0%	0.0%	1.7%	8.6%	4.8%	6.9%
Rarely (once every few months)	3.8%	5.0%	0.0%	0.0%	9.5%	3.4%
Not applicable	5.8%	12.5%	1.7%	14.3%	7.1%	31.0%
Total %	99.9%	100%	98.2%	100%	99.9%	99.8%
Response count	52	40	58	35	42	29

Note. The high percentages are marked with a single asterisk for those working in the same building and two asterisks for those located in different buildings.

Overall, the interaction levels increased as compared to the FTF interaction levels universally for interacting several times a day regardless of the hours and locales. In a striking contrast from Table 18, data revealed that 40% of the respondents interacted several times a day through the use of information technology,

communicating electronically with their employees who are colocated in different buildings when they worked the same hours. In addition, the percentages were higher for respondents and their remote employees when they worked different hours in different buildings, interacting several times a day as opposed to FTF interaction levels (10.3% > 3.6%). When the respondents and their remote employees worked overlapping hours in different buildings, the information-technology interaction level, used several times a day, 20%, was higher than the FTF interaction level of 2.8%.

The interaction levels also increased for interacting electronically with one another several times a week except in two categories, compared with FTF interaction levels. The information-technology interaction levels decreased in contrast to FTF interaction levels in two categories, when the respondents interacted with their employees working the same hours (21.2% < 28.8%) or overlapping hours (37.9% < 40.7%) although they worked in the same building, indicating a preference for FTF interaction.

The percentages also decreased for interacting seldom or rarely due to the availability of information technology, shown in Table 19, enabling respondents to interact more often with their remote employees. Overall, Table 19 indicates the value of information-technology use for interacting with one another when it is inconvenient to meet in person.

Preferences for Communicating Electronically

Respondents also indicated their preferred information-technology tool in communicating or interacting with their remote employees, shown in Table 20, with 66% of the respondents using e-mail several times a day. Twenty-eight percent (28.1%) of

the respondents also relied on telephone calls to communicate with their employees several times a week. They (24.7%) also left voice mail several times a week for unavailable remote employees. Reports and memos were also used by 32% of the respondents to transmit information occasionally (four times or more a month). Respondents also reported that they did not use many tools such as blogs, instant messaging (IM), telephone conference calls, video conference, and wikis, by marking them as not applicable.

Table 20
Frequency of Using Tools in Communicating with Remote Employees

	Once a day	Several times a day	Once a week	Several times a week	4x or more a month	Once or twice a month	Once every few months	n/a	Total *n*
Blog	0.0%	0.0%	1.2%	4.8%	2.4%	7.2%	15.7%	68.7%*	83
Cell phones	0.0%	8.0%	8.0%	8.0%	13.6%	17.0%	20.5%	25.0%*	88
E-mail	8.0%	66.0%*	1.0%	14.0%	5.0%	3.0%	1.0%	2.0%	100
Electronic LISTSERVS/ message boards	0.0%	8.7%	4.3%	9.8%	9.8%	5.4%	8.7%	53.3%*	92
In-person visits	3.0%	26.0%*	15.0%	20.0%	13.0%	13.0%	10.0%	0.0%	100
Instant messaging (IM)	0.0%	3.4%	2.3%	5.7%	2.3%	6.9%	5.7%	73.6%*	87
Group meetings through IM chat	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	8.4%	85.5%*	83
Memos/reports	4.1%	4.1%	10.3%	11.3%	32.0%*	17.5%	16.5%	4.1%	97
Telephone (one-to-one)	10.4%	24.0%	10.4%	28.1%*	13.5%	10.4%	2.1%	1.0%	96
Telephone conference calls	0.0%	2.3%	1.2%	3.5%	9.3%	8.1%	31.4%	44.2%*	86
Video conference	0.0%	1.2%	0.0%	0.0%	0.0%	1.2%	15.9%	81.7%*	82
Voice mail	1.1%	17.2%	9.7%	24.7%*	8.6%	10.8%	12.9%	15.1%	93
Wikis	0.0%	2.5%	1.2%	3.7%	1.2%	9.9%	9.9%	71.6%*	81

Note. Asterisks indicate strong preferences for specific tool usage.

Although the respondents marked available information technology tools as not applicable, for their preferred communication methods, it does not mean that these

respondents did not have such tools in their workplace (see Table 21). For example, 34% of the respondents indicated the presence of blogs in the workplace while 29% of the respondents had wikis. Table 21 illustrates that respondents listed their top three tools to communicate electronically: (a) e-mail (99%), (b) telephone (85.3%), and (c) memos and reports (36.3%).

Table 21
Use of Information Technology Tools

	Available methods (item A02)		Selection of top 3 tools (item A04)		Introduction (item A05)	
	%	count	%	count	%	count
Blog	33.0	34	3.9	4	29.3	29
Cell phones	50.5	52	12.7	13	0.0	0
E-mail	100.0	103	99.0	101	0.0	0
Electronic LISTSERVS/message boards	38.8	40	13.7	14	23.2	23
Instant messaging (IM)	26.2	27	6.9	7	21.2	21
Group meetings through IM chat	5.8	6	0.0	0	2.0	2
Memos/reports	92.2	95	36.3	37	0.0	0
Telephone (one-to-one)	95.1	98	85.3	87	0.0	0
Telephone conference calls	53.4	55	2.9	3	0.0	0
Video conference	5.8	6	0.0	0	4.0	4
Voice mail	80.6	83	31.4	32	29.3	29
Wikis	28.2	29	2.9	3	23.2	23
Other	3.9	4	1.0	1	0.0	7
In-person visits	97.1	100	0.0	0	0.0	0
Not applicable	0.0	0	0.0	0	33.3	33
		n = 103		*n* = 102		*n* = 99

Also shown in Table 21, a number of respondents indicated that they introduced and/or implemented a variety of information technologies into the workplace, with 29.3%

listing the blog, 29.3% listing voice mail, 29.3% listing wikis, and 21.2% listing IM. Some of the respondents indicated that they were waiting for their information-technology department to implement some of these tools while others may use Webinars as part of their training. One respondent wrote that she used a service-desk management solution system called FootPrints®*. Another respondent planned to install a new library integrated system, and would introduce some of the tools, including video conferencing, in conjunction with the system.

Reliability-Analysis Results

Reliability analysis was performed to determine the overall survey's internal consistency and its subscales through Cronbach's alpha (Cronbach, 1951; DeVellis, 2003, p. 28; Gall et al., 2003, p. 198; Huck, 2004, p. 80). The final survey instrument's reliability alpha levels decreased in comparison to the pilot study's reliability coefficient alphas. A number of factors may have played a role in decreasing the reliability alpha levels, such as missing data, the number of items associated with each factor (the lower the number, the lower the reliability), the changes to the factors or survey items, and the composition of the respondent sample itself. Overall, the differences in reliability were slightly lower, especially for Factor J, social capital, in both Parts A and B. However, the reliability-coefficient alphas for the final survey instrument were still acceptable for this study, indicating a range of alpha levels "between .65 and .70, minimally acceptable; between .70 and .80, respectable; between .80 and .90, very good" (DeVellis, pp. 95-96).

As summarized in Table 22, Part A's agreement subscale for Factor B

*Numara FootPrints 8, www.numarasoftware.com/FootPrints.asp

(teamwork), Factor C (communication), and Factor D (accessibility) indicated a range from respectable alpha level to a very good alpha level. On the other hand, Factors I and J were below the acceptable range. Factor I for staff development in Part A had two items while social capital, Factor J, had six associated items, but still showed an unacceptable alpha level.

Table 22
Final Survey-Reliability Analyses

		Coefficient Alpha	
Subscale	Concept	Agreement Rating	Importance Rating
Factor A	Use of information technological tool		0.67
Factor B	Teamwork	0.79	0.71
Factor C	Communication	0.88	
Factor D	Accessibility/availability	0.91	
Factor E	Decision making		0.70
Factor F	Change		0.59
Factor G	Vision		0.64
Factor H	Empowerment		0.72
Factor I	Staff development	0.59	
Factor J	Social capital	0.41	0.49

Note. Factors A, E, F, and G were omitted in the agreement-rating scales; factors C, D, and I were omitted in the importance-rating scales.

Part B's importance-rating subscale indicated acceptable alpha levels except for Factor F (change) which had five items associated with it while Factor J (social capital) had two items. Factor G, vision, was borderline, nearly acceptable, with a .64 alpha level.

Since the questionnaire was the final instrument, it was not necessary to examine the coefficient alpha in order to modify the items, unless a follow-up study is conducted. The means and standard deviations were calculated for each item in the

theoretical-factor subscales as shown in Appendixes H and I.

Factor-Analysis Results

Factor analysis was conducted by extracting factors through principal components analysis. For this study, a 10-factor model was computed to test the factor matrix and eigenvalues. Because the 10-factor model seemed too large, providing too many factors, which defeated the purpose of condensing data into a manageable set, the number of extracted factors was reduced to five. Factor analysis was re-run, using the 5-factor model (eigenvalue > 2.0 as a criterion) and Varimax (orthogonal) rotation.

While the performance of factor analysis was successful for Part B items (the rating of leadership attributes), the statistical program, Number Cruncher Statistical Software (NCSS) could not perform factor analysis for Part A (the LIS leaders' use of information technology). The failure is due to missing data, resulting from respondents who skipped questions or decided not to complete the survey, even though missing values were imputed to no avail. Additionally, factor analysis is dependent on a large sample size, and this study's overall small sample size of 91 to 103 was also inadequate. As a result, factor-analysis results will focus only on Part B items; their eigenvalues are reported in Appendix J.

To answer this study's overarching question, whether patterns of remote leadership are emerging in the LIS field, and to identify essential leadership attributes (the first two research questions), I examined the factor loadings, and determined the items loaded on each factor by examining the degree of correlation. Table 23 summarizes the factor loadings for each item in Part B, with the asterisks highlighting the highest loading score (> .30) for that item.

Table 23
Highest Factor Loading Identified for Part B Items

Survey Item	Description	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
B01	Honest	-0.05	-0.07	-0.75	-0.32*	-0.06
B02	Entrepreneurial	-0.06	-0.67*	0.29	-0.20	0.06
B03	Intelligent	-0.12	-0.32	-0.01	-0.29	0.59*
B04	Ambitious	-0.08	-0.66*	0.11	0.06	0.38
B05	Assertive	-0.08	-0.62*	0.09	-0.11	0.29
B06	Risk taker	-0.23	-0.75*	-0.04	-0.04	-0.02
B07	Creative	-0.15	-0.68*	-0.29	-0.07	0.03
B08	Persistent	-0.08	-0.53*	-0.24	-0.06	0.50
B09	Decisive	-0.04	-0.40*	-0.40*	-0.01	0.34
B10	Analytical	-0.13	-0.58*	-0.29	-0.10	0.17
B11	Self-confident	-0.27	-0.65*	-0.19	-0.15	0.12
B12	Adaptable	-0.38	-0.09	-0.38	-0.47*	0.03
B13	Conservative	0.14	-0.18	0.11	-0.19	0.63*
B14	Collaborative	-0.18	-0.06	-0.11	-0.49*	0.17
B15	Anticipates opportunities by environment scanning	-0.32	-0.49*	0.09	-0.40	0.01
B16	Sets expectations	-0.21	-0.34	-0.03	-0.47*	-0.01
B17	Leads by example	-0.16	-0.06	-0.14	-0.79*	0.07
B18	Is service oriented (committed to public service)	-0.08	-0.08	-0.19	-0.57*	0.20
B19	Identifies trends	-0.59*	-0.37	-0.09	-0.11	-0.04
B20	Fosters teamwork	-0.40	0.01	-0.05	-0.52*	0.16
B21	Sets priorities	-0.46*	-0.10	-0.07	-0.06	0.32
B22	Builds a shared vision for library	-0.72*	-0.08	0.10	-0.33	0.09
B23	Changes and shapes library (organizational culture)	-0.70*	-0.20	0.04	-0.30	0.10
B24	Explores new technology	-0.51*	-0.18	-0.20	-0.11	0.47
B25	Develops partnerships and/or alliances	-0.68*	-0.06	-0.18	-0.09	0.22
B26	Builds relationships with staff members	-0.30	0.04	-0.32	-0.31	0.44*
B27	Acknowledges teamwork effort and staff members' success	-0.35*	0.14	-0.33	-0.16	0.28

(table continues)

Table 23 *(continued)*

Survey Item	Description	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
B28	Deals with rapid changes	-0.55*	-0.10	-0.39	-0.08	0.34
B29	Builds consensus	-0.58*	-0.17	-0.15	-0.18	0.05
B30	Empowering	-0.58*	0.01	-0.27	-0.35	-0.09
B31	Skillful at networking	-0.67*	-0.25	-0.22	-0.10	-0.12
B32	Skillful using Information technology	-0.34	-0.17	-0.05	0.05	0.51*
B33	Inspiring	-0.41	-0.27	-0.03	-0.48*	0.15
B34	Motivational	-0.40	-0.16	-0.16	-0.57*	-0.06
B35	Shares knowledge	-0.52*	-0.10	-0.10	-0.26	-0.03
B36	Communicative	-0.22	-0.06	-0.66*	-0.16	0.05
B37	Strategic planner	-0.58*	-0.22	0.11	-0.20	0.19

Note. Asterisks indicate the highest loading score (> .30) for that particular item.

Some items cross loaded on several factors with a correlation > .30. In cases similar to this study, Hair, Anderson, Tatham, Black (1998) recommended that one item be associated with one factor to further condense data (p. 113) by identifying the highest factor loading for each item. By doing so, an empirical factor structure is created, as shown in Table 24, listing the group of variable items for a particular factor.

By identifying and eliminating some duplicate factor loadings, the newly created empirical factor structures have been established, and labeled to properly represent the various leadership concepts described in the literature review (DeVellis, 2003, p. 126; Hair et al., 1998, p. 114; Kline, 1994, p. 100). By doing so, the results of factor analysis provided an empirical basis to reexamine my theoretical factor structure (see chapter 3, Table 6), allowing me to compare it to the new factor structures. Specifically, I identified all of the variable items loading on each factor, and determined whether the items had a strong disposition for a certain leadership concept, such as vision. Based on the results

Table 24
Part B's Five-Factor Model Highest Factor Loadings

Survey Item	Description	Highest Loading	Factor	Factor Name
B22	Builds a shared vision for library	-0.72	1	Organization Culture
B23	Changes and shapes library (organizational culture)	-0.70	1	Organization Culture
B25	Develops partnerships and/or alliances	-0.68	1	Organization Culture
B31	Skillful at networking	-0.67	1	Organization Culture
B19	Identifies trends	-0.59	1	Organization Culture
B29	Skillful at building consensus	-0.58	1	Organization Culture
B37	Strategic planner	-0.58	1	Organization Culture
B30	Empowering	-0.58	1	Organization Culture
B28	Deals with rapid changes	-0.55	1	Organization Culture
B35	Shares knowledge	-0.52	1	Organization Culture
B24	Explores new technology	-0.51	1	Organization Culture
B21	Sets priorities	-0.46	1	Organization Culture
B27	Acknowledges teamwork effort and staff members' successes	-0.35	1	Organization Culture
B06	Risk taker	-0.75	2	Vision
B07	Creative	-0.68	2	Vision
B02	Entrepreneurial	-0.67	2	Vision
B04	Ambitious	-0.66	2	Vision
B11	Self-confident	-0.65	2	Vision
B05	Assertive	-0.62	2	Vision
B10	Analytical	-0.58	2	Vision
B08	Persistent	-0.53	2	Vision
B15	Anticipates opportunities by environment scanning	-0.49	2	Vision
B01	Honest	-0.75	3	Credibility
B36	Communicative	-0.66	3	Credibility
B09	Decisive	-0.40	3	Credibility
B17	Leads by example	-0.79	4	Social capital
B34	Motivates people	-0.57	4	Social capital
B18	Is Service oriented (committed to public service)	-0.57	4	Social capital
B20	Fosters teamwork	-0.52	4	Social capital

(table continues)

Table 24 *(continued)*

Survey Item	Description	Highest Loading	Factor	Factor Name
B14	Collaborative	-0.49	4	Social capital
B33	Inspirational	-0.48	4	Social capital
B16	Sets expectations	-0.47	4	Social capital
B12	Adaptable	-0.47	4	Social capital
B13	Conservative	0.63	5	Change
B03	Intelligent	0.59	5	Change
B32	Skillful using information technology	0.51	5	Change
B26	Builds relationships with staff members	0.44	5	Change

of the empirical models, my theoretical factor structure (chapter 3, Table 6) needed to be modified.

Table 25 shows the grouping of variables for Factor 1 that focus on building and sharing the vision for the library, developing partnerships and alliances to create an atmosphere of collaboration and consensus-building among colleagues. With this in mind, the Factor 1 empirical structure has been labeled as organizational culture, which is more than just sharing values and norms with employees because leaders also scan the environment to identify upcoming trends and develop strategies in handling these trends, including new technology (Bennis & Nanus, 2003; Jurrens, 2005; Pulley & Sessa, 2001). In addition, leaders provide the vision, enabling their staff to understand their organization's mission (Kouzes & Posner, 2007; Zaleznik, 1977).

Although Factor 1 identifies vision as one of the key variables, for Factor 2, the grouping of factors identifies the personality traits needed by library leaders to carry out the vision and mission of the library. A leader, regardless of profession, should be willing to take risks, show creativity, and have the confidence and persistence to

Table 25
Factor 1: Dimensions of Organizational Culture

Survey Item	Description	Loading Value
B22	Builds shared vision for library	-0.72
B23	Changes and shapes library (organizational culture)	-0.70
B25	Develops partnerships and alliances	-0.68
B31	Skillful at networking	-0.67
B19	Identifies trends	-0.59
B29	Builds consensus	-0.58
B37	Strategic planner	-0.58
B30	Empowering	-0.58
B28	Deals with rapid changes	-0.55
B35	Shares knowledge	-0.52
B24	Explores new technology	-0.51
B21	Sets priorities	-0.46
B27	Acknowledges teamwork effort/success	-0.35

accomplish tasks needed. These findings indicated that library leaders also have similar personality traits to the corporate leaders in the Bennis and Nanus' (2003) and Sheldon's (1991) studies. Additionally the findings also revealed that library leaders should be ambitious and may also need an entrepreneurial streak, which slightly differs from the results in the Sheldon's study. As shown in Table 26, Factor 2 is then categorized as vision.

As for Factor 3, the dimensions indicate the need for the library leader to be honest, creating open lines of communication while making decisions. Bennis and Nanus (2003) and Gardner (1993) stressed the need for leaders' credibility by behaving in a consistent manner. For this reason, Factor 3, classified as credibility, is summarized in Table 27.

Table 26
Factor 2: Dimensions of Vision

Survey Item	Description	Loading Value
B06	Risk taker	-0.75
B07	Creative	-0.68
B02	Entrepreneurial	-0.67
B04	Ambitious	-0.66
B11	Self-confident	-0.65
B05	Assertive	-0.62
B10	Analytical	-0.58
B08	Persistent	-0.53
B15	Anticipates opportunities by environment scanning	-0.49

Table 27
Factor 3: Dimensions of Credibility

Survey Item	Description	Loading Value
B01	Honest	-0.75
B36	Communicative	-0.66
B09	Decisive	-0.40

Factor 4 indicates the importance of a library leader to lead by example, to foster teamwork, to inspire and motivate staff, and to collaborate, because they are committed to public service. These leadership attributes rely on leaders' ability to engage with people in their own institutions and outside of their institutions, to build an environment of collaboration and teamwork, going beyond the development of interpersonal relations. There are many terms for this concept such as social architecture (Bennis & Nanus, 2003); social capital (Fair, Connaughton, & Daly, 2004; Kayworth & Leidner, 2000; Sessa, Hansen, Kossler, & Prestridge, 2001); social glue (Riggs, 1982), and social influence (Chemers, 2000). However all of these terms indicate an important aspect of leadership, which is that leaders need to obtain support from others to

accomplish common tasks. Therefore, the Factor 4 empirical structure (see Table 28) is labeled as social capital.

Table 28
Factor 4: Dimensions of Social Capital

Survey Item	Description	Loading Value
B17	Leads by example	-0.79
B34	Motivates people	-0.57
B18	Is service oriented (committed to public service)	-0.57
B20	Fosters teamwork	-0.52
B14	Collaborative	-0.49
B33	Inspiring	-0.48
B16	Sets expectations	-0.47
B12	Adaptable	-0.47

The last factor structure, Factor 5, indicates a set of items that are not grouped logically and can be classified as undefined (Hair et al., 1998, p. 114). However, there are some items that are tied together, such as the concept of conservative, which can be related to the unwillingness to adapt or change. The other items listed deal with changes as does the idea of exploring technology, which ties into having the necessary skill set to use information technology. The two variable items of exploring new technology and dealing with rapid changes are not the highest loading items for this factor subscale, so these items were not included in Table 24, however, these items still loaded on a single factor. Therefore, Factor 5 is defined as change, shown in Table 29.

Overall, the factor analysis results identified the essential remote leadership attributes asked by the second research question, but the results cannot be generalized to all of the LIS leaders due to this study's small size, and the failure of computing Part A items due to missing data. In light of these inadequate results, additional information

regarding Part A and Part B items will be discussed separately using descriptive statistics.

Table 29
Factor 5: Dimensions of Change

Survey Item	Description	Loading Value
B13	Conservative	0.63
B03	Intelligent	0.59
B32	Skillful using Information technology	0.51
B24	Explores new technology	0.47
B26	Builds relationships with staff members	0.44
B28	Deals with rapid changes	0.34

Results of the *t*-Test Analysis

The paired *t*-test analysis was conducted to determine whether there were statistical mean differences among two different group samples based on their factor scores obtained from Parts A and B. The *t*-test indicated whether a group, for example older and younger library leaders or academic and public library leaders, scored differently on each factor. If they did, the difference or probability (*p*) value would be statistically significant it is less than .05.

Table 30 presents the statistical mean differences for each factor, which proved not to be significant between older and younger LIS leaders. The older age ranges were 51 to 60, 61 to 70, and 71 to 80. The younger age categories were 20 to 30, 31 to 40, and 41 to 50.

Academic library leaders' responsibilities required them to meet the needs of faculty and students based on curricula that are often unique to a particular college, community college, and university. Conversely, public libraries cater to the needs of the

general community with a spectrum of needs, ranging from entertainment to medical. Although academic- and public-library leaders worked in different environments, their factor scores, as analyzed by the *t*-test, proved not to be statistically different, shown in Table 31.

Table 30
Older versus Younger Library Leaders

Factor subscale	*M*		*SD*			
	older	younger	older	younger	*t*	*p*
			Part A			
Fosters teamwork	14.78	14.81	2.79	2.54	-0.04	0.97
Communicative	87.72	83.96	21.07	18.57	0.86	0.39
Accessible/ Available	83.78	80.57	20.98	19.28	0.73	0.47
Visional	3.73	3.70	1.06	0.92	0.17	0.87
Develops staff	7.42	7.46	1.54	1.35	-0.12	0.91
Builds social capital	19.42	19.68	2.67	2.36	-0.46	0.65
			Part B			
Skillful using information technology	8.63	8.64	1.54	1.14	-0.01	0.99
Fosters teamwork	36.99	37.73	5.30	2.14	-0.76	0.45
Communicative	4.85	4.94	0.69	0.24	-0.72	0.47
Decisive	30.76	30.96	4.69	2.56	-0.22	0.83
Changeable	20.37	20.52	3.19	2.26	-0.25	0.80
Visional	34.65	34.76	5.22	2.98	-0.12	0.91
Empowering	17.95	18.52	2.88	1.73	-1.03	0.31
Builds social capital	9.13	9.24	1.43	0.90	-0.40	0.69

Note. $p < .05$

The library profession is well-known as a female-oriented profession; however, the *t*-test results indicated no statistically significant differences between female and male LIS leaders regarding their leadership factor scores (Table 32).

Table 31
Academic versus Public Library Leaders

Factor subscale	*M*		*SD*			
	Academic	Public	Academic	Public	*t*	*p*
			Part A			
Fosters teamwork	15.42	14.29	3.20	2.24	1.96	0.05
Communicative	83.97	86.52	19.98	19.89	-0.59	0.55
Accessible/Available	82.81	80.91	21.60	18.89	0.44	0.66
Visional	3.83	3.61	1.11	0.94	1.02	0.31
Develops staff	7.22	7.19	1.61	1.32	1.72	0.09
Builds social capital	19.83	19.13	2.48	2.51	1.30	0.20
			Part B			
Skillful using information technology	8.39	8.80	1.66	1.20	-1.35	0.18
Fosters teamwork	36.90	37.46	6.65	2.12	-0.58	0.56
Communicative	4.78	4.94	0.87	0.23	-1.35	0.18
Decisive	30.48	31.00	5.82	2.39	-0.59	0.56
Changeable	20.14	20.65	3.90	1.98	-0.82	0.41
Visional	34.53	34.82	6.52	2.70	-0.30	0.77
Empowering	17.86	18.32	3.47	1.75	-0.82	0.42
Builds social capital	9.00	9.26	1.72	0.87	-0.94	0.35

Note. $p < .05$

Table 33 presents the findings for library leaders who were in their current positions 5 years or less as opposed to those who had more than 6 years. Again, the results indicated no statistically significant differences between the two groups.

Finally, the *t*-test analysis results indicated that statistically there were no significant differences between the LIS leaders serving less than 21 years in the LIS field as those who served more than 21 years. The findings are summarized in Table 34.

Table 32
Female versus Male Library Leaders

Factor subscale	*M*		*SD*			
	Female	Male	Female	Male	*t*	*p*
			Part A			
Fosters teamwork	14.69	15.05	2.93	1.91	-0.53	0.60
Communicative	86.89	83.57	21.94	13.90	0.67	0.51
Accessible/ Available	83.02	79.84	20.44	20.41	0.64	0.53
Visional	3.68	3.82	1.11	0.66	-0.55	0.58
Develops staff	7.33	7.73	1.62	0.94	-1.09	0.28
Builds social capital	19.36	19.76	2.64	2.28	-0.64	0.52
			Part B			
Skillful using information technology	8.68	8.46	1.13	2.09	0.65	0.52
Fosters teamwork	37.66	35.91	2.09	1.78	1.61	0.11
Communicative	4.94	4.68	0.24	1.09	1.88	0.06
Decisive	31.19	29.55	2.44	7.06	1.67	0.10
Changeable	20.50	20.05	2.05	4.73	0.63	0.53
Visional	34.95	33.64	2.81	7.91	1.18	0.24
Empowering	18.17	18.00	1.77	4.25	0.28	0.78
Builds social capital	9.23	8.96	0.89	2.08	0.89	0.38

Note. $p < .05$

Chi-square-Analysis Results

The analysis of chi square was conducted to further examine the correlations between the different demographic groups and their use of information technology (the two categorical variables tested). Because there were numerous reports resulting from the chi-square procedure, I did not report the correlations, which indicated no relationships existed between two categorical variables. Instead, I will report on the relationships that proved to be significantly different based on the chi-square results.

Table 33
Five or Less Years versus Six or More Years in Position

Factor subscale	*M*		*SD*			
	5 or less	6 or more	5 or less	6 or more	*t*	*p*
			Part A			
Fosters teamwork	15.33	14.38	2.77	2.60	1.68	0.10
Communicative	87.74	84.91	20.13	20.31	0.66	0.51
Accessible/ Available	83.26	81.68	21.25	19.69	0.37	0.71
Visional	3.75	3.70	1.03	1.00	0.27	0.79
Develops staff	7.53	7.37	1.63	1.36	0.51	0.61
Builds social capital	19.81	19.22	2.43	2.62	1.11	0.27
			Part B			
Skillful using information technology	8.68	8.58	1.05	1.64	0.33	0.74
Fosters teamwork	37.68	36.89	2.10	5.64	0.83	0.41
Communicative	4.98	4.81	0.16	0.74	1.40	0.16
Decisive	31.32	30.40	2.24	5.01	1.08	0.28
Changeable	20.73	20.13	1.83	3.49	0.98	0.33
Visional	35.22	34.23	2.52	5.63	1.04	0.30
Empowering	18.40	17.94	1.69	3.06	0.85	0.40
Builds social capital	9.25	9.10	0.81	1.54	0.57	0.57

Note. $p < .05$

As noted there were two categorical variables tested. The first categorical variable was a demographic variable such as D01 (age), D02 (gender), D03 (service years in the LIS field), D04 (type of library), and D06 (years in current position) obtained from the demographics section (Part D). The second categorical variable was related to the use of information technology from Part A, specifically items A03 (the frequency of using information-technology tools), A04 (the selection of the three preferred information-technology tools), A06 (the availability of using information technology while

away from the office), and A16 (the preference for using information technology to resolve disagreements).

Table 34
Less than 21 Service Years versus More than 21 Service Years in LIS Field

Factor subscale	*M*		*SD*			
	21 or less	21 or more	21 or less	21 or more	*t*	*p*
			Part A			
Fosters teamwork	14.96	14.69	2.28	2.94	0.46	0.65
Communicative	86.17	86.13	20.21	20.32	0.01	0.99
Accessible/ Available	84.06	81.38	22.48	19.01	0.61	0.54
Visional	3.71	3.72	0.84	1.11	-0.08	0.93
Develops staff	7.62	7.33	1.33	1.56	0.91	0.37
Builds social capital	19.84	19.26	2.59	2.51	1.06	0.29
			Part B			
Skillful using information technology	8.74	8.55	0.99	1.60	0.60	0.55
Fosters teamwork	37.32	37.18	2.25	5.37	0.15	0.88
Communicative	4.94	4.85	0.24	0.70	0.78	0.44
Decisive	30.99	30.69	2.56	4.74	0.34	0.74
Changeable	20.39	20.40	2.04	3.30	-0.01	0.99
Visional	34.68	34.64	2.57	5.41	0.04	0.97
Empowering	18.38	18.00	1.60	2.98	0.69	0.49
Builds social capital	9.24	9.12	0.86	1.46	0.42	0.68

Note. $p < .05$

There were significant differences between female and male library leaders in how they used information technology, answering some of Research Question 1 about whether LIS leaders have modified their FTF interactions to lead their employees remotely through the use of information technology.

For instance, male library leaders tended to be in agreement that they were not available when they were away from the office, and they marked not applicable more than female library leaders. On the other hand, male library leaders (proportionately) tended to agree to resolve disagreements by leaving voice mail more than female library leaders. Most of the respondents disagreed about the use of wikis to resolve disagreements, although the results may be unstable due to the recording of numerical values being less than one. Table 35 summarizes the results indicating the statistical differences between female and male library leaders in how they used certain information-technology tools.

Table 35
Differences in Usage of Information Technology Tools by Gender

Description	Female	Male	χ^2	*p*
Available through tool when away from office: not applicable	10	5	12.00	0.00
Prefer to resolve disagreements through "electronic LISTSERVS/message boards"	56	20	10.73	0.01
Prefer to resolve disagreements through voice mail	59	21	8.08	0.02
Prefer to resolve disagreements through wikis	49	21	6.62	0.04

Note. $p < .05$

There were also significant differences between academic- and public-library leaders, as shown in Table 36. The first significant difference is that academic-library leaders, in communicating with their remote employees through in-person visits, indicated higher responses of once a week and lower responses of several times per day than their public-library counterparts. Academic-library leaders were also agreeable to resolving disagreements through voice mail, more than their public-library counterparts.

Table 36
Differences in Usage of Information Technology Tools by Library Type

Description	Academic	Public	χ^2	*p*
Communicate with remote employees through in-person visits	35	53	15.31	0.02
Prefer to resolve disagreements through voice mail	33	46	11.27	0.00

Note. $p < .05$

As indicated by the chi-square results, patterns revealed that a number of library leaders have modified some of their FTF interactions in leading their employees remotely using information technology, answering the first research question.

Additional Descriptive Statistics Results

Because factor analysis failed to run for Part A resulting in somewhat inadequate results, additional descriptive statistics were used to analyze items to answer the first research question as to whether library leaders have been modified their FTF interactions in leading their employees remotely. Additionally, descriptive statistics were also used to obtain answers for the second and third questions, whether essential remote-leadership attributes were identified and found comparable to those exhibited by corporate leaders.

Part A Findings

When the respondents were asked whether they used information-technology tools in leading their employees in remote situations, the findings revealed that the library leaders still relied on e-mail, telephone calls, and memos and/or reports to communicate with one another. The findings are discussed in Tables 37 to 41.

In response to the survey item asking respondents whether they would be available through specific tools if they were away from the office, 63.9% of the library

leaders said they would be available through e-mail. Cell phones were the next highest preferred tool as indicated by 61% of the respondents with telephone calls (45.6%), and voice mail (41.8%). Conversely, 52.9% of the respondents also marked the option of neither agree or disagree for the option of not applicable, which may indicate their ambivalence in being contacted when away from the office. One of the respondents left a comment, saying “When I am away, I discourage contact. I want staff to be self-reliant, and if need be to turn to my boss. I need to focus on the meeting or conference to get the best result.” Other tools are not appropriate for staying in touch while away from the office according to the respondents who disagreed with the use of blog (51.2%), IM (46.2%), and IM group chats (52.3%). The findings are summarized in Table 37.

When remote employees were not available, the respondents strongly agreed that they would leave messages through e-mail (84%), voice mail (55.9%), and telephone calls (44.1%), shown in Table 38. They also agreed to leave messages in the form of memos and reports, as indicated by 44.7% of the respondents. The respondents strongly disagreed with leaving messages through other means such as blog (54.2%), IM (48.8%), IM group chats (54.8%) and video conferencing (50%). Fourteen out of 20 respondents marked the neither agree nor disagree for the not applicable item, resulting in a 70% score, a skewed perspective.

Table 37
Available through Information Technology when Away from Office

Description	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
Blog	51.2%	17.4%	22.1%	5.8%	3.5%	100.0	86
Cell phones	7.0%	1.0%	2.0%	29.0%	61.0%*	100.0	100
E-mail	2.1%	3.1%	3.1%	27.8%	63.9%*	100.0	97
Electronic LISTSERVS/ message boards	34.4%	13.3%	31.1%	12.2%	8.9%	99.9	90
Instant messaging (IM)	46.2%	13.2%	25.3%	8.8%	6.6%	100.0	91
Group meetings through IM chat	52.3%	12.8%	30.2%	4.7%	0.0%	100.0	86
Memos/reports	24.7%	15.1%	20.4%	29.0%	10.8%	100.0	93
Telephone (one-to-one)	7.1%	4.0%	3.0%	39.4%	46.5%*	100.0	99
Telephone conference calls	26.7%	11.1%	32.2%	18.9%	11.1%	100.0	90
Video conference	45.5%	15.9%	34.1%	1.1%	3.4%	100.0	88
Voice mail	11.2%	5.1%	5.1%	36.7%	41.8%*	99.9	98
Wikis	43.7%	13.8%	33.3%	2.3%	6.9%	100.0	87
Not applicable	17.6%	0.0%	52.9%*	11.8%	17.6%	99.9	17

Note. Asterisks indicate strong preferences.

E-mail again played a role in assisting respondents to define their remote employees' roles in remote situations, with 63.7% of them in strong agreement, along with telephone calls (54.7%). Of respondents, 44% of the survey population felt memos and reports were useful tools as well. However, this survey item may have been ambiguous because 6 respondents left comments that they did not understand the question, and 16 more respondents marked the neither agree nor disagree for the not applicable item, resulting in a 55.2% rating. The results are summarized in Table 39.

Table 38
Leave Messages through Information Technology for Remote Employees

Description	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
Blog	54.2%	13.3%	25.3%	4.8%	2.4%	100	83
Cell phones	12.1%	8.8%	12.1%	46.2%	20.9%	100	91
E-mail	2.0%	1.0%	0.0%	13.0%	84.0%*	100	100
Electronic LISTSERVS/ message boards	34.8%	10.1%	27.0%	14.6%	13.5%	100	89
Instant messaging (IM)	48.8%	12.8%	27.9%	7.0%	3.5%	100	86
Group meetings through IM chat	54.8%	14.3%	28.6%	1.2%	1.2%	100	84
Memos/reports	12.8%	2.1%	19.1%	44.7%*	21.3%	100	94
Telephone (one-to-one)	4.3%	4.3%	11.8%	35.5%	44.1%*	100	93
Telephone conference calls	38.4%	12.8%	32.6%	8.1%	8.1%	100	86
Video conference	50.0%	14.3%	29.8%	4.8%	1.2%	100	84
Voice mail	5.4%	2.2%	10.8%	25.8%	55.9%*	100	93
Wikis	46.5%	12.8%	31.4%	4.7%	4.7%	100	86
Not applicable	25.0%	5.0%	70.0%	0.0%	0.0%	100	20

Note. Asterisks indicate strong preferences.

When respondents were asked how to resolve disagreements, 87% of them strongly agreed that in-person visits (FTF meetings) were the preferred method. The library leaders said telephone calls could be used, with 29.7% of the respondents in strong agreement. Telephone calls also were ranked high with a 48.4% of the respondents agreeing that the tool was useful. E-mail was also another preferred method as indicated by 45.6% of the respondents. There were clearly strong disagreements about using other information-technology tools, such as blog (69.9%), IM (57.3%), group IM chats (58.1%), video conference (54.7%), voice mail (44.3%), and telephone conference calls (36.5%). The results are shown in Table 40.

Table 39
Ability to Define Staff Members' Roles in Remote Situations

Description	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
Blog	41.6%	9.1%	39.0%	3.9%	6.5%	100.0	77
Cell phones	12.2%	3.7%	24.4%	32.9%	26.8%	100.0	82
E-mail	2.2%	0.0%	7.7%	26.4%	63.7%*	100.0	91
Electronic LISTSERVS/ message boards	35.0%	5.0% (4)	31.3%	15.0%	13.8%	100.0	80
Instant messaging (IM)	40.3%	10.4%	29.9%	14.3%	5.2%	100.0	77
Group meetings through IM chat	40.8%	13.2%	32.9%	13.2%	0.0%	100.0	76
Memos/reports	9.5%	3.6%	14.3%	44.0%*	28.6%	100.0	84
Telephone (one-to-one)	3.5%	1.2%	5.8%	34.9%	54.7%*	100.0	86
Telephone conference calls	26.3%	5.0%	27.5%	25.0%	16.3%	100.0	80
Video conference	40.0%	13.3%	38.7%	5.3%	2.7%	100.0	75
Voice mail	14.3%	7.1%	17.9%	25.0%	35.7%	100.0	84
Wikis	41.6%	6.5%	33.8%	14.3%	3.9%	100.0	77
Not applicable	37.9%	3.4%	55.2%	0.0%	3.4%	99.9	29

Note. Asterisks indicate strong preferences.

Part A's remaining items' results revealed common patterns in handling leadership situations, found in Appendix A, in that library leaders would overcommunicate by using a variety of tools, establish a rapport with their employees, identify disagreements through commonly used tools (e-mail, telephone, memos, and reports), and sustain team cohesiveness. These findings are recorded in Appendix K.

Table 40
Preferred Communication Method in Resolving Disagreements

Description	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
Blog	69.9%	14.5%	15.7%	0.0%	0.0%	100.0	83
Cell phones	34.9%	22.1%	24.4%	17.4%	1.2%	100.0	86
E-mail	14.4%	17.8%	17.8%	45.6%*	4.4%	100.0	90
Electronic LISTSERVS/ message boards	56.0%	22.6%	17.9%	2.4%	1.2%	100.0	84
In-person visits	0.0%	1.0%	0.0%	12.0%	87.0%*	100.0	100
Instant messaging (IM)	57.3%	13.4%	24.4%	4.9%	0.0%	100.0	82
Group meetings through IM chat	58.1%	14.0%	24.4%	3.5%	0.0%	100.0	86
Memos/reports	24.7%	15.7%	23.6%	29.2%	6.7%	99.9	89
Telephone (one-to-one)	7.7%	5.5%	8.8%	48.4%*	29.7%*	100.0	91
Telephone conference calls	36.5%	14.1%	24.7%	14.1%	10.6%	100.0	85
Video conference	54.7%	11.6%	30.2%	3.5%	0.0%	100.0	86
Voice mail	44.3%	17.0%	22.7%	11.4%	4.5%	99.9	88
Wikis	61.0%	10.4%	27.3%	1.3%	0.0%	100.0	77

Note. Asterisks indicate strong preferences.

Part B Findings

Survey respondents were asked to rate the importance of leadership attributes in remote situations, and their ratings are provided in Appendix L. I extrapolated the leadership-attribute ratings from the very important category, and then ranked these attributes from the highest to the lowest percentage recorded (see Table 41) to create a comparison to the findings reported by Horner-Long and Schoenberg (2002), described in chapter 1, Table 1.

Table 41
Importance Rankings of LIS Leaders' Remote Leadership Attributes

Survey item	Remote leadership attribute	Very important	Rank
B01	Honest	93.8%	1
B36	Communicative	92.7%	2
B27	Acknowledges teamwork effort and/or staff members' success	86.5%	3
B20	Fosters teamwork	84.4%	4
B21	Sets priorities	82.1%	5
B17	Leads by example	81.3%	6
B18	Is service oriented (committed to public service)	80.2%	7
B12	Adaptable	79.2%	8
B26	Builds relationships with staff members	77.1%	9
B22	Builds a shared vision for library	73.4%	10
B30	Empowering	70.5%	11
B35	Shares knowledge	70.5%	11
B34	Motivational	68.8%	13
B28	Deals with rapid changes	65.6%	14
B14	Collaborative	65.3%	15
B09	Decisive	58.3%	16
B16	Sets expectations	58.3%	16
B29	Builds consensus	57.3%	18
B25	Develops partnerships and/or alliances	54.2%	19
B23	Changes and shapes library (organizational culture)	53.7%	20
B24	Explores new technology	52.6%	21
B07	Creative	52.1%	22
B31	Skilled at networking	52.1%	22
B08	Persistent	50.0%	24
B10	Analytical	49.5%	25
B03	Intelligent	49.0%	26
B11	Self-confident	46.9%	27
B37	Strategic planner	46.2%	28
B19	Identifies trends	44.2%	29
B33	Inspiring	40.6%	30
B15	Anticipates opportunities by environment scanning	38.5%	31
B32	Skillful using information technology	35.4%	32
B05	Assertive	33.3%	33
B06	Risk taker	23.2%	34
B02	Entrepreneurial	18.8%	35
B04	Ambitious	17.9%	36
B13	Conservative	1.0%	37

The comparison findings will be presented in the concluding chapter as to whether the LIS leaders are comparable to the corporate leaders in their rankings of remote-leadership attributes.

Content-Analysis Results

The open-ended questions in Part C were tailored to learn how the LIS leaders have modified their FTF interactions in leading their employees remotely, and how they determined which leadership skill and attribute would be needed in the digital-technology environment, in an effort to answer this study's three research questions.

The procedure of content analysis allowed me to examine and interpret data by recording the frequency counts and identifying common words and phrases. The results are shown in Tables 42–45.

The first open-ended question asked the library leaders about their specific leadership challenges in leading their employees remotely through the use of information technology. The respondents often provided more than one comment when answering the questions; each comment was analyzed and counted in the proper category. For example, one respondent wrote,

> You need to be where your employees are located "technologically" rather than expecting them to use the technology that is your preference. Also—information overload. I need to check my cell phone for messages, my voice mail, and e-mail—in addition to reading the printed materials that comes across in my mailbox.

The first part of the respondent's comment was categorized as "lack of information technology skills/usage" on the part of the respondent's employees. The second part of the respondent's comment was categorized as information overload.

Table 42
LIS Leaders' Leadership Challenges

Description	Frequency
Lack of information technology skills/usage	30
Difficulty to maintain relationships without FTF interaction	19
Lack of articulation/communication	13
Difficulty in motivating staff/team	7
Difficulty to deal with rapid changes/unwillingness	6
Information overload	5
Difficulty in prioritizing/organizing projects	3
Persuasion	2
How to share norms and values (organizational culture)	1
Identify trends	1
None	1
Service orientation (commitment to public service)	1
Total combined responses	89

As indicated by the library-leaders' comments, the primary challenge was learning how to understand and use information technology, not only for themselves, but also making sure their staff members were comfortable in using the tools. Another leadership challenge mentioned by LIS leaders was the difficulty in maintaining relationships without FTF interaction. Some of the respondents mentioned the lack of body language, facial gestures, and other verbal and nonverbal cues. That also made communication complicated as they would have to word their emails carefully. Library leaders also mentioned how difficult it was for their employees to know which e-mail was of critical importance. As one of the respondents commented, "At times, I need to communicate critical information via e-mail to reach staff at our 6 branch campus libraries—distinguishing that communication from the daily barrage of emails staff receive can be challenging." Overall, library leaders provided a clear pattern: they have

strived to learn how to use information technology, and learned how to communicate electronically.

The second open-ended question asked library leaders to list the skills, experiences, and traits that they felt were important to become an effective remote leader in the LIS field. They ranked communication as one of the essential skills needed to ensure that they could convey messages with concise and articulate language, both oral and written. Overall, the LIS leaders provided a variety of responses (see Table 43). However, some of the respondents felt that there were no differences between a traditional leader and a remote leader. One of the respondents wrote, “Many [skills] are the same as those that were important before the advent of today's technology options—openness to new ideas; encouragement of feedback and contributions from all; organizational ability.” Another respondent agreed, writing, “I don't think that there are many important differences between being a remote leader and being a leader in terms of what is most important.”

The third open-ended question asked library leaders how they would communicate through the use of information technology without body language, tone inflection, facial expressions, and other nonverbal cues. Some library leaders, showing their technological skills, commented that one should use emoticons, listing it 18 times. These leaders also said they used acronyms or abbreviations such as LOL for laughing out loud. One wrote,

> This isn't new. People have been conveying subtle emotions and information in writing for a long time—novels, letters, poetry, etc. The problems of electronic communication result mostly from too much haste, [or] too little time crafting a sentence that communicates clearly.

Table 43
List of Essential Skills, Experiences and Traits to be a Remote Leader

Description	Frequency
Articulation/Communication	28
Information technology skills/usage	14
Empowerment	9
Team-building skills	8
Conflict-management skills	8
Prioritizing/organizing projects	7
Innovation	7
Building social capital (building/maintaining relations with staff)	6
Vision	6
Patience	6
Confidence	5
Strategic planning	5
Collaboration	5
Networking skills (developing alliances)	4
Persistence	4
Compassion	4
Accessibility/Availability	3
Staff development	3
Motivation of staff	3
Decisiveness	3
Analytical	3
Credibility	3
Dealing with rapid changes	2
Setting expectations	2
Leading by example	2
Being service oriented (commitment to public service)	2
Using praise and recognition	1
Sharing knowledge (of library, of industry, of personal skills)	1
Multitasking	1
Being open to new ideas	1
Using initiative	1
Managing budget/raising funds	1
Risk taking	1
Communicating Face-to-face (as needed)	1
Response given not appropriate to question	1
Humor	1
Reference interviewing	1
Inclusiveness	1
Total combined responses	164

Throughout the comments, there was consensus that library leaders struggled with how to communicate without being misunderstood, commenting that it was very difficult. They said that one could indicate the tone of the message through FTF meetings and telephone calls, but others could easily misunderstand the tone in emails. Some of these leaders have learned how to review their emails, select the appropriate words, and edit them to send concise and clear messages. The results are summarized in Table 44.

Table 44
Communicating Messages without FTF Cues

Description	Frequency
Use of Emoticons, acronyms, abbreviations (i.e., LOL)	18
Professional communication (style/specific language)	14
Clarity to avoid misinterpretation	13
Editing skills by reviewing messages	11
Difficult to do	10
Set tone of messages	9
Keep communications simple and brief	7
Face-to-face or telephone preferred with occasional emails	6
Face-to-face follow up if misunderstood	6
I do not do this/ineffective	5
Format of text	4
Face-to-face for important or detailed information	4
Honest and direct	3
Monitor incoming information and respond promptly	3
Responses given not appropriate to question	3
Text neutral	3
Praise to avoid the impression of coldness	3
Avoid upper-case typing and emoticons at all costs	2
Conversational phrasing of messages	2
Visual attachments	2
Humor	2
Analysis of what is said, how, and to whom	1
Open-ended questions to get managers talking (virtual)	1
Maintain face-to-face relationship	1
Solicit input	1
Personal names are spelled correctly	1
Total combined responses	135

The last open-ended question asked library leaders how they applied their FTF leadership skills in motivating their remote employees. There was general consensus among library leaders, commenting that they would arrange sessions to visit with their remote employees by traveling to their branch locations, or have the remote librarians travel to the central location for staff meetings. LIS leaders agreed that FTF meetings and discussions were ideal in encouraging and supporting their colleagues, stressing the need to empower staff and to build teams. When library leaders have solidified their relationships with their employees, it becomes easier to handle motivation through the use of information technology, mostly by e-mail and telephone.

One of the respondents wrote,

> I always try to keep remote employees informed about what's going on, so that they feel part of things. We also work to bring them in from remote locations if there's something going on (training, speaker, event) at our central location that they are interested in. We also regularly schedule remote librarians at our central campus to avoid isolation, and our central campus librarians cover the remote locations to experience our other libraries.

Another library leader stressed the importance of knowing when to meet FTF, commenting, “Knowing when to move from remote to face-to-face is crucial. Do my best to establish a working relationship with all staff members to minimize the impact of the remote situation.” Table 45 summarizes the results.

Summary

The data analysis results presented in this chapter answered this study’s overarching question about whether emergent patterns of remote leadership existed in the LIS field. It was evident that patterns of remote leadership have emerged, causing library leaders to learn how to use information technology comfortably to lead their

employees remotely. Some library leaders indicated their adeptness in using technology, while others were hesitant in embracing the concept of remote leadership.

Table 45
Motivating Remote Employees through the Use of Information Technology

	Frequency
Prefer to meet face-to-face	15
Open nonverbal indicators, listening skills	13
Group meetings/social occasions	12
Daily contact (e-mail, IM, etc.)	9
Team building	8
Open discussions and friendliness	8
Responses given not appropriate to question	8
Clarity in communications	8
Set tone of messages	7
Praise/recognition	6
Ask for feedback/input	5
Follow through/support	5
Available and accessible at all times	5
Acknowledge everybody when in their location	4
Avoid isolation of employees	4
Coaching	4
Caring	4
Know when to use face-to-face	3
Consistency	3
Humor	3
Stay positive	2
Library vision/policies	2
Keep everyone informed/inclusive	2
Not very well	2
Open-ended questions	2
Honest and straight forward	2
Telephone	2
Do not know	2
Identify goals, objectives, and priorities	1
Tacit communication, motivational strategies	1
Lead by example	1
Empowerment	1
Problem solving	1
Respond quickly	1
Total combined responses	156

While the sample size was adequate for several analyses, such as the chi-square, description, reliability, and *t*-test, it fell short of the 185 participants needed for factor analysis. As a result, factor analysis was run only for Part B. However, the failure did not negate the results because other analyses revealed that some of the LIS leaders have slowly modified their FTF interactions in order to lead their employees remotely through the use of information technology. In addition, LIS leaders responses were similar to those of corporate leaders, corroborating the results in the Horner-Long and Schoenberg's (2002) study and the Creative Leadership (CCL) and Forrester Research study (Pulley & Sessa, 2001; Pulley, Sessa, Fleenor, & Pohlmann, 2001; Pulley, Sessa, & Malloy, 2002). These findings are detailed in chapter 5.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

This study has identified some emergent patterns of remote leadership in the library and information science (LIS) field. This study also explored whether library leaders were using information technology to be effective remote leaders in a technology-driven environment, and explored whether existing leadership attributes could be identified as part of the remote leadership model. Additionally, this study identified underlying issues and challenges faced by LIS leaders as they transition from a traditional leadership model to a blended model of face-to-face (FTF) and remote leadership. Overall, the purpose of this study was to better understand how LIS leaders have used and applied their current leadership skills, making necessary modifications to their FTF interactions when leading their employees remotely.

This chapter presents a summary and interpretation of the findings, addressing each of the three research questions and answers from the questionnaire's Parts A, B, and C. While the findings were reported in the data-analysis review using various statistical methodologies, this chapter also discusses the implications of the findings, and provides recommendations for future research.

Summary

Quantitative and qualitative data were obtained from a small sample size (n = 91 to 103) after two waves of postcards were mailed to 5,849 library leaders throughout the United States. These librarians were selected through a stratified random sampling using a mailing list purchased from MDR (Market Data Retrieval). The survey

respondents participated in a Web-based survey, a self-administered questionnaire, by clicking on a designated Web address provided by SurveyMonkey.com.

I developed a survey instrument based on prior leadership research, specifically the research conducted by the Center for Creative Leadership (CCL) and Forrester researchers (Pulley & Sessa, 2001; Pulley, Sessa, Fleenor, & Pohlmann, 2001; Pulley, Sessa, & Malloy, 2002) and the Horner-Long and Schoenberg (2002) study. Each survey item was developed based on literature related to traditional and remote leadership models. Additionally, Part A items were developed based on the use of information technology (Avolio, Kahai, & Dodge, 2000; Casey & Savastinuk, 2007; Farkas, 2007; Nardi, 2005; Nardi, Whittaker, & Bradner, 2000; Stephens, 2006, 2007). This study's instrument was tested rigorously throughout the construction process to determine its inherent validity and reliability. First, a panel of well-renowned Texas library leaders thoroughly examined each item, proposing additional revisions to the questionnaire. Second, after revisions were made to the instrument, the self-administered questionnaire was pilot tested to strengthen its validity and reliability. Based on the pilot-test results, the survey items were then rewritten for clarity to improve their Cronbach's alpha levels. Finally, the survey instrument was released to the targeted population of LIS leaders.

While the small sample size was adequate for the various statistical methodologies such as chi-square, content analysis, description, reliability, and *t*-test, it fell short of the 185 participants needed for factor analysis. However, this inadequacy does not negate the results, revealed by the various statistical methodologies, that some of the LIS leaders have slowly modified their FTF interactions in order to lead their

employees remotely through the use of information technology. The results also indicated similarities between library leaders and corporate leaders in their efforts to become effective remote leaders. The small number of respondents means that the results cannot be generalized to the entire population of library leaders without further research.

Interpretation of the Findings

As noted, factor analysis was conducted to condense data by grouping items empirically through factor loadings, and to reveal the essential attributes needed in remote leadership. By selecting the five-factor model, the dimensions of remote leadership were revealed based on empirical data, shown in Table 46. As a result, my theoretical factor subscales had to be modified. The theoretical model was based on the integrated-leadership theory (Chemers, 2000) and the graphic model proposed by Wagner and Hollenbeck (2005), along with other relevant leadership studies in the corporate world, such as the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002), Horner-Long and Schoenberg (2002), Bennis and Nanus (2003), Fair, Connaughton, and Daly (2004); Jurrens (2005); Kayworth and Leidner (2000); Kerber and Buono (2004), and the library leadership studies conducted by Evans and Ward (2007); Hernon , Powell, and Young (2003), and Sheldon (1991). However, the concept of remote leadership remained intact in that library leaders needed to provide dimensions of essential leadership attributes that were also rooted in the traditional FTF leadership model.

Table 46
Empirical Factor Structure for Remote Leadership

Factor	Factor Name
Factor 1	Dimensions of Organizational Culture
Factor 2	Dimensions of Vision
Factor 3	Dimensions of Credibility
Factor 4	Dimensions of Social Capital
Factor 5	Dimensions of Change

The remote-leadership empirical factor model answered the second research question by showing which essential attributes were needed for a leader to be an effective remote leader.

Part A Findings

Library leaders were asked to indicate their interaction levels with their remote employees through FTF meetings and through the use of information technology. They recognized the ease of meeting with their employees FTF if they worked in the same building. They also acknowledged that they increased their interactions with their remote employees who were colocated in different buildings when they used information technology. The tools enabled them to stay in touch more frequently, leveling the equity between those employees housed in the same building and those housed in different buildings. Based on these interaction levels revealed by LIS leaders, I developed a model where there would be more frequent and daily FTF interaction if library leaders and their employees were physically located in the same building, working the same hours (see Figure 4). When the hours began to diverge, the FTF interaction started to decrease with a higher increase in the use of information technology. When the library leaders and their remote employees worked in different

buildings on different schedules, their FTF interaction decreased, and they relied more on the use of information technology to interact with one another.

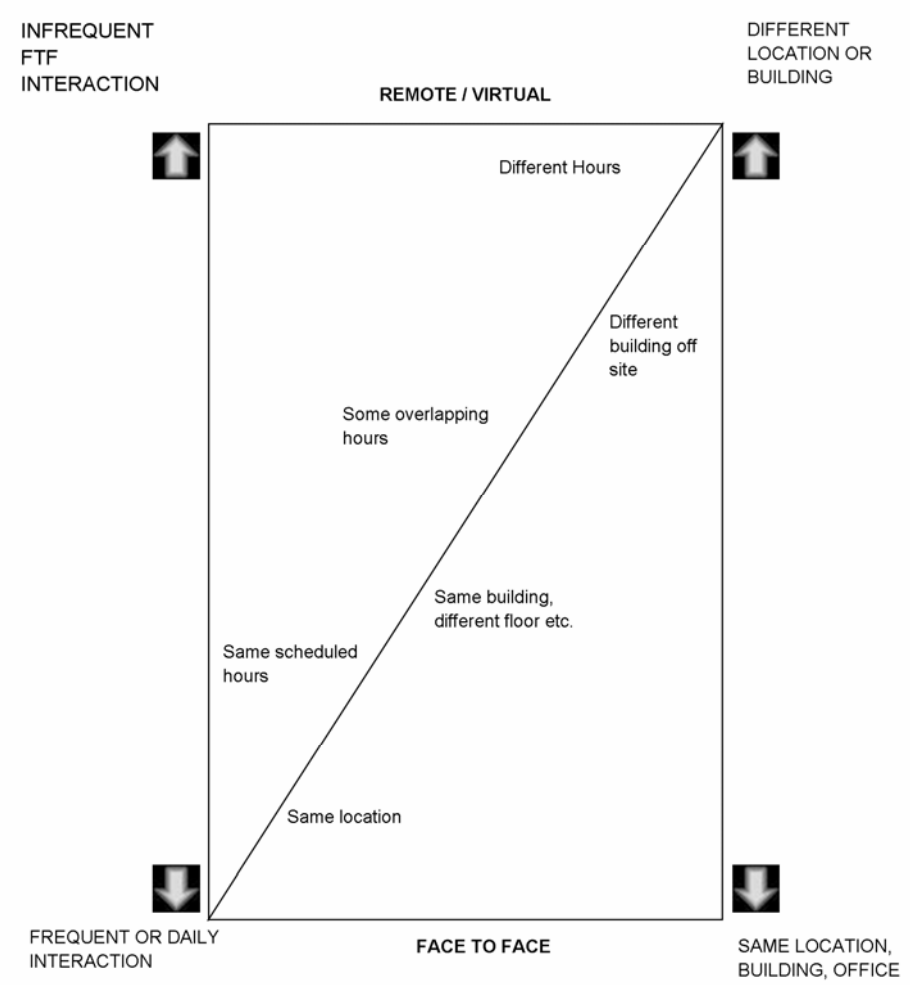

Figure 4. Remote-interaction model.

Further descriptive statistics revealed that LIS leaders' preferred particular information-technological tools in communicating or interacting with their remote employees: e-mail and telephone calls. In addition, 99% of the respondents selected e-mail as their preferred in information-technology tool (see chapter 4, Table 21). The respondents selected telephone calls as the second most useful method, with 85.3% respondents in strong agreement. The library leaders also selected memos and reports as other means of communicating and interacting with their remote employees.

Study results also indicated that the respondents likely do not use instant messaging (IM). One of the survey items (shown in Appendix L, A12) asked the respondents whether they checked the buddy list, one of the IM features to see if a remote staff member was available for a chat. The key operative was to determine the remote employee's presence so that the respondent could also make a telephone call if needed. The results showed 12% of the respondents in strong agreement (4%) or agreement (8%) with this statement. Another 35.6% had no opinion. These results were somewhat similar to the findings made by DeRosa, Cantrell, Havens, Hawk, & Jenkins (2007) who reported that only 38% of the 382 library directors in the OCLC study sent or received IMs. However, this study's finding cannot be applied to all library leaders. As one of the library leaders mentioned in the provide your final comments section in the survey,

> I try to match my communication mode with the preferences of my staff. Some really don't like IM, so I use it as a tool to see if they're in the office, then make a call. Others love IM and I message them [and] receive messages from them almost daily.

Additionally, findings for preferred communication methods exhibited by library leaders were very similar to the corporate leaders' preferences identified by the CCL researchers (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002). The CCL study revealed that the corporate leaders preferred FTF meetings, making telephone calls, and writing emails. Referring back to the literature-review discussion, it may be that the corporate leaders in the CCL study and the library leaders in this study lacked technical expertise in using information technology. As an example, several respondents in this study admitted that they were behind technologically, and that other people (staff and/or colleagues) were more comfortable in using information technology

as a leadership tool. On the other hand, in response to the open-ended question listing leadership challenges, one of the respondents wrote, “This is an assumption that I am not willing to accept, so I think the challenges may be that not everyone is using information technology, or perhaps that not everyone has the same expectations for information technology.” This attitude, while not applicable to every library leader, also revealed some of the underlying issues facing library leaders: the inherent struggle to stay current in a sea of rapid technological changes, the unwillingness to adapt to changes brought about by information technology, or even the unwillingness to be available at all times for their remote employees.

According to the chi-square statistical results, there were significant differences in the use of information technology by gender. Male library leaders tended to be in agreement not to be available when they were away from the office, as they marked the option of not applicable more than female library leaders. Furthermore, male library leaders (proportionately) tended to agree to resolve disagreements by leaving voice mail more than female library leaders.

Academic- and public-library leaders also statistically differed in their communication frequency specifically for FTF meetings. According to the chi-square results, academic-library leaders preferred to communicate FTF once a week with their remote employees. On the other hand, public-library leaders preferred to communicate FTF several times a day. While these findings indicated that academic-library leaders may be more willing to rely on information technology than their public-library counterparts, generalization cannot be applied. Of particular interest, academic-library

leaders were also similar to male library leaders in that they were more agreeable to leave voice mail to resolve disagreements.

Overall, the Part A findings from this study's survey instrument indicated that LIS leaders have slowly adapted their traditional FTF interactions in leading their employees remotely, answering the first research question. This study's findings also answered the third research question, that library leaders exhibited similar attitudes and information behavior to those exhibited by corporate leaders.

Part B Findings

As part of exploring whether patterns of remote leadership were emerging in the LIS field, the survey respondents were asked to review a list of leadership attributes obtained after an extensive literature review. These leadership attributes were rooted in the traditional leadership model. Some attributes were also obtained from recent research that indicated a symbiotic relationship between leadership and information technology had been emerging in the corporate world. One such study was conducted by Horner-Long and Schoenberg (2002), who surveyed two groups of corporate leaders, traditional leaders and e-leaders or remote leaders in the United Kingdom. The authors then compared how these chief executive officers (CEOs) viewed leadership and how they rated these attributes in remote situations (see chapter 1, Table 1).

After listing the library leaders' importance rankings for each leadership attribute needed in remote situations (see Table 41), these rankings were compared to those listed by Horner-Long and Schoenberg's (2002) list, and are presented in Table 47.

Table 47
Venetis' Comparison of LIS Leaders' Ratings to Horner-Long and Schoenberg's (2002) Corporate Leaders

Leadership attribute	Traditional or FTF leaders	E-Leaders or remote leaders	Venetis study results to indicate LIS Leaders rankings
SIMILAR TO BOTH TRADITIONAL AND REMOTE LEADERS			
Inspiring	Important	Important	Important
Intelligent	Important	Important	Important
Anticipates opportunities (environment scanning)	Important	Important	Important
Strategic planner	Important	Important	Important
SIMILAR TO TRADITIONAL LEADERS			
Entrepreneurial	Less important	More important	Less important
Risk taker	Less important	More important	Less important
Skillful using information technology	Less important	More important	Less important
Honest	More important	Less important	More important
Collaborative	More important	Less important	More important
Sets expectations	More important	Less important	More important
Lives the values (leading by example)	More important	Less important	More important
SIMILAR TO REMOTE LEADERS			
Sets priorities	Less important	More important	More important
Skilled at networking	Less important	More important	More important
Conservative	More important	Less important	Less important
DIFFERENT FROM TRADITIONAL AND REMOTE LEADERS			
Decisive	Important	Important	More important
Adaptable	Important	Important	More important
Motivational	Important	Important	More important
Inspires vision	Important	Important	More important
Shares knowledge	Important	Important	More important
Communicative	Important	Important	More important

Not surprisingly, there were some leadership attributes in which LIS leaders had similar rankings to both traditional and remote leaders, such as inspiration, environment scanning, and strategic planning. There were other attributes in which the library

leaders' rankings were more aligned with the traditional (FTF) leaders' rankings, such as entrepreneurial, risk-taking, honesty, collaboration, leading by example, and use of information technology. Additionally, library leaders ranked yet other leadership attributes similarly to those made by remote leaders, such as conservative, the ability to set priorities, and networking skills. However, LIS leaders placed more importance on some leadership attributes that differed from those chosen by traditional and remote leaders, such as to make decisions, to adapt, to motivate, to inspire, to share knowledge, and to communicate.

It is apparent that the library leaders are in a transition from a traditional-leadership model toward the remote-leadership model, but they are not fully integrated to it. To reiterate, the traditional model of leadership could be defined as the FTF interaction between leaders and their employees and colleagues. In contrast, remote leadership indicates a different model, one that focuses on the interaction of leaders and their staff through today's digital technology. Although these leaders still use FTF interaction, due to varied work schedules and job responsibilities, they also recognize the need to lead their employees remotely. These leaders have started to incorporate information technology into their leadership model.

The library leaders noted a hybrid type of leadership, by having some leadership attributes needed by both the traditional (FTF) leader and the remote leader. These findings indicate that LIS leaders have recognized the emergent patterns of remote leadership; however, they are not ready to abandon the traditional concept of leadership. Overall, the Part B findings from this study's survey instrument answered both the second and third research questions in identifying essential remote-leadership

attributes, and whether the LIS leaders exhibited similar rankings to those made by corporate leaders in the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002) and Horner-Long and Schoenberg's (2002) study.

Part C Findings

The purpose of having open-ended questions was to elicit library leaders' opinions and to determine whether common patterns and themes would emerge. The leadership challenges reported by LIS leaders were similar to those made by the corporate leaders in the CCL study (Pulley & Sessa, 2001; Pulley et al., 2001; Pulley et al., 2002; referenced in chapter 2, CCL Study). For example, the CCL corporate leaders were concerned with how to integrate new technologies, mastering these technologies, and keeping pace with these technologies (Pulley et al., 2001, p. 5). The LIS leaders also listed the need to develop their technological skills, and how to use information technology comfortably, as their most pressing concern, as shown in Table 42. Library leaders differed from CCL corporate leaders in that they also listed the difficulty in maintaining relationships without FTF interaction. It did not come as a surprise that the library leaders were concerned about the lack of FTF interaction because of their service-oriented philosophy, serving their community users as shown in Sheldon's 1991 study. In contrast, CCL corporate leaders were concerned about their business models.

Like CCL corporate leaders, library leaders stressed the need to have good communication skills (Pulley et al., 2001, p. 6) as one of the important essential skills needed to be effective remote leaders. Again, the LIS leaders listed other skills, experiences, and traits that they felt were more important, such as improving their information-technological skills and developing team cohesiveness through

empowerment, conflict-management skills, and social capital. In contrast, the CCL corporate leaders were more concerned about dealing with rapid changes and retaining talented employees.

Both library and CCL leaders reported their concerns about how to motivate their remote employees. While the CCL study did not further analyze the motivation aspect through information-technology use, this study's findings revealed the need to provide FTF meetings as part of building social capital, which matched the prevailing strategy recommended by researchers (Andrews, 2004; Burtha & Connaughton, 2004; Farmer, 2005; Jurrens, 2005; Kayworth & Leidner, 2000; Kerber and Buono, 2004; Maurer, 2006; Sessa, Hansen, Kossler, & Prestridge, 2001), as discussed in Appendix A.

I also asked the library leaders how they handled the communication aspect without the FTF cues that are normally present, such as the tone of voice, the facial expressions and gestures, and many other nonverbal cues. Some of the LIS leaders, who have experienced various tools such as IM, indicated the use of buddy lists and emoticons as discussed by Nardi, Whittaker, and Bradner (2000) and Nardi (2005). However, library leaders also noted that they had to word their e-mails and other written reports carefully to avoid any misunderstandings. They also recognized the need to understand when to select the appropriate tool, confirming Lengel and Daft's 1988 study results.

Overall, core leadership attributes still exist, and library leaders have recognized the need to make modifications to their leadership skills by applying them in remote situations. The Part C findings from this study's survey instrument answered all three research questions.

Implications of Research

This study addressed a gap in the library-leadership body by providing an exploratory yet rich foundation of emergent patterns of remote leadership. Although the small sample size was a limitation in this study, it also revealed the newness of the topic. It might have resulted in some perceived inability to address remote leadership in librarianship. The phrase “remote leadership” is not easily understood, but if a library leader was given the scenario of having direct employees who run off-site branch locations, it is easily understood.

With all the changes in the field of information technology, it only stands to reason that librarians need to keep current on new and developing communication methods in addition to the standard methods of in-person visits, e-mail, memos and reports, and telephone calls. This study did not focus on the library workforce that crosses generations (Young, Hernon, & Powell, 2006, p. 489), however, as shown in the literature review, Evans and Ward (2007) commented that Generation X and Generation Y librarians will easily adapt to changes, and will be at ease in using information technology. Young et al. (2006) compared various leadership attributes ranked by Generation X librarians to the library leaders’ rankings made in their 2003 study (Hernon et al., 2003); the researchers commented that the Generation X librarians were more embracing of new technology (Young et al., 2006, p. 500) and favored frequent communication (p. 500).

It will fall to progressive library leaders to encourage the use of information technology to recruit and retain Generation X librarians in librarianship and leadership positions. By offering challenges and support, Generation X librarians would begin to

take ownership of the next cycle of library leadership, and ensure that libraries do not stagnate or fall behind technologically. After all, as Mosley (2005) wrote in her work, some Generation X librarians are already in management and administration positions.

Implications of Practice

As discussed, the concept of remote leadership is not easily understood. In order to understand the concept of remote leadership, it is best to discuss the traditional-leadership model first. Then indicate how information technology use can enhance that traditional model. The next step is to link remote leadership to the oversight of off-site campus or branch libraries as one of the remote situations. From that point, one can easily explain how library leaders could engage in leadership activities through the use of information technology. Additionally, the obtained quantitative and qualitative data for this study indicated that library leaders are a hybrid type, incorporating both traditional and remote leadership attributes as part of their leadership styles. Showing library leaders the various concepts in the two models will assist them to analyze which area they embody, and how to modify their own FTF leadership skills and apply them to remote situations.

However, information technologies do not necessarily have to be the Library 2.0 tools such as blogging, online social networks, or wikis suggested by Casey and Savastinuk (2007), Farkas (2007), and Stephens (2006, 2007). Instead, the tools should be tied into communication, such as e-mail, cell phones, telephones, IM, Webinars, and similar tools. This kind of information technology could provide interaction that includes both verbal and nonverbal cues. These familiar tools can enable library leaders to

overcome their lack of technical expertise, which in turn, can assist them to adopt other communication tools.

It also stands to reason that library-leadership courses could be offered through the LIS curricula. It would be helpful for future LIS students to learn about leadership, its several theories, and how they can be applied to real-life scenarios. Additionally, LIS faculty could also include corporate-leadership case studies as part of their pedagogy, showing LIS students how both corporate and library leaders could develop practical solutions. It may become critical to teach how leadership and information technology are interconnected symbiotically, and how to use information technology appropriately.

This study's findings revealed that library leaders need to gain technical expertise in information technology and the survey instrument. Notably Part A could be used as a method to determine which set of technological skills, such as communicating through IM, needed to be improved for both library leaders and employees.

Furthermore, Part A can indicate preferences for communicating electronically in a variety of situations. Library leaders could learn not to rely on information technology to avoid conflict or personal contact (Markus, 1994; Timmerman & Harrison, 2005).

Recommendations for Future Research

Because this study was the first to research and to explore remote leadership in librarianship, it was necessary to have a lengthy questionnaire to obtain an extensive amount of data in order to identify any emergent patterns if they existed. It is recommended that for future studies the survey instrument be shortened, omitting the open-ended questions section and sending both parts A and B together, or sending out Parts A and B individually. In addition, instead of attempting to define the term *remote*

leadership at the beginning of the questionnaire, future versions of the survey instrument should list various remote-leadership scenarios and ask participants to check all of the scenarios that applied to their situation. The respondents should be asked to give a definition, to capture their concept of remote leadership. By doing so, it would provide a clearer picture of how remote leadership exists in academic and public libraries.

Due to privacy issues for this survey, it became necessary to send postcards to participants. For future research, the survey should be sent through e-mail and e-mail LISTSERVS, giving participants the opportunity to click on the Web address at the moment of receipt. This may increase the sample size and response rate, which is needed to run factor analysis properly.

Instead of contacting library leaders throughout the United States, it is recommended that the sampling be narrowed to focus on library associations such as the Urban Libraries Council and Association of Research Libraries by looking up member libraries and contacting their library directors and deans to inquire about their modifications to FTF leadership skills due to today's digital-technology environment. In some states, such as California, upstate New York, Michigan, Florida, and Texas, libraries often have off-site locations. It is recommended that state associations be contacted to see whether they would be willing to allow researchers to use their mailing lists or electronic LISTSERV, to inquire how their librarians handle the oversight of their remote branches.

Similar to the ongoing studies by Hernon et al. (2003) and Young et al. (2006), longitudinal studies could be established to determine the development of remote

leadership in librarianship. Generations X and Y library leaders should be invited to participate in order to assess and compare their leadership abilities to those made by senior administrators. Parallel longitudinal studies also could be established.

Finally, since this study focused on the library leaders' perspective, it is also recommended that any future research focus on the follower's (employee) perspective to ascertain their perceptions of their library leaders' effectiveness as remote leaders. After all, leaders should have followers who help them to carry out the mission. As an example, Duncan (2008), an electronic resources librarian, discussed her recent experience working remotely from an employee perspective. The question arises, how would Duncan and other telecommuting librarians assess the effectiveness of their library administrators as remote leaders.

Conclusion

Because this study's findings indicated that library leaders are not quite the traditional (FTF) leader, and yet are not fully integrated into remote leadership, it becomes apparent that they would function with a blend of both FTF and electronic interactions, due to the nature of library work. As Sheldon (1991) indicated, library leaders have a need to serve the public, and this need enables library leaders to place more importance on being able to adapt and to share knowledge, as shown in Table 42. These two essential traits become increasingly necessary in navigating the digital-technology environment. It also becomes crucial for LIS leaders to analyze their own leadership attributes based on the empirical-factor structure, focusing on the five dimensions of leadership: (a) organizational culture, (b) vision, (c) credibility, (d) social capital, and (e) change. By focusing on these concepts, library leaders then could

incorporate the best practical applications from both the traditional-leadership model and the remote-leadership model, and blend both aspects to transition into a third model that is specifically tailored to librarianship and the nonprofit world.

APPENDIX A

KEY ISSUES AND LEADERSHIP ATTRIBUTES IN REMOTE TEAMS

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Andrews (2004) Twenty tips were provided without stating whether this was based on personal experience, interviews with telecommuters, etc.	Remote leaders have substantial disadvantages in not knowing what people are doing and in turn, they cannot coordinate work. They cannot convey their physical presence, or convey their messages clearly. Remote leaders must try to establish a framework to guide and direct team members. Leaders need to establish social interaction with team members. Leaders also should use a variety of communication tools in virtual meetings, using a blend of oral communication (telephone calls or conferences, and/or video conferences) and written communication (e-mail, shared databases or Websites).	Build social capital. It is important for leaders to get to know each remote member. Interpersonal skills are critical in establishing relationships and understanding team members' perspectives. Listen and ask questions to clarify roles within remote teams. Delegate job and/or project responsibilities among team members. Become a role model by setting examples of commitment, credibility and trust. Establish a spirit of collaboration among team members and encourage them to contribute to the project(s).

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Burtha & Connaughton (2004) Eight best practices were developed from 5 years of research, based on personal experience, discussions, and interviews with team leaders and members. The researchers also conducted surveys and analyzed the results after projects or programs were completed to identify common strategies.	Remote leaders need to establish social connection among members from the initial meeting, and successful leaders often use FTF communications to begin projects. Remote leaders often choose the location to hold FTF or virtual meetings, however, successful leaders selected neutral sites (p. 25) to avoid territorial claims. Leaders recognize that remote team members may not receive the same information as those physically situated team members would. Effective remote leaders keep all team members in the loop by providing remote members the same information that physically situated members would receive. Since it is necessary to keep all team members informed at the same time, effective leaders provide members various information technologies to use, convey, and share messages. Remote leaders need to convey their accessibility to team members by physical means as in FTF visits or remote means as in personal e-mails, telephone calls, and other means.	Build social capital and establish teamwork of collaboration and trust among team members. "It's the team leader's job to clarify team roles and responsibilities, create coherence, align behaviors with rewards and recognitions, and identify actual, perceived and potential conflicts in how team members might be asked to spend their time" (p. 26). Identify and resolve conflict, recognizing that remote team members may have different supervisors and demands on site. Recognize frequent communication is essential. "What you say (and don't say) matters" (p. 25). Learn how to listen to others. Understand and overcome cultural differences when members are geographically dispersed across continents. Adapt to changes and show flexibility. Encourage team members to adapt to change related to shifting goals, budgets, resources, and information technologies. Take time in planning and preparing projects, accounting for delays related to company infrastructure and/or resources, including time zones across continents.

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Fair, Connaughton, & Daly, (2004) The researchers developed a leadership toolkit to assist the United States Army by formulating leadership skills and strategies in leading battle forces remotely. The researchers drew parallels from the business world (p. 4). Their research is based on anecdotes, experience, and case studies from both the business world and the military field (p. 5).	Military leaders and team members need "to be present in more than one place simultaneously, with their members linked through technology" (p. 4). The thinking of "physical distance was necessarily crippling to leaders" (p. 6) needed to be overcome by showing military leaders how to be available both FTF and remotely. Military leaders need to establish FTF meetings on a regular basis and continue to communicate through other information technologies. Military leaders cannot depend on one information-technological tool such as e-mail. Instead, they should choose appropriate information technologies, knowing when to use FTF and information technologies in dealing with crises. Leaders also need to communicate goals clearly, and share the same information among their team members. Military leaders also need to recognize that on-site leaders need to be included in conveying the same message to their battle troops to avoid confusion over "who is the 'real' superior" (p. 9).	Establish social interaction among their remote team members to '[prevent] feelings of isolation" (p. 5) by communicating FTF and using information technologies. Create a climate of trust and collaboration by being available and by encouraging participation through frequent communication between leaders and remote team members. Ensure information flow by over-communicating (p. 7). Leaders must deliver the same message using more than one information-technology tool in order to be understood. Include both physically situated and remote team members in information flow. Understand when to use FTF communication and information technologies (or both) in various situations. Military "leaders need to have much more discipline about everything from returning calls and e-mails to managing meetings and tasks" (p. 7). Understand cultural nuances and act accordingly (p. 8).

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Farmer (2005) Farmer's case study explored the various methods in leading health care telecommuters, based on Hersey and Blanchard's Situational Leadership Model.	The Hersey and Blanchard's Situational Leadership Model is based on the principle that leadership styles need to be modified to fit the situation; more importantly, to fit the team member's developmental level. Farmer redesigned the leadership model to fit the healthcare field by diagnosing and collaborating for maximum performance. Farmer stressed, "traditional leadership styles must be modified to respond to the needs of telecommuters" (p. 483). Farmer discussed the leadership model in depth, by assessing telecommuters' developmental levels or job knowledge in order for leaders to direct, coach, and support telecommuters (p. 486). The key goal is to delegate tasks to telecommuters who can handle such responsibilities (p. 486).	Leaders need to "know how to diagnose the performance, competence and commitment of others" (p. 485). Recognize and understand the work settings in order to employ the appropriate leadership style (p. 485). Communicate and obtain feedback. Establish clear priorities and goals to ensure success of a project. Coach and develop team members' skills by building interpersonal relationships. Allow team members' growth in job knowledge by delegating responsibilities and empowering. Flexibility is an essential component in adjusting to various work settings.

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Jurrens (2005) Jurrens provided a summary of common problems of dealing with remote team members in the engineering field over a 5-year span. His team had engineers based in different locations throughout the world. Instead of relocating people to the headquarters, it benefited the organization, IBM, to move work to people (p. 707). Jurrens provided a list of best practices in resolving problems with his remote engineers.	Jurrens noted that as a leader, it was essential to establish common social and organizational norms. Projects needed "the right leaders in the right places, and perhaps most important of all, the right leadership tone" (p. 705). Job training was emphasized among all team members in preparation for a retiring workforce or in cases of high turnover. With job training in place, remote leaders recognized and understood who could handle the project's demands, including the needs of technology, human resources, and other resources. The goal was to maintain the project's continuity despite a high turnover due to retirements or resignations. Flex factor (p. 707) allowed the "'virtual team' to essentially expand and contract as required to meet the significant fluctuations in the demand of our skills, as well as to respond to financial windfalls or challenges, both of which are inevitable" (p. 707). Establish common goals and technology infrastructures to ensure project's success.	Develop social and organizational culture or norms. Recognize and identify remote team members' talents and skills. Establish interpersonal relationships with each remote team member. Build a social connection among team members to achieve common goals in projects. Leader accessibility is vital to team success, whether by physical presence, or availability virtually, or listening attentively. Build an atmosphere of trust and respect among team members. Culture blending needed to understand group dynamics (p. 708), especially when remote team members are located on various continents. Communicating a set of unifying principles or goals for team to support (p. 708) are critical to team success.

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Kayworth & Leidner (2000) Kayworth and Leidner set up a field-study experiment to observe group behaviors in virtual or remote teams. The researchers selected university students located in 3 geographic areas: Europe, Mexico, and the United States (p. 185), setting up 12 teams with 5 to 7 members, with team leaders (professors). These teams were required to use various information-technology tools. The researchers gathered data by tracking technical and behavioral issues, and identified group dynamics in each virtual team. Out of these 12 teams, 3 groups relied on a blend of FTF and information-technology tools to communicate with one another. These three groups were more successful in carrying out their tasks than other groups.	Kayworth and Leidner identified common patterns and problems among the 12 teams. They also identified the strategies developed by the 3 successful teams. The major problem was communication among 9 teams who decided to rely only on e-mail. These teams did not account for time-zone differences nor the language or cultural barriers, which resulted in difficulties in completing their projects. Another problem these 9 teams encountered was the leader's style in guiding or direction in managing projects. Other team members noted their leaders were not easily approachable or available to answer questions or clarify goals. The three successful teams used a blend of FTF communications and various information technologies, including shared Websites, e-mail, and other tools. These teams also established both organizational and social norms. These 3 teams also allowed time for preparation, familiarization with technology, and communication across time zones.	Overcommunicate to be effective. Use a blend of FTF communication and information technologies to deliver messages. Understand diversity, and develop sensitivity to assist team members in overcoming language and cultural barriers. Guide and direct team members' work by communicating project's goals clearly and "provid[ing] continuous feedback on performance" (p. 190). Be available and approachable. Build interpersonal relationships to ensure team or project success. Build team cohesiveness by developing organizational and social norms among team members. Flexibility allows team leaders and remote team members alike to prepare and familiarize with the overall project goals and the various resources used, such as finances and technology, and to get to know one another.

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Kerber & Buono (2004) An unidentified organization created a virtual team "as a long-term, permanent part of the corporate structure" (p. 5) to coordinate training programs for employees in various locations. The researchers' in-depth study of this virtual team's development and progress provided a baseline of various strategies needed to lead remote teams effectively.	The virtual team leader recognized the need to outline the training program's mandate, by communicating and clarifying the expected goals. The leader established frequent communication, using both FTF communication and information technologies, such as telephone or video conference calls, chat rooms, shared written documents, or Websites. The leader encouraged participation by giving team members the opportunity to make project decisions as a group. The leader recognized his team members' expertise, and asked them to provide on-site leadership in guiding and directing training projects. "[Leaders] can successfully harness the talents and capabilities of their virtual teams, facilitating the ability of their organization to achieve its business objectives, and matching, perhaps even exceeding, the effectiveness of collocated teams" (p. 10).	Develop cohesiveness or high-quality relationships among team members. "Create a level of collaboration and productivity" (p. 5). Establish credibility by obtaining commitment from remote team leaders and members in supporting the project's objectives (p. 6). Excellent human resources and communication skills are needed to establish team identity and cohesion. Provide structured projects, establish routines, and constantly provide clarity in identifying roles and responsibilities to manage performance. "Establish, develop, and sustain *lavish information flow* among all team members" to overcome geographic distances and time zones (p. 9). Empower team members to make decisions in a shared leadership context, even though team members recognize the leader's ultimate authority.
Maurer (2006) Author outlined his personal experience in developing a virtual co-travel workshop with remote sales team members (p. 21).	Use a variety of information technologies to stay connected. Focus on one objective per meeting with one member at a time. Communicate the same way as if the meeting was FTF when using information-technology tools.	Communicate training objectives prior to a meeting. Coach team members by providing advice and strategies in handling situations. Develop an interpersonal relationship with team members. Mentoring is another way to establish interpersonal relationships with team members.

Works Cited/Summary	Key Issues Noted	Leadership Attributes
Sessa, Hansen, Kossler & Prestridge (2001) The article is based on "two fields of research that provide information relevant to GDTs [geographically dispersed teams]" (p. 15). The researchers at the Center for Creative Leadership (CCL) sent a survey to organizations that had GDTs between August 1997 and August 1998 (p. 15). The CCL researchers asked the organizations 4 questions related to the performance and effectiveness of GDTs in comparison to physically situated teams (pp. 14–15).	Similar to physically situated teams, GDTs performed effectively only if team leaders clearly outlined the project or team goals. GDTs had more difficulties when their team members represented other cultures because these teams focused only on meeting the project's objectives, instead of building interpersonal relationships with one another. "GDT members tended to believe that it was more difficult for them than for members of conventional teams to work as a unit and develop the synergy and cohesiveness needed for effective teamwork" (p. 17). However, GDT members who had FTF meetings at the beginning of a project and used a blend of FTF communications with information technologies reported that they had "a strong sense of membership in the team—one of the measures of team effectiveness" (p.18).	"Develop clear and measurable goals" (p. 18). Establish goals for project members to ensure team effectiveness. Communicate goals and strategies, including the team's structure. Use a blend of FTF communication and information technologies especially during team formation. Build interpersonal skills and recognize cultural differences among team members. Build teamwork of cooperation, interdependency, collaboration, and trust. Identify roles for teams and allow them to participate in the decision-making process.

APPENDIX B

SURVEY INSTRUMENT MATRIX

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1* = How and to what extent have LIS leaders modified their FTF interactions to lead their employees remotely using information technology?	RQ1 statements focus on various leadership attributes used in remote situations. RQ1 questions are located in Part A in the instrument.	NOTE. The first statement recorded was the pretest survey item used in the subject-matter-expert (SME) survey.	Based on the SME review process, the SME survey item was either rephrased, combined with others, or not included in the pilot survey.	Each statement correlated to RQ1 has a Likert scale ranging from strongly disagree (1) to strongly agree (5). Based on the reliability analyses, the pilot-survey item was either rephrased, or not included in the final survey.
Remote leadership/ Demographics	Investigator	Sample group identity	Number of employees	A1 How many remote employees do you supervise? A1 changed to survey item #1 (variable i1) in pilot survey. #1 kept in final survey.
Remote leadership/ Demographics	Burtha & Connaughton (2004); Hart & McLeod (2003)	Sample group identity	Frequency of interaction	A2 How often do you see those employees you consider remote employees? Rephrased; retained as A1 and variable i2 in pilot survey. A1 kept in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Andrews (2004); Casey & Savastinuk (2007); Farkas (2007); Kayworth & Leidner (2000); Nardi, Whittaker, & Bradner (2000); Pulley, Sessa, Fleenor, & Pohlmann (2001); Pulley, Sessa, & Malloy (2002); Stephens (2006, 2007)	Use of information technology Factor A	Patterns of usage	A3 Please check all the information technological tools you use in your work. Kept as A2 (variables i3–i11) in pilot survey. Rephrased and retained as A2 in final survey. List of tools slightly modified to include additional tools such as in-person visits, telephone (one-to-one), etc.
RQ1	Andrews (2004); Fiorina (2006); Hart & McLeod (2003); Kayworth & Leidner (2000); Kerber & Buono (2004); Marta (2006); Nardi et al. (2000); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002)	Use of information technology Factor A	Patterns of usage	A4 How often do you use the following information-technological tools in your work? Rephrased and retained as pilot survey item A3 (i12–i20). Slightly rephrased and retained as A3 in final survey; list of tools slightly modified to include additional tools.
RQ1	DeRosa, Cantrell, Havens, Hawk & Jenkins (2007); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002)	Use of information technology Factor A	Patterns of usage	A5 How often do you use the following information technological tools to communicate with your remote employees? Duplicate of SME survey item A4. SMEs suggested to use “Select top three ... tools.” Pilot-survey item now A4 along with variables i21–i29. A4 kept in final survey; slightly modified to include additional tools.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Jurrens (2005)	Accessibility Factor D	Presence	A6 I visit my remote employees electronically. Please check all that apply. Rephrased vague statement by combining A6, A20, A21, A22, and A23 items into pilot-survey item A7 (i48). Item omitted from final survey to improve reliability.
RQ1	Andrews (2004); Burtha & Connaughton (2004); Kayworth & Leidner (2000); Kerber & Buono (2004)	Communication Factor C	Interaction	A7 I encourage all staff members to use any information technological tool to communicate with one another. Item omitted from pilot survey; low relevance.
RQ1	Investigator–based on A7 item	Communication Factor C	Interaction	A8 I encourage all staff members to use only FTF meetings to communicate with patrons. Item deleted from pilot survey; low relevance.
RQ1	Bennis & Nanus (2003); Kouzes & Posner (2007); Sheldon (1991)	Change Factor F	Adapts to new technology/ changes	A9 I use the following communication tools to initiate new concepts. Item omitted from pilot survey; low relevance.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kerber & Buono (2004)	Communication Factor C	Interaction	A10 I communicate frequently with my staff, especially remote employees, by using FTF meetings. Omitted from pilot survey. Consolidated in-person visits into list of tools in pilot-survey item A3 (i12–i20).

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kerber & Buono (2004)	Communication Factor C	Interaction	A11 I communicate frequently with my staff, especially remote employees, using one of the following information technological tools. Omitted from pilot survey. Consolidated in-person visits into list of tools in pilot-survey item A3 (i12–i20).
RQ1	Burtha & Connaughton (2004); Jurrens (2005)	Accessibility Factor D	Presence	A12 I am available through e-mail when I am away from the office to attend a meeting near my library's location. Deleted after combining A12, A13, A14, and A15 into pilot-survey item A6 (i39–i47). A6 kept in final survey.
RQ1	Burtha & Connaughton (2004); Jurrens (2005)	Accessibility Factor D	Presence	A13 I am available through e-mail when I am away from the office to attend an out-of-town conference. Deleted after combining A12, A13, A14, and A15 into pilot-survey item A6 (i39–i47).
RQ1	Burtha & Connaughton (2004); Jurrens (2005)	Accessibility Factor D	Presence	A14 I am available through cell phone when I am away from the office to attend a meeting near my library's location. Deleted after combining A12, A13, A14, and A15 into pilot-survey item A6 (i39–i47).

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Jurrens (2005)	Accessibility Factor D	Presence	A15 I am available through cell phone when I am away from the office to attend an out-of-town conference. Deleted after combining A12, A13, A14, and A15 into pilot-survey item A6 (i39–i47).
RQ1	Casey & Savastinuk (2007); Farkas (2007); Nardi (2005); Nardi et al. (2000); Stephens (2006, 2007)	Accessibility Factor D	Presence	A16 I check the instant messaging feature, a buddy list, to see if a colleague is available to initiate a conversation. Rephrased and kept as pilot-survey item A23 (i104). Kept as A12 in final survey.
RQ1	Andrews (2004); Bennis & Nanus (2003); Burtha & Connaughton (2004); Jurrens (2005); Sheldon (1991)	Accessibility Factor D	Presence	A17 I listen attentively to all of my colleagues, including my remote employees. Item deleted from pilot survey due to social desirability.
RQ1	Andrews (2004); Burtha & Connaughton (2004); Kayworth & Leidner (2000); Nardi et al. (2000)	Communication Factor C	Social cues	A18 I ask questions, using instant messaging, to clarify tasks or assignments that need to be completed, in remote situations. Rephrased by combining A18 and A19 into pilot-survey item A11 (i52–i60). Rephrased and kept as A8 in final survey.
RQ1	Andrews (2004); Burtha & Connaughton (2004); Kayworth & Leidner (2000); Nardi et al. (2000)	Communication Factor C	Social cues	A19 I ask questions, using emails, to clarify tasks or assignments that need to be completed, in remote situations. Deleted after combining A18 and A19 into pilot-survey item A11 (i52–i60).

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Fair et al. (2004)	Accessibility Factor D	Presence	A20 I often visit my staff members who are physically located near my office. Deleted after combining A6, A20, A21, A22, and A23 into pilot-survey item A7 (i48).
RQ1	Burtha & Connaughton (2004); Fair et al. (2004)	Accessibility Factor D	Presence	A21 I often visit my remote employees by traveling to their offices. Deleted after combining A6, A20, A21, A22, and A23 into pilot-survey item A7 (i48).
RQ1	Andrews (2004); Hart & McLeod (2003); Kayworth & Leidner (2000); Kerber & Buono (2004); Maurer (2006); Pulley et al. (2001); Sessa, Hanson, Kessler, & Prestridge (2001)	Accessibility Factor D	Presence	A22 I use a blend of FTF and virtual meetings using information technological tools with my staff members who are physically located near my office. Deleted after combining A6, A20, A21, A22, and A23 into pilot-survey item A7 (i48).
RQ1	Andrews (2004); Hart & McLeod (2003); Kayworth & Leidner (2000); Kerber & Buono (2004); Maurer (2006); Pulley et al. (2001); Sessa et al. (2001)	Accessibility Factor D	Presence	A23 I use a blend of FTF and virtual meetings using information technological tools with my remote employees. Deleted after combining A6, A20, A21, A22, and A23 into pilot-survey item A7 (i48).

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Casey & Savastinuk (2007); Farkas (2007); Horner-Long & Schoenberg (2002); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A24 I keep up with new technological changes. Item deleted from pilot survey due to social desirability.
RQ1	Casey & Savastinuk (2007); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A25 I inform others about new information technological tools on the market. Item deleted from pilot survey due to social desirability.
RQ1	Casey & Savastinuk (2007); Farkas (2007); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A26 I frequently encourage others to accept rapid technological changes. Item deleted from pilot survey due to social desirability.
RQ1	Casey & Savastinuk (2007); Farkas (2007); Horner-Long & Schoenberg (2002); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A27 I require all staff members to keep up with technological advances. Item deleted from pilot survey due to social desirability.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Casey & Savastinuk (2007); Farkas (2007); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A28 I implemented the latest technological tool into my workplace, such as blogging. Modified by creating a list of tools; retained as pilot-survey item A5 (i30–i38). Rephrased and retained as A5 in final survey; also deleted e-mail and telephone from list of tools.
RQ1	Fiorina (2006); Kouzes & Posner (2007);	Change Factor F	Adapts to new technology/ changes	A29 I challenge the status quo by asking how we can improve our communication with patrons and staff alike. Item deleted from pilot survey; low relevance.
RQ1	Bennis & Nanus (2003); Kouzes & Posner (2007); Sheldon (1991)	Change Factor F	Adapts to new technology/ changes	A30 I encourage efforts to improve current procedures and services. Item deleted from pilot survey; low relevance.
RQ1	Casey & Savastinuk (2007); Farkas (2007); Horner-Long & Schoenberg (2002); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002); Stephens (2006, 2007)	Change Factor F	Adapts to new technology/ changes	A31 I can adapt when new technology is introduced into the workplace. Item deleted from pilot survey due to social desirability.
RQ1	Horner-Long & Schoenberg (2002); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002)	Change Factor F	Adapts to new technology/ changes	A32 I know how to use new information technology tools. Item deleted from pilot survey due to social desirability.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Casey & Savastinuk (2007); Farkas (2007); Stephens (2006, 2007)	Change	Adapts to new technology/ changes	A33 I create new services based on information technology tools, for example, virtual reference using instant messaging (IM). Item deleted from pilot survey; low relevance.
RQ1	Bennis & Nanus (2003); Kouzes & Posner (2007); Sheldon (1991)	Change Factor F	Adapts to new technology/ changes	A34 I will initiate changes in procedures or services if a better way exists. Item deleted from pilot survey; low relevance.
RQ1	Bennis & Nanus (2003); Gardner (1993); Sheldon (1991); Zaleznik (1977)	Communication Factor C	Convinces others with logic	A35 I know how to communicate a set of goals for my remote employees using FTF meetings. Item deleted from pilot survey; low relevance.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Farmer (2005); Jurrens (2005); Kayworth & Leidner (2000); Maurer (2006); Sessa et al. (2001)	Communication Factor C	Convinces others with logic	A36 I know how to communicate a set of goals for my remote employees using information technological tools (emails, instant messaging). Item deleted from pilot survey; low relevance.
RQ1	Burtha & Connaughton (2004); Lengel & Daft (1988)	Communication Factor C	Social cues	A37 I can identify and recognize conflict among my remote employees through information technological tools (e-mails, instant messages, etc). Rephrased and kept as pilot-survey item A9 (i50). Kept as A15 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Lengel & Daft (1988)	Communication Factor C	Social cues	A38 I can identify and recognize conflict among my remote employees through FTF interaction. Rephrased and kept as pilot-survey item A8 (i49). Item deleted from final survey because the list of tools now includes in-person visits in final survey item, A16. Statement now reads methods instead of information technology.
RQ1	Lengel & Daft (1988)	Communication Factor C Disagreement favors leadership	Nonroutine incident: leadership versus management	A39 I use emails or instant messages as a way to avoid talking to remote employees. Rephrased and kept as pilot-survey item A10 (i51). Item deleted from final survey to improve reliability.
RQ1	Fair et al. (2004); Lengel & Daft (1988)	Communication Factor C Agreement favors leadership	Nonroutine incident: leadership versus management	A40 I know which situation requires FTF meetings instead of information technological tools. Rephrased and kept as pilot-survey item A12 (i61). Kept as A11 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Fair et al. (2004); Lengel & Daft (1988)	Communication Factor C Agreement favors leadership	Routine incident: leadership versus management	A41 I know which situation requires information technological tools (emails or instant messages) instead of FTF meetings. Rephrased and kept as pilot-survey item A13 (i62). Item deleted from final survey to improve reliability.
RQ1	Lengel & Daft (1988)	Communication Factor C Agreement favors leadership	Routine incident: leadership versus management	A42 I prefer to use information technological tools to transmit information about meetings. Rephrased and retained as pilot-survey item A15 (i64–i72). Item deleted from final survey; management function.
RQ1	Lengel & Daft (1988)	Communication Factor C Disagreement favors leadership	Routine incident: leadership versus management	A43 I prefer FTF meetings to transmit information about meetings. Rephrased and kept as pilot-survey item A14 (i63). Item deleted from pilot survey to improve reliability.
RQ1	Lengel & Daft (1988)	Communication Factor C Disagreement favors leadership	Nonroutine incident: leadership versus management	A44 I prefer information technological tools to resolve personality conflicts. Rephrased and kept as pilot-survey item A17 (i74–i82). Kept as A16 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Lengel & Daft (1988)	Communication Factor C Agreement favors leadership	Nonroutine Incident: leadership versus management	A45 I prefer FTF meetings to resolve personality conflicts. Rephrased and kept as pilot-survey item A16 (i73). Item deleted from final survey because the option of in-person visits was added to the list of tools.
RQ1	Fair et al. (2004); Kayworth & Leidner (2000)	Communication Factor C	Information flow	A46 I depend on FTF meetings to communicate with my remote employees. Item omitted from pilot survey based on SME's comments.
RQ1	Fair et al. (2004); Kayworth & Leidner (2000)	Communication	Information flow	A47 I depend on information technological tools to communicate with my remote employees. Item omitted from pilot survey based on SME's comments.
RQ1	Fair et al. (2004); Kayworth & Leidner (2000)	Communication Factor C	Information flow	A48 I depend on a blend of information technological tools and FTF meetings to communicate with my remote employees. Item omitted from pilot survey based on SME's comments.
RQ1	Bennis & Nanus (2003); Kouzes & Posner (2007); Sheldon (1991)	Decision making Factor E	Sets priorities	A49 I provide information through FTF meetings with my remote employees so they can make decisions for their departments. Item omitted from pilot survey based on SME's comments.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Horner-Long & Schoenberg (2002); Kerber & Buono (2004); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002);	Decision making Factor E	Sets priorities	A50 I provide information through information technological tools (emails, instant messages, etc.) to my remote employees so they can make decisions for their departments. Item omitted from pilot survey based on SME's comments.
RQ1	Bennis & Nanus (2003); Kouzes & Posner, 2007); Sheldon (1991)	Empowerment Factor H	Allows others to handle projects, tasks, etc.	A51 I delegate job or project responsibilities to staff members physically located near my office to encourage them to contribute/participate within the library team. Item omitted from pilot survey; management function.
RQ1	Andrews (2004); Burtha & Connaughton (2004); Farmer (2005); Kerber & Buono (2004)	Empowerment Factor H	Allows others to handle projects, tasks, etc.	A52 I delegate job or project responsibilities to remote employees to encourage them to contribute/participate within the library team. Item omitted from pilot survey; management function.
RQ1	Jurrens (2005); Kerber & Buono (2004)	Staff development Factor I	Mentors and coaches others	A53 I identify my remote employees' skills and strengths in order to guide them in directing their departments. Rephrased by combining A53, A56, A57, and A85 statements; kept as pilot survey-item A34 (i123). Rephrased and retained as A19 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Bennis & Nanus (2003); Sheldon (1991)	Staff development Factor I	Mentors and coaches others	A54 I coach and develop staff members' skills through FTF interaction. Item deleted from pilot survey by adding a list of tools in pilot-survey item, A18 (i83–i91).
RQ1	Farmer (2005); Maurer (2006)	Staff development Factor I	Mentors and coaches others	A55 I coach and develop staff members' skills through information technological tools (emails, instant messages, etc.). Rephrased and kept as pilot-survey item A18 (i83–i91). Removed list of tools. Kept as A24 in final survey.
RQ1	Horner-Long & Schonenberg (2002); Kerber & Buono (2004); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002);	Decision making Factor E	Makes sense of collected data	A56 Remote employees send me questions through IM and I can guide them to find solutions. Deleted after combining A53, A56, A57, and A85 statements; kept as pilot-survey item A34 (i123).
RQ1	Horner-Long & Schonenberg (2002); Kerber & Buono (2004); Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002);	Decision making Factor E	Makes sense of collected data	A57 Remote employees send me questions through e-mail and I can guide them to find solutions. Deleted after combining A53, A56, A57, and A85 statements; kept as pilot survey item A34 (i123).
RQ1	Bennis & Nanus (2003); Sheldon (1991)	Empowerment Factor H	Encourages others to improve	A58 I can motivate remote employees through FTF meetings. Item omitted from pilot survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Kayworth & Leidner (2000)	Empowerment Factor H	Encourages others to improve	A59 I can motivate remote employees through information technological tools. Rephrased, and kept as pilot-survey item A19 (i92–i100). Item moved to Part C as one of the open-ended questions (C4) for final survey.
RQ1	Sheldon (1991)	Vision Factor G	Foresees future possibilities and shares mental concept/idea	A60 I can make my remote employees interested in the library's projects by sharing information through FTF meetings. Item omitted from pilot survey; low relevance.
RQ1	Sheldon (1991)	Vision Factor G	Sets goals for self and/or team and carries them out	A61 I can inspire my remote employees to take charge of any library project through FTF meetings. Item omitted from pilot survey; low relevance.
RQ1	Researcher—based on A60 & A61 items	Vision Factor G	Sets goals for self and/or team and carries them out	A62 I can inspire my remote employees to take charge of any library project through information technological tools. Item omitted from pilot survey; low relevance.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kayworth & Leidner (2000); Kerber & Buono (2004)	Communication Factor C	Information flow	A63 I recognize that my remote employees may not receive the same information as those who are physically located near my office. Rephrased and kept as pilot-survey item A20 (i101). Item omitted from final survey due to negative alpha correlation.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kayworth & Leidner (2000); Kerber & Buono (2004)	Communication Factor C	Information flow	A64 I provide the same information to all employees at the same time even if I do not see my remote employees. Rephrased and kept as pilot-survey item A21 (i102). Item omitted from final survey to improve reliability.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kerber & Buono (2004)	Communication Factor C	Information flow	A65 I use a variety of information technological tools to relay the same information to my remote employees. Rephrased by combining A65, A67, and A68; kept as pilot-survey item A22 (i103). Kept as A9 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kerber & Buono (2004)	Communication Factor C	Information flow	A66 I recognize that remote employees will have on site supervisors and ensure that my information does not override the on site supervisor's authority. Item omitted from pilot survey; management function.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Kayworth & Leidner (2000) Kerber & Buono (2004);	Communication Factor C	Information flow	A67 I often deliver the same message using more than one information technological tool in order to be understood. Deleted after combining A65, A67, and A68; kept as pilot-survey item A22 (i103).
RQ1	Kayworth & Leidner (2000)	Communication Factor C	Information flow	A68 I over-communicate delivering the same message frequently to be effective. Deleted after combining A65, A67, and A68; kept as pilot-survey item A22 (i103).
RQ1	Farmer (2005)	Communication Factor C	Information flow	A69 I obtain feedback from all employees, especially remote employees. Item omitted from pilot survey; management function.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Nardi (2005); Nardi et al. (2000)	Accessibility Factor D	Presence	A70 Using IM, I engage in a series of conversations with remote employees even if they are not available in real time (at the same time). Due to poor clarity, item rephrased as leaving messages for remote employees when not available in pilot survey, A07. Kept as A07 in final survey.
RQ1	Nardi (2005); Nardi et al. (2000)	Accessibility Factor D	Presence	A71 Using e-mail, I engage in a series of conversations with remote employees even if they are not available in real time (at the same time). Item omitted from pilot survey; poor clarity.
RQ1	Nardi (2005); Nardi et al. (2000)	Accessibility Factor D	Presence	A72 Using IM, I often hold a conversation with remote employees in real time (at the same time). Item omitted from pilot survey; poor clarity.
RQ1	Nardi (2005); Nardi et al. (2000)	Accessibility Factor D	Presence	A73 Using e-mail, I often hold a conversation with remote employees in real time (at the same time). Item omitted from pilot survey; poor clarity.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Hart & McLeod (2003); Nardi (2005)	Social capital Factor J	Interaction—strength of relationship	A74 I often send instant messages just to chat and ask remote employees about their day. Rephrased and kept as pilot-survey item A25 (i114). Kept as A13 in final survey.
RQ1	Hart & McLeod (2003); Nardi (2005)	Social capital Factor J	Interaction—strength of relationship	A75 I often send emails just to chat and ask remote employees about their day. Rephrased and kept as A26 (i115) in pilot survey. Kept as A14 in final survey.
RQ1	Hart & McLeod (2003); Nardi (2005)	Social capital Factor J	Interaction—strength of relationship	A76 I often have FTF meetings just to chat and ask remote employees about their day. Rephrased and kept as pilot-survey item A27 (i116). Item omitted from final survey to improve reliability.
RQ1	Hart & McLeod (2003)	Social capital Factor J Agreement indicates strong relationship	Interaction—strength of relationship	A77 My instant messages focus only on work related tasks. Rephrased and kept as pilot-survey item A28 (i117). Combined pilot survey items A28, A29, and A30; rephrased and retained as A10 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Hart & McLeod (2003)	Social capital Factor J Agreement indicates strong relationship	Interaction—strength of relationship	A78 My emails focus only on work related tasks. Rephrased and kept as pilot-survey item A29 (i118). Note. added a new item, A30 (i119) in pilot. Both items deleted from final survey after combining pilot survey items A28, A29, and A30.
RQ1	Gerke (2006)	Communication Factor C	Interaction	A79 When I do not see my remote employees, I forget to keep them informed. Rephrased and kept as pilot-survey item A31 (i120). Item deleted from final survey to improve reliability.
RQ1	Hart & McLeod (2003)	Social capital Factor J Agreement indicates strong relationship	Interaction—strength of relationship	A80 I send short messages to my remote employees on work related tasks. Item omitted from pilot survey; poor clarity.
RQ1	Hart & McLeod (2003)	Social capital Factor J Agreement indicates weak relationship	Interaction—strength of relationship	A81 I send lengthy messages to my remote employees on work related tasks. Item omitted from pilot survey; poor clarity.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Fair et al. (2004)	Social capital Factor J	Interaction	A82 I ensure that my remote employees do not feel isolated. Rephrased and kept as pilot-survey item A32 (i121). Kept as A17 in final survey.
RQ1	Bennis & Nanus (2003); Evans & Ward (2007); Horner-Long & Schoenberg (2002)	Vision Factor G	Foresees future possibilities and shares mental concept/idea	A83 I can inspire remote employees to commit to the library's mission through information technological tools. Item omitted from pilot survey; poor clarity.
RQ1	Jurrens (2005); Kayworth & Leidner (2000)	Teamwork Factor B	Works together	A84 I can build and sustain remote teams through the use of technological tools. Rephrased and kept as pilot-survey item A33 (i122). Rephrased and kept as A18 in final survey.
RQ1	Farmer (2005); Kayworth & Leidner (2000); Kerber & Buono (2004)	Staff development Factor I	Mentors and coaches others	A85 I can guide remote employees to practical solutions when I use information technological tools. Deleted after combining A53, A56, A57, and A85 statements; kept as pilot-survey item A34 (i123).

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Andrews (2004); Farmer (2005); Jurrens (2005); Kayworth & Leidner (2000); Sessa et al. (2001)	Social capital Factor J	Interpersonal relations	A86 I can develop interpersonal relationships with my remote employees even when I use information technological tools. Rephrased and kept as pilot-survey item A35 (i124). Rephrased and retained as A20 in final survey.
RQ1	Hart & McLeod (2003); Lengel & Daft (1988)	Social capital Factor J Agreement indicates strong relationship	Interaction—strength of relationship	A87 I prefer that remote employees express their opinions through information technological tools. Item omitted from pilot survey; low relevance.
RQ1	Hart & McLeod (2003); Lengel & Daft (1988)	Social capital Factor J Agreement indicates weak relationship	Interaction—strength of relationship	A88 I prefer that remote employees express their opinions in person. Item omitted from pilot survey; low relevance.
RQ1	Fair et al. (2004); Hernon, Powell & Young (2003); Horner-Long & Schoenberg (2002)	Teamwork Factor B	Work together	A89 I can foster partnerships and alliances by keeping in touch through information technological tools. Rephrased and kept as pilot-survey item A36 (i125–i133). Kept as A25 in final survey; removed list of tools.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Andrews (2004); Bennis & Nanus (2003); Burtha & Connaughton (2004); Fair et al. (2004); Jurrens (2005); Sessa et al. (2001)	Social capital Factor J	Interpersonal relations—trust and caring	A90 I can create an atmosphere of caring, collaboration, and trust among my remote employees through information technological tools. Rephrased and kept as pilot-survey item A37 (i134–i142). Kept as A26 in final survey; removed list of tools.
RQ1	Fair et al. (2004); Hernon et al. (2003); Horner-Long & Schoenberg (2002)	Teamwork Factor B	Works together	A91 I can build enthusiasm and cooperation among remote employees. Rephrased as collaboration and cooperation in pilot survey as A38. Kept as A21 in final survey.
RQ1	Jurrens (2005); Kayworth & Leidner (2000); Morrison (2002); Riggs (1982)	Vision Factor G	Organizational culture/norms	A92 I can display and reflect the unique strengths, values, and beliefs of my library institution remotely. Rephrased and kept as pilot-survey item A39 (i144). Rephrased and retained as A22 in final survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ1	Jurrens (2005); Kayworth & Leidner (2000);	Teamwork Factor B	Organizational culture/norms	A93 I can build team cohesiveness by developing organizational and social norms among remote team members. Rephrased and retained as pilot-survey item A40 (i145). Kept as A23 in final survey.
RQ1	Fair et al (2004); Hernon et al. (2003); Horner-Long & Schoenberg (2002)	Teamwork Factor B	Works together	A94 I recognize my remote employees' accomplishments. Item omitted from pilot survey; low relevance.
RQ1	Burtha & Connaughton (2004); Fair et al. (2004); Farmer (2005); Jurrens (2005); Kayworth & Leidner (2000); Maurer (2006); Sessa et al. (2001)	Vision Factor G	Sets goals for self and/or team and carries them out	A95 I clearly set my library's organizational direction and purpose to my remote employees. Item omitted from pilot survey; low relevance.
RQ2 = What are the key attributes of remote leadership?	RQ2 statements deal with personality traits and/or behaviors needed by leaders in remote situations.	RQ2 questions are located in Part B within instrument.		Each respondent will rank the importance of leadership attributes in remote situations, using a Likert scale ranging from least important (1) to most important (5).
RQ2	Bennis & Nanus (2003); Evans & Ward (2007); Hernon et al. (2003); Horner-Long & Schoenberg (2002); Sheldon (1991); YoungHernon, & Powell (2004)	Teamwork Factor B	Collaborative	B1 Honest Kept in pilot survey, B1 (i146). Kept in final survey, B1.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Vision Factor G	Takes risks by doing something different	B2 Entrepreneurial Kept in pilot survey, B2 (i147). Kept in final survey, B2.
RQ2	Same citations as shown above in item B1	Decision making Factor E	Makes decisions based on collected data and thoughts	B3 Intelligent Kept in pilot survey, B3 (i148). Kept in final survey, B3.
RQ2	Same citations as shown above in item B1	Vision Factor G	Sets goals for self and/or team and carries them out	B4 Ambitious Kept in pilot survey, B4 (i149). Kept in final survey, B4.
RQ2	Same citations as shown above in item B1	Staff development Originally set up as Factor I Relocated to Vision, Factor G	Role model	B5 Inspiring Kept in pilot survey, B5 (i150). Rephrased and kept as B33 in final survey.
RQ2	Same citations as shown above in item B1	Decision making Factor E	Confidence in decision/ strategic planning	B6 Assertive Kept in pilot survey, B6 (i151). Kept in final survey, B5.
RQ2	Same citations as shown above in item B1	Change Factor F	Willing to try something different	B7 Risk-taker Kept in pilot survey, B7 (i152). Kept in final survey, B6.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Vision Factor G	Foresees future possibilities by heading in different directions	B8 Creative Kept in pilot survey, B8 (i153). Kept in final survey, B7.
RQ2	Same citations as shown above in item B1	Change Factor F	Willing to try something different and adapts easily to changes	B9 Flexible Kept in pilot survey, B9 (i154). Item deleted from final survey to improve reliability.
RQ2	Same citations as shown above in item B1	Vision Factor G	Stays on course after identifying trends and goals	B10 Persistent Kept in pilot survey, B10 (i155). Kept in final survey, B8.
RQ2	Same citations as shown above in item B1	Communication Factor C	Convinces others	B11 Persuasive Kept in pilot survey, B11 (i156). Item deleted from final survey to improve reliability.
RQ2	Same citations as shown above in item B1	Decision making Factor E	Makes decisions	B12 Decisive Kept in pilot survey, B12 (i157). Kept in final survey, B9.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Decision making Factor E	Makes decisions based on collected data	B13 Analytical Kept in pilot survey, B13 (i158). Kept in final survey, B10.
RQ2	Same citations as shown above in item B1	Decision making Factor E	Confidence in decisions and carries them out	B14 Self-confident Kept in pilot survey, B14 (i159). Kept in final survey, B11.
RQ2	Same citations as shown above in item B1	Personality	Stamina	B15 Energetic Item deleted from pilot survey.
RQ2	Same citations as shown above in item B1	Change Factor F	Adapts to changes	B16 Able to adapt Kept in pilot survey, B15 (i160). Kept in final survey, B12.
RQ2	Same citations as shown above in item B1	Change Factor F	Adapts to change (specifically lacks ability to change)	B17 Conservative Kept in pilot survey, B16 (i161). Kept in final survey, B13.
RQ2	Same citations as shown above in item B1	Teamwork Factor B	Works together	B18 Collaborative Kept in pilot survey, B17 (i162). Kept in final survey, B14.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Communication Factor C	Convinces others with logic	B19 Articulate Kept in pilot survey, B18 (i163). Item deleted from final survey to improve reliability.
RQ2	Same citations as shown above in item B1	Decision making Factor E	Makes sense of collected data	B20 Organized Kept in pilot survey, B19 (i164). Item deleted from final survey to improve reliability.
RQ2	Same citations as shown above in item B1	Empowerment Factor H	Builds enthusiasm and buy-in for vision	B21 Motivates staff Kept in pilot survey, B20 (i165). Rephrased and retained as A34 for comparison purpose.
RQ2	Same citations as shown above in item B1	Vision Factor G	Foresees future possibilities	B22 Anticipates opportunities by environment scanning Kept in pilot survey, B21 (i166). Kept in final survey, B15.
RQ2	Same citations as shown above in item B1	Vision	Role model	B23 Inspires vision Duplicate of B32; item deleted from pilot survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1)	Staff development Originally set up as Factor I Better termed as teamwork—relocated to Factor B	Mentors and coaches others by communicating goals and mission	B24 Sets expectations Kept in pilot survey, B22 (i167). Kept in final survey, B16; relocated to Factor B
RQ2	Same citations as shown above in item B1	Staff development Originally set up as Factor I Better termed as teamwork—relocated to Factor B	Role model	B25 Lives the values (leads by example) Rephrased; kept in pilot survey, B23 (i168) Kept in final survey, B17; relocated to Factor B
RQ2	Same citations as shown above in item B1	Vision Factor G	Assists people to find data	B26 Service oriented (commitment to public service) Kept in pilot survey, B24 (i169). Rephrased; kept in final survey, B18.
RQ2	Same citations as shown above in item B1	Vision Factor G	Foresees future possibilities	B27 Identifies trends Kept in pilot survey, B25 (i170). Kept in final survey, B19.
RQ2	Same sources as shown in item B1	Vision	Foresees future possibilities	B28 Plans and identifies strategic goals Duplicate of B42; item deleted from pilot survey.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Teamwork Factor B	Works together	B29 Fosters teamwork Kept in pilot survey, B26 (i171). Kept in final survey, B20.
RQ2	Same citations as shown above in item B1	Empowerment Factor H	Creates responsibility for work	B30 Fosters accountability Kept in pilot survey, B27 (i172). Item deleted from final survey.
RQ2	Same citations as shown above in item B1	Staff development Originally set up as Factor I Relocated to Empowerment, Factor H	Mentors and coaches others	B31 Shares knowledge (of library, of industry, of personal skills) Kept in pilot survey, B28 (i173). Rephrased and retained as A35 in final survey.
RQ2	Same citations as shown above in item B1	Vision Factor G	Foresees future possibilities and shares mental concept/idea	B32 Builds a shared vision for library Kept in pilot survey, B29 (i174). Kept in final survey, B22.
RQ2	Same citations as shown above in item B1	Change Factor F	Provides means for socialization to acquire norms, values, and beliefs	B33 Changes and shapes library (organizational culture) Kept in pilot survey, B30 (i175). Kept in final survey, B23.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Use of information technology Factor A	Patterns of usage	B34 Understands and uses information technology comfortably Kept in pilot survey, B31 (i176). Item deleted from final survey to improve reliability.
RQ2	Same citations as shown above in item B1	Use of information technology Factor A	Patterns of usage	B35 Exploits new technology Kept in pilot survey, B32 (i177). Rephrased as explores new technology, and kept in final survey, B24.
RQ2	Same citations as shown above in item B1)	Decision making	Makes decisions	B36 Makes decisions Duplicate of B12; item deleted from pilot survey.
RQ2	Same citations as shown above in item B1)	Teamwork Factor B	Works together	B37 Develops partnerships and/or alliances Kept in pilot survey, B33 (i178). Kept in final survey, B25.
RQ2	Same citations as shown above in item B1	Social capital Factor J	Interpersonal relations	B38 Builds relationships with staff members Kept in pilot survey, B34 (i179). Kept in final survey, B26.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Teamwork Factor B	Works together	B39 Acknowledges teamwork effort and/or staff members' success Kept in pilot survey, B35 (i180). Kept in final survey, B27.
RQ2	Same citations as shown above in item B1	Change Factor F	Adapts to changes	B40 Deals with rapid changes Kept in pilot survey, B36 (i181). Kept in final survey, B28.
RQ2	Same citations as shown above in item B1	Communication Factor C	Speaks and writes clearly	B41 Communication Kept in pilot survey, B37 (i182). Kept as B36 in final survey for comparison purpose.
RQ2	Same citations as shown above in item B1	Vision Factor G	Foresees future possibilities	B42 Strategic planning Kept in pilot survey, B38 (i183). Kept as B37 in final survey for comparison purpose.
RQ2	Same citations as shown above in item B1	Teamwork Factor B	Works together	B43 Consensus-building skills Kept in pilot survey, B39 (i184). Kept in final survey, B29.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Empowerment Factor H	Allows others to handle projects, tasks, etc.	B44 Delegation of responsibilities/duties Kept in pilot survey, B40 (i185). Item deleted from final survey; management function.
RQ2	Same citations as shown above in item B1	Empowerment	Allows others to handle projects, tasks, etc.	B45 Team building skills Duplicate of B29; item deleted from pilot survey.
RQ2	Same citations as shown above in item B1	Empowerment Factor H	Allows others to handle projects, tasks, etc.	B46 Empowerment Kept in pilot survey, B41 (i186). Kept in final survey, B30.
RQ2	Same citations as shown above in item B1	Teamwork	Works together	B47 Collaborative skills Duplicate of B18; item deleted from pilot survey.
RQ2	Same citations as shown above in item B1	Social capital Factor J	Interpersonal skills	B48 Networking skills Kept in pilot survey, B42 (i187). Kept in final survey, B31.
RQ2	Same citations as shown above in item B1	Use of information technology Factor A	Patterns of usage	B49 Technical (technological) skills Kept in pilot survey, B44 (i189). Rephrased and kept in final survey, B32.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ2	Same citations as shown above in item B1	Decision making Factor E	Sets priorities	B50 Prioritization of activities, tasks, goals Kept in pilot survey, B43 (i188). Rephrased as set priorities; kept in final survey, B21.
RQ3 = How do the remote leadership attributes of successful and effective LIS leaders compare to those corporate leaders' identified attributes in remote leadership?	RQ3 statements ask participants to describe their opinions about remote leadership. RQ3 questions are located in Part C in the instrument.			Each question will elicit feedback from participants that may not be covered in the first two parts of the survey instrument.
RQ3	Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002)	Change Factor F	Challenges	C1 What specific leadership challenges do you face now that everyone is using information technological tools? Kept in pilot study, C1. Kept in final study, C1.
RQ3	Pulley & Sessa (2001); Pulley et al. (2001); Pulley et al. (2002)	Staff development Factor I	Mentors and coaches	C2 What skills, experiences and traits do you think are important to be an effective remote leader in the library and information (LIS) field? Kept in pilot study, C2. Kept in final study, C2.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
RQ3	Lengel & Daft (1988); Nardi (2005); Nardi, Bradner, & Whitaker (2000)	Communication Factor C	Social cues	C3 In FTF situations, there is an interactive flow of communication between people. The communication flow also includes the tone of voice, body language, eye contact, facial expressions, gestures and other nonverbal aspects. How do you convey these similar aspects by using information technological tools, such as e-mail, IM, and other similar forums in remote situations? Kept in pilot study C3. Kept in final study, C3.
RQ3	Kayworth & Leidner (2000)	Empowerment	Encourages others to improve	C4 How do you apply your FTF leadership skills to motivate your remote employees. Originally listed as A19 (i192–i100) in pilot survey. Now relocated to C4 for final survey.
Demographics Part D	Demographic statements will obtain information about the population sample.	Demographic questions are located in Part D in the instrument.		
Demographics	Investigator	Sample group identity	Age	#D1 List age (i190) Kept in pilot survey, D1. Added a range of years for final survey; kept as D1.

Research Question	Source	Concept and Factor Code	Condition	Item # for SME, Pilot, and Final surveys
Demographics	Investigator	Sample group identity	Gender	#D2 List gender (i191) Kept in pilot and final survey, D2.
Demographics	Investigator	Sample group identity	Service	D3 List the number of years you have worked in the LIS field. (missing variable – should be i195) Kept in pilot survey, D3. Added a range of years for final survey; kept as D3.
Demographics	American Library Association (2008); Chute, Kroe, O'Shea, Craig, Freeman, Hardesty, et al. (2006); Holton, Vaden, & O'Shea (2006); Strizek, Pittsonberger, Riordan, Lyter, & Orlofsky (2006)	Sample group identity	Library type	#D4 In which type of library do you work? (i192) Kept in pilot survey, D4. For final survey, corrected public-libraries line; added joint use/combined libraries to list of library types; kept as D4.
Demographics	Investigator	Sample group identity	Position type	#D5 Identify your current position. (i193) Kept in pilot and final survey, D5.
Demographics	Investigator	Sample group identity	Service	D6 List the number of years you have worked in your current position (i194) Kept in pilot survey, D6. Added a range of years for final survey; kept as D6.

* RQ = Research Question

APPENDIX C

SUBJECT MATTER EXPERT (SME) RESULTS

Item	Clarity Mean	Clarity SD	Relevance Mean	Relevance SD	Clarity & Relevance Mean	Category or Factor
A63	5.00	0.00	5.00	0.00	5.00	C
A47	4.91	0.30	5.00	0.00	4.96	Undetermined
A67	4.91	0.30	5.00	0.00	4.96	C
A89	4.91	0.30	5.00	0.00	4.96	B
A05	4.82	0.40	5.00	0.00	4.91	A
A16	4.91	0.30	4.91	0.30	4.91	D
A84	4.91	0.30	4.91	0.30	4.91	B
A90	4.82	0.40	5.00	0.00	4.91	B
A77	4.90	0.32	4.90	0.32	4.90	C
A78	4.90	0.32	4.90	0.32	4.90	C
A04	4.73	0.65	5.00	0.00	4.87	A
A09	4.82	0.40	4.91	0.30	4.87	Undetermined
A13	4.82	0.40	4.91	0.30	4.87	D
A65	4.73	0.47	5.00	0.00	4.87	C
A75	5.00	0.00	4.73	0.65	4.87	B
A79	4.82	0.60	4.91	0.30	4.87	C
A86	4.91	0.30	4.82	0.60	4.87	B
A15	4.80	0.42	4.90	0.32	4.85	D
A02	4.64	0.67	5.00	0.00	4.82	Undetermined
A03	4.64	0.67	5.00	0.00	4.82	A
A18	4.73	0.47	4.91	0.30	4.82	C
A42	4.91	0.30	4.73	0.65	4.82	C
A74	4.91	0.30	4.73	0.65	4.82	B
A85	4.82	0.60	4.82	0.60	4.82	H
A23	4.82	0.40	4.80	0.42	4.81	Undetermined
A82	4.70	0.67	4.90	0.32	4.80	B
A91	4.80	0.42	4.80	0.63	4.80	B
A92	4.70	0.67	4.90	0.32	4.80	G
A93	4.80	0.63	4.80	0.63	4.80	B
A19	4.64	0.67	4.91	0.30	4.78	C
A36	4.64	0.81	4.91	0.30	4.78	C
A48	4.91	0.30	4.64	0.81	4.78	C
A76	4.91	0.30	4.64	0.81	4.78	B
A95	4.50	0.93	5.00	0.00	4.75	Undetermined
A22	4.60	0.84	4.89	0.33	4.75	C

Item	Clarity Mean	Clarity SD	Relevance Mean	Relevance SD	Clarity & Relevance Mean	Category or Factor
A25	4.73	0.47	4.73	0.65	4.73	A
A43	4.82	0.40	4.64	0.67	4.73	C
A50	4.73	0.65	4.73	0.65	4.73	C
A58	4.82	0.60	4.64	0.81	4.73	Undetermined
A24	4.60	0.70	4.82	0.60	4.71	A
A69	4.50	0.97	4.90	0.32	4.70	C
A14	4.55	0.82	4.82	0.40	4.69	D
A38	4.64	0.81	4.73	0.65	4.69	B
A72	4.73	0.65	4.64	0.67	4.69	C
A87	4.82	0.40	4.55	0.82	4.69	C
A28	4.64	0.92	4.70	0.67	4.67	A
A94	4.44	0.88	4.89	0.33	4.67	B
A73	4.70	0.67	4.60	0.70	4.65	C
A88	4.80	0.42	4.50	0.85	4.65	C
A07	4.73	0.65	4.55	0.82	4.64	Undetermined
A12	4.64	0.67	4.64	0.67	4.64	Undetermined
A39	4.55	0.93	4.73	0.90	4.64	C
A44	4.64	0.92	4.64	0.81	4.64	C
A45	4.64	0.92	4.64	0.81	4.64	C
A46	4.64	0.92	4.64	0.81	4.64	C
A61	4.73	0.90	4.55	1.04	4.64	Undetermined
A08	4.91	0.30	4.36	1.03	4.64	C
A52	4.82	0.40	4.45	1.21	4.64	Undetermined
A56	4.45	0.93	4.82	0.60	4.64	D
A57	4.45	0.93	4.82	0.60	4.64	D
A34	4.70	0.48	4.55	1.21	4.63	G
A26	4.50	0.85	4.70	0.67	4.60	Undetermined
A10	4.55	0.82	4.64	0.67	4.60	C
A35	4.55	0.82	4.64	0.81	4.60	C
A30	4.91	0.30	4.27	1.27	4.59	H
A49	4.55	0.82	4.55	0.82	4.55	C
A60	4.55	1.04	4.55	1.04	4.55	B
A31	4.64	0.67	4.45	1.04	4.55	Undetermined
A40	4.27	1.27	4.82	0.60	4.55	C
A41	4.27	1.27	4.82	0.60	4.55	C

Item	Clarity Mean	Clarity SD	Relevance Mean	Relevance SD	Clarity & Relevance Mean	Category or Factor
A80	4.27	0.90	4.80	0.42	4.54	C
A81	4.27	0.90	4.80	0.42	4.54	C
A01	4.36	0.92	4.64	1.21	4.50	Undetermined
A21	4.64	0.67	4.36	1.29	4.50	Undetermined
A27	4.33	1.00	4.67	0.71	4.50	Undetermined
A11	4.36	1.03	4.55	0.82	4.46	C
A54	4.55	1.21	4.36	1.29	4.46	H
A55	4.36	1.43	4.55	1.21	4.46	H
A33	4.60	0.70	4.30	1.49	4.45	Undetermined
A59	4.45	1.29	4.45	1.29	4.45	Undetermined
A64	4.45	1.29	4.45	1.29	4.45	C
A62	4.30	1.49	4.36	1.43	4.33	B
A66	4.10	1.37	4.50	1.27	4.30	B
A68	4.22	1.39	4.33	1.32	4.28	C
A37	4.18	1.33	4.36	1.29	4.27	B
A06	3.90	1.10	4.60	0.70	4.25	A
A32	3.90	1.52	4.60	0.84	4.25	A
A53	4.30	1.34	4.20	1.32	4.25	H
A20	4.18	1.08	4.27	1.27	4.23	Undetermined
A51	4.18	1.33	4.27	1.27	4.23	Undetermined
A83	4.20	1.40	4.20	1.40	4.20	B
A71	4.27	1.42	4.09	1.45	4.18	C
A17	4.18	1.47	4.09	1.30	4.14	B
A29	4.18	1.25	4.09	1.64	4.14	Undetermined
A70	3.80	1.48	4.00	1.33	3.90	C
B18	5.00	0.00	5.00	0.00	5.00	Undetermined
B09	4.86	0.38	5.00	0.00	4.93	Undetermined
B11	4.86	0.38	5.00	0.00	4.93	Undetermined
B12	4.86	0.38	5.00	0.00	4.93	E
B16	4.86	0.38	5.00	0.00	4.93	F
B19	4.86	0.38	5.00	0.00	4.93	C
B20	4.86	0.38	5.00	0.00	4.93	Undetermined
B21	4.86	0.38	5.00	0.00	4.93	Undetermined
B22	4.86	0.38	5.00	0.00	4.93	Undetermined

Item	Clarity Mean	Clarity SD	Relevance Mean	Relevance SD	Clarity & Relevance Mean	Category or Factor
B23	4.86	0.38	5.00	0.00	4.93	G
B24	4.86	0.38	5.00	0.00	4.93	Undetermined
B28	4.86	0.38	5.00	0.00	4.93	Undetermined
B29	4.86	0.38	5.00	0.00	4.93	B
B31	4.86	0.38	5.00	0.00	4.93	Undetermined
B34	4.86	0.38	5.00	0.00	4.93	A
B36	4.86	0.38	5.00	0.00	4.93	E
B38	4.86	0.38	5.00	0.00	4.93	B
B39	4.86	0.38	5.00	0.00	4.93	B
B40	4.86	0.38	5.00	0.00	4.93	F
B41	4.86	0.38	5.00	0.00	4.93	C
B42	4.86	0.38	5.00	0.00	4.93	Undetermined
B43	4.86	0.38	5.00	0.00	4.93	B
B45	4.86	0.38	5.00	0.00	4.93	B
B46	4.86	0.38	5.00	0.00	4.93	H
B47	4.86	0.38	5.00	0.00	4.93	B
B48	4.86	0.38	5.00	0.00	4.93	B
B50	4.86	0.38	5.00	0.00	4.93	E
B15	5.00	0.00	4.83	0.41	4.92	F
B30	4.83	0.41	5.00	0.00	4.92	Undetermined
B32	4.83	0.41	5.00	0.00	4.92	Undetermined
B33	4.83	0.41	5.00	0.00	4.92	F
B37	4.83	0.41	5.00	0.00	4.92	Undetermined
B01	4.86	0.38	4.86	0.38	4.86	B
B03	4.86	0.38	4.86	0.38	4.86	E
B05	4.86	0.38	4.86	0.38	4.86	Undetermined
B06	4.86	0.38	4.86	0.38	4.86	E
B07	4.86	0.38	4.86	0.38	4.86	F
B10	4.86	0.38	4.86	0.38	4.86	Undetermined
B14	4.86	0.38	4.86	0.38	4.86	G
B25	4.86	0.38	4.86	0.38	4.86	G
B26	4.86	0.38	4.86	0.38	4.86	G
B27	4.86	0.38	4.86	0.38	4.86	Undetermined
B35	4.86	0.38	4.86	0.38	4.86	A
B44	4.86	0.38	4.86	0.38	4.86	Undetermined

Item	Clarity Mean	Clarity SD	Relevance Mean	Relevance SD	Clarity & Relevance Mean	Category or Factor
B49	4.86	0.38	4.86	0.38	4.86	A
B08	4.86	0.38	4.71	0.76	4.79	G
B13	4.86	0.38	4.71	0.76	4.79	E
B02	4.86	0.38	4.57	1.13	4.72	G
B04	4.86	0.38	4.00	1.29	4.43	G
B17	4.29	1.50	3.86	1.57	4.08	Undetermined
C02	4.90	0.32	5.00	0.00	4.95	Undetermined
C01	4.80	0.42	5.00	0.00	4.90	Undetermined
C03	4.36	0.92	4.82	0.60	4.59	C
D02	5.00	0.00	5.00	0.00	5.00	Undetermined
D03	5.00	0.00	5.00	0.00	5.00	Undetermined
D04	5.00	0.00	5.00	0.00	5.00	Undetermined
D01	4.80	0.45	5.00	0.00	4.90	Undetermined
D05	5.00	0.00	4.75	0.50	4.88	Undetermined
D06	5.00	0.00	4.75	0.50	4.88	Undetermined

APPENDIX D

PART A: PILOT SURVEY RELIABILITY ANALYSES FOR LIS LEADERS' USE OF TECHNOLOGY IN REMOTE SITUATIONS

Teamwork: Factor B, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A33	i122	3.74	0.86	0.91	0.29
A36	i125	2.47	1.29	0.89	0.69
A36	i126	3.08	1.46	0.89	0.63
A36	i127	2.58	1.22	0.89	0.64
A36	i128	4.05	1.04	0.90	0.51
A36	i129	2.87	1.51	0.88	0.82
A36	i130	2.53	1.35	0.89	0.69
A36	i131	2.11	0.95	0.89	0.70
A36	i132	2.16	1.00	0.89	0.73
A36	i133	2.29	1.16	0.89	0.72
A38	i143	3.55	0.92	0.90	0.46
A40	i145	3.58	0.83	0.90	0.57

Communication: Factor C, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A08	i49	4.00	0.97	0.90	0.36
A09	i50	3.60	1.01	0.90	0.17
A10	i51	1.49	0.74	0.90	0.03
A11	i52	2.31	1.08	0.90	0.57
A11	i53	3.11	1.47	0.90	0.50
A11	i54	2.54	1.36	0.90	0.47
A11	i55	4.31	0.80	0.90	0.00
A11	i56	2.71	1.47	0.90	0.47
A11	i57	2.40	1.19	0.89	0.71
A11	i58	1.83	0.92	0.90	0.64
A11	i59	1.97	1.04	0.90	0.68
A11	i60	2.00	1.08	0.90	0.63
A12	i61	4.49	0.51	0.90	0.26
A13	i62	3.97	0.66	0.90	0.01
A14	i63	1.91	0.95	0.90	0.01
A15	i64	2.31	1.08	0.90	0.56
A15	i65	2.20	1.02	0.90	0.65
A15	i66	2.14	0.94	0.90	0.67
A15	i67	4.63	0.69	0.90	-0.12
A15	i68	3.06	1.49	0.90	0.54
A15	i69	2.60	1.19	0.90	0.61
A15	i70	1.94	0.91	0.90	0.61
A15	i71	2.00	0.91	0.90	0.70
A15	i72	2.14	1.09	0.89	0.72
A16	i73	4.57	0.85	0.90	0.02
A17	i74	1.49	0.70	0.90	0.54
A17	i75	1.94	1.14	0.90	0.49
A17	i76	1.74	0.95	0.90	0.54
A17	i77	1.97	1.07	0.90	0.34
A17	i78	1.60	0.74	0.90	0.65
A17	i79	1.66	0.87	0.90	0.51
A17	i80	1.54	0.74	0.90	0.58
A17	i81	1.60	0.77	0.90	0.55
A17	i82	1.57	0.74	0.90	0.63

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A20	i101	3.77	0.94	0.91	-0.16
A21	i102	3.31	0.99	0.90	0.14
A22	i103	3.11	1.08	0.90	0.45
A31	i120	2.31	1.02	0.90	0.05

Accessibility/Availability: Factor D, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A06	i39	2.03	1.13	0.90	0.48
A06	i40	4.30	1.21	0.90	0.38
A06	i41	2.94	1.43	0.90	0.46
A06	i42	4.64	0.55	0.90	0.30
A06	i43	2.67	1.41	0.89	0.65
A06	i44	2.30	1.42	0.90	0.46
A06	i45	1.70	0.85	0.90	0.67
A06	i46	1.76	0.90	0.89	0.70
A06	i47	1.82	0.95	0.90	0.60
A07	i48	3.33	1.29	0.90	0.33
A23	i104	2.36	1.34	0.90	0.60
A24	i105	2.00	1.06	0.90	0.53
A24	i106	3.33	1.41	0.90	0.49
A24	i107	1.91	0.95	0.89	0.74
A24	i108	4.58	0.50	0.91	0.01
A24	i109	2.58	1.46	0.90	0.57
A24	i110	2.03	1.05	0.89	0.71
A24	i111	1.79	0.86	0.89	0.75
A24	i112	1.79	0.86	0.89	0.75
A24	i113	1.91	0.88	0.89	0.79

Change: Factor F, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A5	i30	2.60	1.43	0.83	0.62
A5	i31	3.14	1.36	0.83	0.64
A5	i32	2.53	1.26	0.84	0.50
A5	i33	3.51	1.40	0.86	0.30
A5	i34	2.63	1.33	0.82	0.68
A5	i35	2.70	1.34	0.82	0.73
A5	i36	2.19	1.07	0.83	0.57
A5	i37	2.23	1.04	0.83	0.58
A5	i38	2.35	1.19	0.84	0.55

Empowerment: Factor H, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A19	i92	2.36	1.18	0.91	0.70
A19	i93	2.64	1.16	0.92	0.55
A19	i94	2.31	1.08	0.90	0.74
A19	i95	3.85	0.87	0.92	0.49
A19	i96	2.33	1.22	0.90	0.78
A19	i97	2.26	1.12	0.90	0.80
A19	i98	2.00	0.97	0.90	0.73
A19	i99	1.95	0.94	0.90	0.78
A19	i100	2.05	1.00	0.90	0.79

Staff Development: Factor I, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A18	i83	2.33	1.22	0.89	0.70
A18	i84	2.48	1.11	0.89	0.60
A18	i85	2.33	1.05	0.89	0.70
A18	i86	3.62	1.21	0.91	0.47
A18	i87	2.43	1.33	0.88	0.73
A18	i88	2.17	1.06	0.89	0.72
A18	i89	2.02	0.98	0.89	0.67
A18	i90	1.93	0.92	0.89	0.74
A18	i91	2.02	1.02	0.88	0.75

Social Capital: Factor J, Part A

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A25	i114	2.16	1.15	0.84	0.37
A26	i115	2.95	1.23	0.84	0.49
A27	i116	2.72	1.18	0.85	0.27
A28	i117	2.49	1.06	0.84	0.31
A29	i118	2.84	1.13	0.87	-0.22
A30	i119	2.88	1.07	0.87	-0.19
A32	i121	4.07	0.59	0.84	0.44
A35	i124	3.28	1.16	0.84	0.46
A37	i134	2.53	1.16	0.82	0.69
A37	i135	2.79	1.23	0.82	0.74
A37	i136	2.67	1.15	0.83	0.68
A37	i137	3.63	1.11	0.84	0.31
A37	i138	2.63	1.22	0.82	0.74
A37	i139	2.65	1.25	0.82	0.70
A37	i140	2.21	0.89	0.83	0.74
A37	i141	2.26	0.93	0.83	0.73
A37	i142	2.26	0.98	0.83	0.73

Factors A, E, G omitted

APPENDIX E

PART B: PILOT SURVEY RELIABILITY ANALYSES FOR LIS LEADERS' RATING REMOTE LEADERSHIP ATTRIBUTES

Use of information technology: Factor A, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A17	i176	4.33	0.64	0.81	0.39
A17	i177	3.91	0.73	0.58	0.60
A18	i189	3.82	0.75	0.47	0.68

Teamwork: Factor B, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A06	i146	4.93	0.26	0.76	0.13
A13	i162	4.57	0.55	0.68	0.53
A15	i171	4.55	0.55	0.63	0.68
A17	i178	4.34	0.71	0.64	0.62
B34	I179	4.66	0.48	0.77	0.45
A17	i180	4.86	0.41	0.72	0.39
A18	i184	4.32	0.64	0.71	0.45
B42	i187	4.41	0.73	0.76	0.51

Communication: Factor C, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
A11	i156	4.40	0.76	0.20	0.47
A14	i163	4.65	0.53	0.13	0.38
A17	i182	4.88	0.32	0.61	0.02

Decision Making: Factor E, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
B03	i148	4.22	0.74	0.73	0.45
B06	i151	3.98	0.62	0.72	0.47
B12	i157	4.24	0.77	0.67	0.65
B13	i158	4.20	0.59	0.71	0.51
B14	i159	4.38	0.65	0.70	0.55
B19	i164	4.42	0.58	0.77	0.18
B43	i188	4.47	0.59	0.72	0.46

Change: Factor F, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
B07	i152	4.02	0.83	0.59	0.45
B09	i154	4.93	0.26	0.66	0.26
B15	i160	4.79	0.47	0.62	0.42
B16	i161	2.33	0.75	0.66	0.26
B30	i175	4.16	0.97	0.49	0.65
B36	i181	4.60	0.54	0.61	0.42

Vision, Factor G, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
B02	i147	3.70	0.79	0.80	0.40
B04	i149	3.43	0.90	0.80	0.47
B08	i153	4.45	0.59	0.80	0.36
B10	i155	4.36	0.61	0.80	0.41
B21	i166	4.20	0.85	0.78	0.56
B24	i169	4.70	0.51	0.80	0.44
B25	i170	4.27	0.76	0.75	0.75
B29	i174	4.75	0.49	0.79	0.56
B38	i183	4.23	0.80	0.77	0.65

Empowerment: Factor H, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
B20	i165	4.68	0.47	0.74	0.38
B27	i172	4.61	0.49	0.63	0.59
B40	i185	4.36	0.57	0.65	0.56
B41	i186	4.66	0.53	0.64	0.56

Staff Development: Factor I, Part B

Survey Item	Variable Item	*M*	*SD*	Coef Alpha	Correlation Total
B05	i150	4.36	0.78	0.48	0.37
B22	i167	4.52	0.55	0.48	0.34
B23	i168	4.75	0.44	0.49	0.36
B28	i173	4.57	0.55	0.49	0.34

Factors D and K omitted

APPENDIX F

UNT INSTITUTIONAL REVIEW BOARD APPROVAL

UNT
UNIVERSITY OF
NORTH TEXAS
DISCOVER THE POWER OF IDEAS

January 23, 2008 OFFICE OF THE VICE PRESIDENT FOR RESEARCH
Office of Research Services

Mary Jo Venetis
School of Library and Information Sciences
University of North Texas

Institutional Review Board for the Protection of Human Subjects in Research (IRB)
RE: Human Subject Application #07-288

Dear Ms. Venetis:

The UNT IRB has received your request to modify your study titled "Identification of Remote Leadership Patterns in the Library and Information Science Field." As required by federal law and regulations governing the use of human subjects in research projects, the UNT IRB has examined the request to use a different sampling group, use postcards for the initial contact and revise the questionnaire in this study. The modifications to this study are hereby approved for the use of human subjects. **Approval for this project is August 20, 2007 through August 19, 2008.**

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any other modifications made. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact Shelia Bourns, Research Compliance Administrator, at (940) 565-3940, or Boyd Herndon, Director of Research Compliance, at (940) 565-3941, if you wish to make changes or need additional information.

Sincerely,

Kenneth W. Sewell, Ph.D.
Chair
Institutional Review Board

KS/sb
CC: Dr. Brian O'Connor

P.O. Box 305250 | Denton, Texas 76203-5250 | TEL 940.565.3940 | FAX 940.565.4277 | TTY 940.369.8652 | www.unt.edu

APPENDIX G

NUMBER OF REMOTE EMPLOYEES AND THEIR SCHEDULES

No. of remote employees	Same hours		Overlapping hours		Different hours	
	Same building	Different building	Same building	Different building	Same building	Different building
0	30.0%	44.6%	16.2%	48.4%	30.6%	64.9%
1	1.4%	6.2%	9.5%	6.5%	16.1%	7.0%
2	2.9%	12.3%	14.9%	4.8%	6.5%	3.5%
3	7.1%	6.2%	2.7%	4.8%	12.9%	1.8%
4	5.7%	0.0%	5.4%	1.6%	1.6%	1.8%
5	7.1%	7.7%	6.8%	6.5%	8.1%	1.8%
6	7.1%	1.5%	5.4%	1.6%	3.2%	7.0%
7	0.0%	1.5%	6.8%	1.6%	1.6%	0.0%
8	8.6%	3.1%	4.1%	3.2%	1.6%	0.0%
9	1.4%	0.0%	2.7%	0.0%	0.0%	0.0%
10	8.6%	0.0%	4.1%	4.8%	8.1%	1.8%
11	1.4%	0.0%	1.4%	0.0%	0.0%	0.0%
12	1.4%	1.5%	1.4%	0.0%	1.6%	0.0%
13	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%
14	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%
15	0.0%	3.1%	1.4%	0.0%	1.6%	0.0%
16	2.9%	0.0%	1.4%	0.0%	0.0%	0.0%
17	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%
18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
19	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20	1.4%	4.6%	5.4%	3.2%	3.2%	1.8%
21	1.4%	0.0%	1.4%	1.6%	0.0%	0.0%
22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
23	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
25	1.4%	0.0%	2.7%	0.0%	0.0%	0.0%
26	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%
27	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
29	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	2.9%	1.5%	1.4%	0.0%	1.6%	3.5%
31	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
33	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

	Same hours		Overlapping hours		Different hours	
No. of remote employees	Same building	Different building	Same building	Different building	Same building	Different building
34	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%
35	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
36	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
37	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
39	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	1.4%	1.5%	1.4%	1.6%	0.0%	0.0%
41	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
43	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
44	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
45	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%
46	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
48	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%
49	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%
Over 50	2.9%	3.1%	1.4%	4.8%	1.6%	5.3%
Total %	100.0%	100.0%	100%	100%	100%	100%
Response count	70	65	74	62	62	57

APPENDIX H

PART A: FINAL RELIABILITY ANALYSES FOR LIS LEADERS' USE OF TECHNOLOGY IN REMOTE SITUATIONS

Teamwork: Factor B, Part A

Survey item	Description	*M*	*SD*
A18	Sustain (maintain) remote teams	3.71	0.91
A21	Build collaboration and cooperation	3.58	0.86
A23	Build team cohesiveness by organizational/social norms	3.47	0.91
A25	Foster partnerships/alliances by keeping in touch	3.98	0.68

Cronbach's alpha = 0.787

Communication: Factor C, Part A

Survey item	Description	*M*	*SD*
A08	Establish remote staff members' roles		
A08_a	Blog	2.26	1.21
A08_b	Cell phones	3.42	1.30
A08_c	E-mail	4.42	0.95
A08_d	Electronic LISTSERVS/message boards	2.52	1.36
A08_e	Instant messaging (IM)	2.24	1.19
A08_f	Group meetings through IM chat	2.24	1.17
A08_g	Memos/reports	3.60	1.23
A08_h	Telephone one-to-one	4.32	0.96
A08_i	Telephone conference calls	2.88	1.39
A08_j	Video conference	2.24	1.15
A08_k	Voice mail	3.58	1.39
A08_l	Wikis	2.30	1.25
A09	Deliver same message several times via different tools	3.12	1.21
A11	Understand which situations are best addressed FTF	4.06	0.89
A15	Identify disagreements by information technology	3.10	1.04
A16	Resolve remote staff member's disagreements.		
A16_a	Blog	1.48	0.74
A16_b	Cell phones	2.36	1.14
A16_c	E-mail	3.04	1.20
A16_d	Electronic LISTSERVS/message boards	1.80	0.93
A16_e	In-person visits	4.82	0.52
A16_f	Instant messaging (IM)	1.86	0.97
A16_g	Group meetings through IM chat	1.76	0.92
A16_h	Memos/reports	2.82	1.22
A16_i	Telephone one-to-one	3.98	1.12
A16_j	Telephone conference calls	2.62	1.40
A16_k	Video conference	1.88	1.00
A16_l	Voice mail	2.14	1.20
A16_m	Wikis	1.76	0.92

Cronbach's alpha = 0.876

Accessibility/Availability: Factor D, Part A

Survey item	Description	*M*	*SD*
A06	*When away, available to staff members through:*		
A06_a	Blog	2.42	1.00
A06_b	Cell phones	4.42	0.67
A06_c	E-mail	4.67	0.49
A06_d	Electronic LISTSERVS/message boards	2.75	0.75
A06_e	Instant messaging (IM)	2.33	1.23
A06_f	Group meetings through IM chat	2.17	0.94
A06_g	Memos/reports	3.25	1.06
A06_h	Telephone one-to-one	3.67	1.30
A06_i	Telephone conference calls	3.00	0.85
A06_j	Video conference	2.17	0.94
A06_k	Voice mail	3.92	1.24
A06_l	Wikis	2.50	0.80
A06_m	Not applicable	2.58	1.00
A07	*Leave messages when employees not available:*		
A07_a	Blog	2.42	1.00
A07_b	Cell phones	3.67	1.07
A07_c	E-mail	4.67	0.49
A07_d	Electronic LISTSERVS/message boards	2.92	1.00
A07_e	Instant messaging (IM)	2.33	0.99
A07_f	Group meetings through IM chat	2.25	0.87
A07_g	Memos/reports	3.17	1.12
A07_h	Telephone one-to-one	3.92	1.08
A07_i	Telephone conference calls	2.75	0.97
A07_j	Video conference	2.25	0.87
A07_k	Voice mail	4.42	0.79
A07_l	Wikis	2.25	0.87
A07_m	Not applicable	2.42	0.90
A12	Check IM buddy list for staff availability	2.25	1.06

Cronbach's alpha = 0.911

Staff development: Factor I, Part A

Survey item	Description	*M*	*SD*
A19	Guide remote staff members to practical solutions	3.80	0.76
A24	Coach and build remote staff members' skills	3.56	1.01

Cronbach's alpha = 0.787

Social Capital: Factor J, Part A

Survey item	Description	*M*	*SD*
A10	Communications focus only on project issues/activities	2.61	1.17
A13	Use IM to chat and ask remote employees about their day	2.03	1.14
A14	Send e-mail to chat and ask about their day	2.70	1.19
A17	Make sure remote employees do not feel isolated	3.92	0.83
A20	Develop interpersonal relationships with remote members	3.39	0.99
A26	Create atmosphere of caring/trust/camaraderie	3.48	0.88

Cronbach's alpha = 0.410

APPENDIX I

PART B: FINAL SURVEY RELIABILITY ANALYSES FOR LIS LEADERS' RATING REMOTE LEADERSHIP ATTRIBUTES

Use of information technology: Factor A, Part B

Survey item	Description	*M*	*SD*
B24	Explores new technology	4.44	0.65
B32	Skillful using information technology	4.26	0.62

Cronbach's alpha = 0.670

Teamwork: Factor B, Part B

Survey item	Description	*M*	*SD*
B01	Honest	4.94	0.25
B14	Collaborative	4.62	0.55
B16	Sets expectations	4.57	0.54
B17	Leads by example	4.81	0.39
B20	Fosters teamwork	4.83	0.40
B25	Develops partnerships and/or alliances	4.44	0.68
B27	Acknowledges teamwork effort and staff success	4.85	0.39
B29	Buildings consensus building	4.57	0.52

Cronbach's alpha = 0.707

Decision making: Factor E, Part B

Survey item	Description	*M*	*SD*
B03	Intelligent	4.44	0.60
B05	Assertive	4.14	0.75
B09	Decisive	4.48	0.74
B10	Analytical	4.44	0.60
B11	Self-confident	4.43	0.64
B21	Sets priorities	4.82	0.38
B37	Strategic planner	4.36	0.71

Cronbach's alpha = 0.702

Change: Factor F, Part B

Survey item	Description	*M*	*SD*
B06	Risk taker	3.99	0.73
B12	Adaptable	4.78	0.44
B13	Conservative	2.77	0.74
B23	Changes and shapes library (organizational culture)	4.37	0.79
B28	Deals with rapid changes	4.65	0.50

Cronbach's alpha = 0.586

Vision: Factor G, Part B

Survey item	Description	*M*	*SD*
B02	Entrepreneurial	3.75	0.83
B04	Ambitious	3.62	0.90
B07	Creative	4.44	0.62
B08	Persistent	4.42	0.63
B15	Anticipates opportunities by environment scanning	4.19	0.76
B18	Is service oriented (committed to public service)	4.79	0.41
B19	Identifies trends	4.38	0.61
B22	Builds a shared vision for library	4.69	0.57

Cronbach's alpha = 0.640

Empowerment: Factor H, Part B

Survey item	Description	*M*	*SD*
B30	Empowering	4.64	0.60
B33	Inspiring	4.27	0.68
B34	Motivational	4.63	0.59
B35	Shares knowledge	4.69	0.49

Cronbach's alpha = 0.717

Social capital: Factor J, Part B

Survey item	Description	*M*	*SD*
B26	Builds relationships with staff members	4.76	0.45
B31	Skilled at networking	4.47	0.50

Cronbach's alpha = 0.465

APPENDIX J

PART B ITEMS' EIGENVALUES

Survey item	Description	Eigenvalue	Individual percent	Cumulative percent
B01	Honest	5.77	15.6	15.6
B02	Entrepreneurial	4.55	12.3	27.9
B03	Intelligent	2.42	6.5	34.4
B04	Ambitious	3.60	9.7	44.2
B05	Assertive	2.61	7.1	51.2
B06	Risk taker	1.37	3.7	54.9
B07	Creative	1.33	3.6	58.5
B08	Persistent	1.18	3.2	61.7
B09	Decisive	1.16	3.1	64.9
B10	Analytical	1.02	2.8	67.6
B11	Self-confident	0.97	2.6	70.3
B12	Adaptable	0.88	2.4	72.6
B13	Conservative	0.85	2.3	74.9
B14	Collaborative	0.76	2.1	77.0
B15	Anticipates opportunities by environment scanning	0.71	1.9	78.9
B16	Sets expectations	0.70	1.9	80.8
B17	Leads by example	0.65	1.8	82.5
B18	Is service oriented (committed to public service)	0.63	1.7	84.2
B19	Identifies trends	0.57	1.6	85.8
B20	Fosters teamwork	0.53	1.4	87.2
B21	Sets priorities	0.48	1.3	88.5
B22	Builds a shared vision for library	0.47	1.3	89.8
B23	Changes and shapes library (organizational culture)	0.44	1.2	91.0
B24	Explores new technology	0.38	1.0	92.0
B25	Develops partnerships and/or alliances	0.36	1.0	93.0
B26	Builds relationships with staff members	0.33	0.9	93.9
B27	Acknowledges teamwork effort and/or staff members' success	0.33	0.9	94.8
B28	Deals with rapid changes	0.30	0.8	95.6
B29	Builds consensus	0.28	0.8	96.3
B30	Empowering	0.26	0.7	97.0
B31	Skilled at networking	0.21	0.6	97.6
B32	Skillful using information technology	0.19	0.5	98.1
B33	Inspiring	0.18	0.5	98.6
B34	Motivational	0.16	0.4	99.0

Survey item	Description	Eigenvalue	Individual percent	Cumulative percent
B35	Shares knowledge	0.13	0.4	99.4
B36	Communicative	0.12	0.3	99.7
B37	Strategic planner	0.11	0.3	100.0

APPENDIX K

LIS LEADERS' AGREEMENT RATINGS FOR PART A ITEMS

Description (survey item #)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
I deliver the same message several times using different technological tools to reduce any misunderstanding (A09)	5.8%	26.2%	18.4%	40.8%	8.7%	100	103
My communications with my remote employees focus only on project related issues/activities (A10)	16.7%	40.2%	13.7%	25.5%	3.9%	100	102
I know which leadership situations are best addressed during face-to-face meetings instead of using information technology (A11)	3.9%	1.0%	3.9%	60.2%	31.1%	100	103
I check the buddy list, one of the instant messaging features, to see if a remote staff member is available for a chat (A12)	41.6%	10.9%	35.6%	7.9%	4.0%	100	102
I send instant messages to chat and ask remote employees about their day (A13)	45.0%	18.0%	29.0%	4.0%	4.0%	100	100
I send emails to chat and ask remote employees about their day (A14)	19.6%	24.5%	27.5%	23.5%	4.9%	100	102
I have the ability to identify disagreements among my remote employees through the use of information technology (A15)	8.8%	10.8%	28.4%	49.0%	2.9%	100	102
I make sure that my remote employees do not feel isolated (A17)	2.9%	2.9%	10.7%	65.0%	18.4%	100	103
I sustain remote teams (A18)	2.9%	5.8%	24.3%	51.5%	15.5%	100	103
I guide remote employees to practical solutions (A19)	1.0%	6.8%	14.6%	67.0%	10.7%	100	103
I develop interpersonal relationships with my remote employees (A20)	3.9%	14.6%	28.2%	44.7%	8.7%	100	103
I build collaboration and cooperation among remote employees (A21)	2.0%	10.8%	22.5%	56.9%	7.8%	100	102

Description (survey item #)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Response %	Response count
I convey and reflect my library's unique strengths, values, and beliefs to remote employees (A22)	3.9%	5.9%	12.7%	64.7%	12.7%	100	102
I build team cohesiveness by developing organizational and social norms among remote employees (A23)	2.9%	9.7%	35.9%	41.7	9.7%	100	103
I coach and develop remote staff members' skills (A24)	4.9%	11.7%	17.5%	54.4%	11.7%	100	103
I foster partnerships and alliances by keeping in touch (A25)	1.0%	1.0%	14.7%	65.7%	17.6%	100	102
I create an atmosphere of caring, trust, and camaraderie among my remote employees (A26)	2.0%	11.8%	31.4%	47.1%	7.8%	100	102

APPENDIX L

LIS LEADERS' RATINGS FOR PART B REMOTE LEADERSHIP ATTRIBUTES

Survey Item	Attribute	Not at all important	Not important	Neutral	Somewhat important	Very important	Respondent Percentage
B01	Honest	0.0%	0.0%	0.0%	6.3%	93.8%	100
B02	Entrepreneurial	0.0%	6.3%	32.3%	42.7%	18.8%	100
B03	Intelligent	0.0%	0.0%	5.2%	45.8%	49.0%	100
B04	Ambitious	2.1%	7.4%	35.8%	36.8%	17.9%	100
B05	Assertive	1.0%	3.1%	12.5%	50.0%	33.3%	100
B06	Risk taker	0.0%	2.1%	21.1%	53.7%	23.2%	100
B07	Creative	0.0%	0.0%	6.3%	41.7%	52.1%	100
B08	Persistent	0.0%	1.0%	7.3%	41.7%	50.0%	100
B09	Decisive	1.0%	1.0%	4.2%	35.4%	58.3%	100
B10	Analytical	0.0%	0.0%	5.3%	45.3%	49.5%	100
B11	Self-confident	1.0%	0.0%	1.0%	51.0%	46.9%	100
B12	Adaptable	0.0%	0.0%	1.0%	19.8%	79.2%	100
B13	Conservative	4.2%	27.1%	56.3%	11.5%	1.0%	100
B14	Collaborative	0.0%	0.0%	3.2%	31.6%	65.3%	100
B15	Anticipates opportunities by environment scanning	0.0%	0.0%	21.9%	39.6%	38.5%	100
B16	Sets expectations	0.0%	0.0%	2.1%	39.6%	58.3%	100
B17	Leads by example	0.0%	0.0%	0.0%	18.8%	81.3%	100
B18	Is service oriented (committed to public service)	0.0%	0.0%	0.0%	19.8%	80.2%	100
B19	Identifies trends	0.0%	0.0%	7.4%	48.4%	44.2%	100
B20	Fosters teamwork	0.0%	0.0%	1.0%	14.6%	84.4%	100
B21	Sets priorities	0.0%	0.0%	0.0%	17.9%	82.1%	100
B22	Builds a shared vision for library	0.0%	0.0%	6.4%	20.2%	73.4%	100
B23	Changes and shapes library (organizational culture)	0.0%	2.1%	12.6%	31.6%	53.7%	100
B24	Explores new technology	0.0%	0.0%	8.4%	38.9%	52.6%	100
B25	Develops partnerships and/or alliances	0.0%	0.0%	11.5%	34.4%	54.2%	100
B26	Builds relationships with staff members	0.0%	0.0%	1.0%	21.9%	77.1%	100
B27	Acknowledges teamwork effort and/or staff members' success	0.0%	0.0%	1.0%	12.5%	86.5%	100
B28	Deals with rapid changes	0.0%	0.0%	1.0%	33.3%	65.6%	100

Survey Item	Attribute	Not at all important	Not important	Neutral	Somewhat important	Very important	Respondent Percentage
B29	Builds consensus	0.0%	0.0%	1.0%	41.7%	57.3%	100
B30	Empowering	0.0%	0.0%	6.3%	23.2%	70.5%	100
B31	Skilled at networking	0.0%	0.0%	5.2%	42.7%	52.1%	100
B32	Skillful using information technology	0.0%	0.0%	9.4%	55.2%	35.4%	100
B33	Inspiring	0.0%	0.0%	12.5%	46.9%	40.6%	100
B34	Motivational	0.0%	0.0%	5.2%	26.0%	68.8%	100
B35	Shares knowledge	0.0%	0.0%	1.1%	28.4%	70.5%	100
B36	Communicative	0.0%	0.0%	0.0%	7.3%	92.7%	100
B37	Strategic planner	0.0%	3.2%	6.5%	44.1%	46.2%	100

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