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# The Role of Leadership in Job Requirements and Responsibilities of the CIO

CAPSTONE REPORT

**Arron Leverman**  
**U.S. Navy**

University of Oregon  
Applied Information  
Management  
Program

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722 SW Second Avenue  
Suite 230  
Portland, OR 97204  
(800) 824-2714



Approved by

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Dr. Linda F. Ettinger

## Leadership Requirements for the CIO

## The Role of Leadership in Job Requirements and Responsibilities of the CIO

Arron Leverman

U.S. Navy



### **Abstract**

A gap exists in understanding the leadership actions required of corporate Chief Information Officers (CIO) (Gottschalk, 2007). This study examines that gap through a review of current job requirements and responsibilities of the CIO, extracted from selected literature published between 1998 and 2007. Focus is on the role of leadership in for-profit organizations, as framed by Kotter (1998). The leadership definition includes three characteristics: (1) setting a direction, (2) aligning people and (3) motivating people.



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## **Introduction to the Literature Review**

### ***Topic***

The topic investigated in this literature review is job requirements and responsibilities of the Chief Information Officer, with focus on the role of leadership at the executive level in a for-profit organization. As framed by Gottschalk (2007), the definition of a CIO is limited to individuals who (a) are the highest ranking information technology (IT) executive, (b) report no more than two levels from the Chief Executive Officer (CEO), (c) have areas of responsibility that include information systems (IS) and computer operations, and (d) are responsible for strategic IS/IT planning (p. 38). As framed by Kotter (1998), the definition of leadership includes three characteristics of (a) setting a direction, (b) aligning people and (c) motivating people.

### ***Research Problem***

The purpose of this study is to identify current job requirements and responsibilities of the corporate CIO, specifically as related to the executive leadership role, through examination of selected literature published from 1998 to 2007. According to Gottschalk (2007), in the 1970s and 1980s the growing importance of information technology (IT) ushered in the need for a corporate savior, the chief information officer (CIO), to “align the worlds of business and technology” (p. 39). The CIO position was designed to (a) create a single executive position who was responsible and accountable for corporate information processing needs and (b) close the gap between, or align, organizational and information technology strategies (Gottschalk, 2007, p. 40). Although Gottschalk (2007) states that the very survival of the organization depends on

achieving a competitive advantage by aligning business and IT objectives, he also notes that “achieving these gains has proven elusive” (p. 40).

In 1987, Synnott described CIOs as “the new breed of information managers who were businessmen first, managers second, and technologists third” (cited in Grover, Jeong, Kettinger, & Lee, 1993, p. 108). Survey results of what qualifications business and IT executives expected of CIOs in 1997 (ten years after Synnott) note the top two qualifications as: (1) the knowledge of applying IT to the business and (2) leadership; with CEOs viewing leadership as the primary qualification (Luftman, Bullen, Liao, Nash, & Neumann, 2004). However, twenty years later, Gottschalk (2007) believes that many CIOs have failed at bringing the roles of technology management and business management closer together.

Berkman (2002) refers to the words of the CIO of PMA Reinsurance Management, Paul Ayoub, who says that executive committees and CIOs themselves don’t understand the job requirements and responsibilities. Ayoub states:

*In the late 1980s and early 1990s, the CIO position was much more tactical than strategic, and the CIO was definitely more technical. [The executive committee] would tell you, “Don’t worry – we’ll figure out the strategic direction and you just make it run” (para 3).*

At the same point in time, a 2002 survey by CIO Magazine determined that there are three top skills CIOs must have to be successful, including communication, understanding business process and operations, and strategic thinking and planning (Berkman, 2002). Unfortunately, five years after this survey, Agarwal and Beath (2007) presented a report to the Society for

Information Management Advance Practices Council that notes IT and human resource executives and recruiters of senior technology leaders determined that business knowledge and skills, relationship management, and overall leadership capability were lacking as part of the general CIO skill set (“The Coming CIO Shortage,” 2007, p. 46).

### ***Audience and Significance***

The literature review is designed for an audience that includes: Chief Information Officers (CIOs), individuals such as corporate IT managers striving to hold that position, Chief Executive Officers (CEOs), and executive search firms. The expectation is that Chief Information Officers and corporate IT managers will benefit from this literature review by gaining knowledge of the job requirements and responsibilities needed to fill the leading IT position in a corporation or company. Those who are involved in the hiring process of CIOs, such as CEOs and executive search firms, should take particular interest in what is expected from a CIO in relation to the leadership role.

Information about the Chief Information Officer position provided in this inquiry is framed by the ideas of Petter Gottschalk, Professor of information and knowledge management at the Norwegian School of Management. Gottschalk (2007) writes, “The chief information officer (CIO) can be defined as the highest ranking IT executive who typically exhibits managerial roles requiring effective communication with top management, a broad corporate perspective in managing information resources, influence on organizational strategy, responsibility for the planning of IT” (p. 38). Additionally, Gottschalk (2007) clarifies that the establishment of the executive CIO position is to not only increase the organization’s information intensity and a

competitive advantage, but to also sustain a competitive advantage by consistently deploying IT faster, cheaper, and more strategically than one's competitors (p. 40).

According to Gottschalk (2007), performance of IT functions “often centers on the quality of leadership, meaning, the CIO” (p. 41), and the role of the CIO is failing to live up to the designed expectations. Gottschalk is not the first to point out the shortcomings of leadership in the CIO position. CIO.com's Senior Editor, Edward Prewitt, notes in the annual “State of the CIO” special report in 2004, “alignment between the business and IT remains fragile and sometimes elusive” (para 4). In 2005, authors Monnoyer and Willmott (2005), blame the lack of IT leadership in an organization that suffers from incoherent IT strategies and the misalignment and miscommunication between IT and business managers. Alter (2006) notes “Companies urgently need CIOs who are effective leaders, and CIOs have consistently indicated in previous surveys that ‘leadership ability’ is the most important personal attribute they need to succeed” (p. 61).

The definition of leadership selected for use in this study is one framed by John P. Kotter, Konosuke Matsushita Professor of Leadership at the Harvard Business School, who is widely regarded as one of the best speakers in the world on the topics of leadership and change (Harvard Business Review on Leadership, 1998). To compete and survive effectively in a competitive and volatile business world, Kotter (1998) says leadership is about “coping with change” (p. 40) and how coping with change shapes the leadership characteristics of setting a direction, and aligning and motivating people (p. 41).

## ***Limitations***

### ***Literature collection***

The literature collected for this study is comprised of peer-reviewed academic journal articles, textbooks (Hewitt, 2002), and trade magazine articles, all from the field of information technology and leadership. Peer-reviewed articles from academic journals are “critically reviewed by experts in the field prior to publication” (p. 5). Textbooks provide a comprehensive overview of research literature (Hewitt, 2002). Articles written by CIOs and executive recruiters, published in trade magazines specifically designed for the CIO, are collected to address the CIO requirements and expectations from currently employed CIOs and organizations. Focus is on the goal of selecting literature that describes the required leadership role of Chief Information Officers at the executive level in an organization.

### ***Timeframe***

Literature is collected from materials published between 1998 and 2007 in order to focus the research on the most recent leadership qualification demands of the CIO. Selected resource materials dating back to 1980 are used to provide a sense of the evolution of job requirements and responsibilities of CIOs through the years leading up this time period, particularly the role of leadership.

### ***Audience***

The audience for this study is limited to CIOs, members of the top management team, executive peers of the CIO, and executive search firms. Gottschalk (2007) frames the CIO in an organization as an individual who is the highest ranking IT executive, reports no more than two

levels from the CEO, has areas of responsibility that include IS and computer operations, and is responsible for strategic IS/IT planning (p. 38). A good working relationship with top executive peers, “is a necessary condition for the success,” (p. 54) of the CIO (Gottschalk, 2007).

### ***Leadership focus***

The leadership focus of this review is limited by Kotter’s (1998) definition of leadership, as a way to separate which job requirements and responsibilities of the CIO are leadership characteristics and which are not. Kotter believes that leadership is about “coping with change” (p. 40) and how coping with change shapes the leadership characteristics of setting a direction, and aligning and motivating people (p. 41).

### ***Organizational context***

This study does not examine the role and responsibilities of the CIO within any particular business industry or organization. And while specific job requirements and responsibilities of a CIO will have some variance among organizations, the assumption in this inquiry is that leadership characteristics defined by Kotter (1998) can be applied to any business, industry or organization.

### ***Writing Plan Preview***

This study is designed as a literature review to evaluate, organize, synthesize, and report literature (Leedy & Ormrod, 2005) related to the research topic. In general, literature used in a review are comprised mainly of articles published in journals, however, also used are books, reports, conference proceedings (Hewitt, 2002) and other scholarly research and expert opinions

(Rapple, 2008). Cooper (1998) expounds on the significance of a literature review as an “attempt to integrate what others have done and said, to criticize previous scholarly works, to build bridges between related topic areas, to identify the central issues in a field, or all of these” (p. 3).

The specific topic at hand is to identify the requirements of the leadership role of the Chief Information Officer at the executive level. Building on ideas provided by Obenzinger (2005), this writing plan aligns with a ‘swiss cheese’ rhetorical pattern. Obenzinger (2005) defines a ‘swiss cheese’ rhetorical pattern as a research process that “presents a picture of current knowledge, identifying gaps or holes in the field, and argues why the current research plugs up one of the holes” (p. 5). The gap for this study is the apparent lack of understanding of the expected leadership actions originally envisioned in the CIO position (Gottschalk, 2007). This inquiry provides two sets of data, designed to address this gap. Appendix A presents current knowledge of the job requirements and responsibilities of the CIO, as these are revealed within the selected literature. Appendices B, C, and D present views of the current knowledge categorized into Kotter’s three executive leadership actions, for the purpose of clarifying the required leadership expectations of the CIO at the executive level.

## Definitions

The following defined terms provide a specific understanding to the context of the term in the literature review. Definitions are cited to the selected literature referenced in this study.

**Alignment [between IT and business goals]** – “The application of IT in an appropriate and timely manner, in harmony with business goals, strategies, and needs” (Luftman, et al., 2004, p. 16).

**Business acumen** – “Be visionary and a thought leader; take the enterprise point of view; understand strategy, finance, funding, marketing; communicate with board” (Agarwal & Beath, cited in “The Coming CIO Shortage,” 2007, p. 53).

**‘Chief’ or ‘C’ role** – executive positions, who, individually, provide corporate leadership for a key business function and, collectively, form the top management team (Remenyi, Grant, & Pather, 2005).

**Communication** – the process in which individuals “share and create information in order to reach a mutual understanding” (Johnson & Lederer, 2005, p. 229).

**Corporate Chief Information Officer (CIO)** – “The chief information officer (CIO) can be defined as the highest ranking IT executive who typically exhibits managerial roles requiring effective communication with top management, a broad corporate perspective in managing information resources, influence on organizational strategy, and responsibility for the planning of

IT” (Gottschalk, 2007, p. 38), and “to increase the organization’s information intensity and a competitive advantage” (p. 40).

**Executive search firms [Executive Recruiters]** – Provide expensive, but popular, prescreening services and background checks for companies seeking executive candidates who are a good fit to the company (Luftman, et al., 2004).

**IS Leadership** – “Information Systems Leadership sets directions, creates commitment, mobilizes institutional, political, psychological, and other resources, facilitates action, and adapts the IS unit to fit a changing environment such that it adds value and achieves shared objectives” (Karahanna & Watson, 2006, p. 172).

**IT Assimilation** – the effective application of IT strategy in supporting, shaping, and enabling firms’ business strategies and other activities (Armstrong & Sambamurthy, 1999).

**Leadership** – Leadership is coping with change and how coping with change shapes the leadership characteristics of (a) setting a direction, (b) aligning people and (c) motivating people (Kotter, 1998).

**Relationship Ability** – “Build, maintain and repair relationships, internally and externally; network outside company; manage without owning” (Agarwal & Beath, cited in “The Coming CIO Shortage,” 2007, p. 53).

**Senior Leadership** – refers to the Chief Information Officer (CIO) and members of the top management team (Armstrong & Sambamurthy, 1999).

**Strategic IT Knowledge** – “encompasses the potential and limitations of an organization’s IT infrastructure, strategic IT actions of its competitors, and the potential of emerging information technologies for an organization’s business” (Armstrong and Sambamurthy, 1999, p. 306).

**Top Management Team** – refers to the Chief Executive Officer (CEO), the Chief Operating Officer (COO), the Chief Financial Officer (CFO), and other senior business executives responsible for key business or functional areas (Armstrong & Sambamurthy, 1999).

## **Research Parameters**

This section describes the larger research design for this inquiry and provides the research tools and the methodologies used to search and collect the literature for this study. Criterion used to select literature is documented. A writing plan is then introduced to describe how the selected literature is organized, synthesized and presented in the Review of the Literature.

### ***Search Strategy***

The search strategy for this literature review (Leedy & Ormrod, 2005) began with four general indexing descriptors: Chief Information Officer (CIO), CIO Job Requirements, CIO Responsibilities, and CIO Leadership. Search results are graded based on relevancy to the four general indexing descriptors and the number of search results. The quality of the search results is graded in four levels: Poor, Fair, Good, and Excellent. Articles, databases, and indexes were searched using the University of Oregon libraries OneSearch database and the EBSCO Host Research database. Advanced search features were used to narrow searches by category and sub category with the most relevant results appearing in the Academic Search Premier, MasterFile Premier, Business Source Premier, INSPEC, and Web of Science databases. Key terms extracted from the abstracts of trade articles and journals in the search results include: Chief Information Officer, Information Technology Management, Management of Information Systems, Leadership, Business and Economics Leadership, Success in Business, Interorganizational Relations, Communication in Organizations, and Business Communication.

### ***Topic Area Search Terms***

Chief Information Officer

Chief Information Officer & Job Requirements

Chief Information Officer & Job Description

Chief Information Officer & Responsibilities

Chief Information Officer & Leadership

Chief Information Officer & Role

Information Systems & Leadership

CIO Effectiveness

Information Technology & Leadership

### ***Search Result Details***

Search results are reported in Appendix E.

### ***Literature Collection and Selection***

Sources for the literature review are analyzed and selected according to credibility and suitability set forth by the University of Oregon critical evaluation of information sources guidelines (Bell & Smith, 2007) and Hewitt (2002):

1. **Relevance.** The source addresses the topic of Chief Information Officer, job requirements and responsibilities, and leadership roles;
2. **Accessibility.** The source is from a freely available, peer-reviewed, academic journal;
3. **Authority.** The source is from a recognized expert. An expert has published a book, a post-secondary textbook, or an article in a trade publication. Additionally, an expert's credentials include university affiliation, association with a reputable organization or society, relevant degree, employment experience as a CIO, or a supervisor of a CIO.

4. Quality. The source information is well-organized, complete and accurate.

### ***Writing Plan***

The writing plan for this literature review is organized in three parts, designed to examine selected literature about the leadership role of the Chief Information Officer. The approach is based on the swiss cheese strategy, described by Obenzinger (2005). Following the swiss cheese approach, the goal is to first present current discussion of the job requirements and responsibilities of the CIO reported in the selected literature, at the executive level position, as defined by Gottschalk (2007); second, identify the leadership actions inherent in these job requirements and responsibilities, according to a set of three categories defined by Kotter (1998) as a way to reveal which leadership roles performed by CIOs are being discussed; and third, discuss ways in which this research may be used to address the gap in understanding the expectations originally envisioned in the CIO position (Gottschalk, 2007).

When the CIO position was created, one of the responsibilities of the CIO was to bridge the gap between business and IT strategies (Gottschalk, 2007). Armstrong and Sambamurthy (1999) state, that to achieve IT assimilation, the CIO must possess the ability to foresee how current and emerging information technologies impact business and IT strategies. To be successful at the executive level, CIOs need to also be a good leader, have good communication skills, the ability to think strategically, and have an understanding of business processes and operations (Gottschalk, 2007).

Selected literature is examined first to derive the current job requirements and responsibilities required of the CIO position, working within a definition framed by Gottschalk (2007). A table format is used to present the extracted data (see Appendix A template in Figure 1).

| Reference    | Year | CIO Job Requirements & Responsibilities                                   |
|--------------|------|---|
| Title/Author | Date | <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul> |
|              |      |   |

*Figure 1 – Template of Appendix A: Summary of CIO Job Requirements & Responsibilities*

For the very survival of any organization, achieving competitive advantage is a matter of aligning business and IT strategies (Gottschalk, 2007). Achieving and sustaining that competitive advantage has proven elusive to CIOs, calling into question the quality of leadership of those who hold, or have held, the executive title of CIO (Gottschalk, 2007). Executive recruiter and writer for CIO.com, Mark Polansky, reported in 2001 that the number one requirement for the position of CIO is leadership. Luftman et al. (2004) conclude that if leadership is a primary role and skill of the CIO position, “this may contribute to an explanation of why many CIOs fail” (p. 111).

One explanation for CIOs not meeting the leadership needs required of them, offered by Gottschalk (2007), is a conflict in understanding the leadership actions originally envisioned in the CIO position. As a way to better understand the role of leadership, the list of current job requirements and responsibilities presented in Appendix A is further examined and re-sorted by

each of Kotter's three executive leadership actions. The result is a set of three tables (see Appendix B, C, and D templates in Figure 2).

| Reference    | Year | Leadership Action | CIO Job Requirements & Responsibilities |
|--------------|------|-------------------|---|
| Title/Author | Date |                   | •                                       |
|              |      |                   |   |

*Figure 2 – Template of Tables in Appendix B, C, and D: The Role of Leadership in the Position of CIO, According to Kotter*

### **Writing Plan Outline**

**Part 1:** The first part of the Review of the Literature provides a summary of the process utilized to derive the data set presented in Appendix A, along with a descriptive overview of the information contained in the data set of job requirements and responsibilities of the CIO.

**Part 2:** The second part of the Review of the Literature provides an analysis of the data set presented in Appendix A, from the viewpoint of Kotter's three categories of leadership. Data is recorded in three tables (see Appendices B, C and D), each described below.

Appendix B: Setting a Direction – the table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of setting a direction as defined by Kotter (1998). This part includes a summary of:

1. Literature that relates to CIOs needing to create a vision to produce change and be easily translated into a realistic competitive advantage (Kotter, 1998, pp. 42-43).
2. Literature that relates to CIOs needing to create and articulate feasible strategies to produce change and competitive advantage (Kotter, 1998, pp. 42-43).

Appendix C: Aligning people – the table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of aligning people as defined by Kotter (1998). This part includes a summary of literature that relates to CIOs needing to create networks of people and relationships at all levels of the organization to accomplish an agenda through the communication of the new vision and strategies (Kotter, 1998, p. 45).

Appendix D: Motivating and inspiring people – the table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of motivating and inspiring people as defined by Kotter (1998). This part includes a summary of literature that relates to CIOs needing to motivate and inspire people at all levels of the organization to keep the organization energized and moving in the right direction (Kotter, 1998, pp. 47-49).

**Part 3:** Conclusion - Using the data provided in the table presented in Appendices B, C, and D as guidance, a conclusion is formulated to resolve the CIO gap in understanding the expected leadership role required of the CIO (Gottschalk, 2007).

## Annotated Bibliography

This Annotated Bibliography is a list of 20 references used to write the Review of Literature section of the paper. The selected core references illustrate current knowledge of the CIO executive level job requirements, responsibilities, and leadership shortfalls with the intent to (a) align the job requirements and responsibilities with Kotter's three executive level leadership actions and to (b) clarify executive level CIO leadership. References in the bibliography provide a selected compilation of current, relevant, accessible, authoritative, and quality according to the selection criteria noted in the search strategy. Annotation consists of a bibliographic citation and abstract for each reference, as well as an explanation of assessment of credibility and how the reference is used to support this inquiry, noted in brackets.

Alter, A. (2006). Are You the Leader You Think You Are? *CIO Insight*, 63, 61-70. Retrieved April 06, 2008, from Computer Source database.

ABSTRACT: The article presents a study conducted by the CIO Insight Research which assesses the perception of the leadership role in information technology. Significantly, the author points out that leadership ability is the most important personal attribute that chief information officers (CIO) need to achieve. The study has indicated that several factors have been attributed to the reasons why CIO and other information technology executives are missing their mark as leaders. The author discusses the trends and figures regarding the characteristics of the leadership abilities of CIO.

[Credibility: Author is Executive Editor of CIO Insight, part of the award-winning business unit of International Data Group (IDG), serving over 140,000 CIOs and high-level executive IT readers; former editor-in-chief and the director of new content development for the MIT Sloan Management Review. The article supports the discussion of the importance of leadership as part of the set of professional responsibilities of a CIO].

Are CIOs Obsolete? (2000, March/April). *Harvard Business Review*, 78(2), 55-63. Retrieved April 24, 2008, from Business Source Premier database.

ABSTRACT: The senior editor provides an introduction to a series of articles about chief information officers. In the early days of information technology, the chief information

officer position was created to prepare companies for a technological revolution. Information technology is now part of every aspect of business and every employee may be considered an information officer. Commentators discuss whether, now that information technology and business strategy are integrated, the position of chief information officer is obsolete.

[Credibility: Maruca is the senior editor at the Harvard Business Review. Commentators include: Lepore, CIO and vice chairman at Charles Schwab, is widely recognized as one of the forward-thinking people to hold – and shape – the position; Rockart, director of the Center for Information Systems Research and lecturer at MIT, has been studying the CIO's role and its implications for business; Earl, professor of information management at London Business School, has recently completed a far-reaching survey of sitting CIOs; Thomas, was Dell's first CIO, the CIO for Kraft's commercial products division and the CIO at 3Com, currently is the chairman and CEO at Vantive; McAteer and Elton, consultants at Giga Information Group and Integral, respectively, have interviewed and advised hundreds of CIOs, CEOs, and top-management headhunters in the course of their work. The article supports the discussion of CIO job requirements and the role of the CIO].

Armstrong, C. & Sambamurthy, V. (1999). Information Technology Assimilation in Firms: The Influence of Senior Leadership and IT Infrastructures. *Information Systems Research*, 10(4), 304-327. Retrieved May 6, 2008, from Business Source Premier database.

ABSTRACT: IT assimilation is regarded as an important outcome in the efforts of firms to leverage the potential of information technologies in their business activities and strategies. Despite significant investments in information technology, considerable diversity exists in how well firms have been able to assimilate IT and leverage the business value of IT. This research draws upon the emerging knowledge-based and resource-based views of the firm to examine the influence of three factors on IT assimilation: (i) quality of senior leadership, (ii) sophistication of IT infrastructures, and (iii) organizational size. Drawing upon a large-scale sample survey where responses were obtained from CIOs and senior business executives who were members of the firms' top management teams, the study examines a variety of mostly normative prescriptions. The findings provide robust evidence about the impacts of CIOs' business and IT knowledge on IT assimilation. Further, we find that CIOs' membership in top management teams and their informal interactions with TMT members enhance their knowledge, particularly their business knowledge. We find that the intensity of the relationship between CIO's interactions with the top management team and their level of IT and business knowledge is much stronger in firms that articulate a transformational IT vision. The sophistication of IT infrastructures was also found to significantly impact IT assimilation. Surprisingly, the IT knowledge of senior business executives was not found to be a significant influence on IT assimilation. The implications of these findings for evolving a deeper understanding of the dynamics underlying IT assimilation are presented.

[Credibility: Dr. Armstrong is a professor of information systems and Dr. Sambamurthy is a professor of IT and the executive director of the Center for Leadership of the Digital Enterprise with published books and peer-reviewed articles in journals such as MIS

Quarterly and IEEE. The article supports the discussion of the requirements and responsibilities of senior IS leadership, the CIO, and expectations to the organization and the top management team].

Bassellier, G., Reich, B., & Benbasat, I. (2001). Information Technology Competence of Business Managers: A Definition and Research Model. *Journal of Management Information Systems*, 17(4), 159-182. Retrieved May 5, 2008, from Business Source Premier database.

**ABSTRACT:** This research explores the concept of the information technology (IT) competence of business managers, defined as the set of IT-related explicit and tacit knowledge that a business manager possesses that enables him or her to exhibit IT leadership in his or her area of business. A manager's knowledge of technologies, applications, systems development, and management of IT from his or her explicit IT knowledge. This domain further extends to include knowing who knows what, which enables the manager to leverage the knowledge of others. Tacit IT knowledge is conceptualized as a combination of experience and cognition. Experience relates to personal computing, IT projects, and overall management of IT. Cognition refers to two mental models: the manager's process view and his or her vision for the role of IT. The outcomes expected from IT-competent business managers are chiefly two behaviors: an increased willingness to form partnerships with IT people and an increased propensity to lead and participate in IT projects.

[Credibility: Bassellier is a Ph.D. candidate with research interests in the competence of business managers and IS professionals. Dean Reich is an associate professor in the Faculty of Business Administration with current research interests in the creation of the information technology competence of business managers and career transitions for IT professionals. Dr. Benbasat is Research Chief in IT Management with current research in measuring the information systems competence of those within the organization. The article supports the discussion of the importance of the CIO bringing alignment of the IT and business objectives].

Booth, M. E., & Philip, G. (2005). Information systems management: role of planning, alignment and leadership. *Behaviour & Information Technology*, 24(5), 391-404. Retrieved April 26, 2008, from Academic Search Premier database.

Undoubtedly technology has the potential to provide significant strategic and operational benefits to organisations in the electronic age. Unfortunately the reality is that many organisations are failing to reap the expected benefits from their investment in information systems. This, along with the ubiquitous presence of technology, incessant technological changes and the unrelenting advance of e-commerce, means information systems management (ISM) has become a matter of major concern to many organisations. Given the paramount importance of ISM to organisations, this article seeks to critically examine three of the most fundamental and perhaps elusive aspects of ISM in the context of a rapidly

changing technological environment - planning, alignment and managerial responsibilities. Since ISM is a multifaceted concept, it would be futile to attempt a comprehensive analysis of the subject in a single article and hence the above focus on a small number of issues. More specifically, the organisational and managerial aspects of ISM would form the core of this article rather than the more technical issues (e.g. IT infrastructure development). It will also explore problem areas in the literature that represents gaps within both theory and in the prevalent methodologies employed to examine those theories.

[Credibility: the authors are Professors of Management and Information systems at the Queen's School of Management. The article supports the discussion of CIO leadership through partnership with executive peers in top management, leadership, and embracing change].

Dearstyne, B. (2006). Information Program Leaders in Transition. *The Information Management Journal*, 40(1), 45-50. Retrieved May 5, 2008, from Academic Search Premier database.

ABSTRACT: The article emphasizes the importance of establishing a relationship between chief information officers (CIO) and records and information management (RIM) professionals. Four themes are conveyed in the interviews with the CIO and studies of his work: expectations are undefined but high; the core work changes and grows; defending one's budget is a constant challenge; and tenures are short and turnover high. One issue faced by a CIO is that his goals, style and determination to make changes are inconsistent with the organizational culture. The areas where RIM professionals can lead their CIO associates include: the definition, nature and importance of records; the lifecycle concept; legal aspects of RIM; the nature of genuine service; and the records management professional field, principles, standards and traditions. INSET: Educating CIOs.

[Credibility: Dr. Bruce Dearstyne has more than 30 years of experience as a practitioner, consultant, and professor in records, archives, and related information work. He is a professor at the University of Maryland, College of Information studies, and he is the author of many articles and several books, including *Managing Government Records and Information*, published by ARMA International, the leader and authority on the education of information management issues. The article supports the discussion of CIO job requirements/responsibilities].

Enns, H., Huff, S., & Higgins, C. (2003). CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems. *MIS Quarterly*, 27(1), 155-174. Retrieved May 5, 2008, from ProQuest database.

In order to develop and bring to fruition strategic information systems (SIS) projects, chief information officers (CIOs) must be able to effectively influence their peers. This research examines the relationship between CIO influence behaviors and the successfulness of influence outcomes, utilizing a revised model initially developed by Yukl (1994). Focused interviews were first conducted with CIOs and their peers to gain insights into the

phenomenon. A survey instrument was then developed and distributed to a sample of CIO and peer executive pairs to gather data with which to test a research model. A total of 69 pairs of surveys were eventually used for data analysis. The research model was found to be generally meaningful in the CIO-top management context. Furthermore, the influence behaviors rational persuasion and personal appeal exhibited significant relationships with peer commitment, whereas exchange and pressure were significantly related to peer resistance. These results provide useful guidance to CIOs who wish to propose strategic information systems to peers.

[Credibility: Authors are professors of information systems, with decades of academic experience, and with published articles in multiple peer-reviewed journals and textbooks. The article supports the discussion of the requirements and responsibilities of the CIO, the strategic role of the CIO to provide leadership, and the lateral influence CIO needs to foster at the top management level with executive peers].

Gottschalk, P. (2007). *CIO and Corporate Strategic Management: Changing Role of CIO to CEO*. Hershey, PA: Idea Group Publishing.

ABSTRACT: The CIO position and importance depend on information technology maturity in the organization, value configuration, strategic IT resources, e-business approach, and IT governance structure. *CIO and Corporate Strategic Management: Changing Role of CIO to CEO* holds key information in improving a CIO's role, which would then advance his or her chances of moving up into a CEO role.

*CIO and Corporate Strategic Management: Changing Role of CIO to CEO* provides analysis within theoretical frameworks and consulting recommendations, and starts with the demand side of CEO successions, specifically highlighting approaches in IT foundations, e-business development, and IT sourcing decisions.

[Credibility: Author is Professor at the Norwegian School of Management, in the Department of Leadership and Organizational Management. His research and teaching areas include strategic IT planning and management; and he is an author and editor associated with the Idea Group Publishing, an innovated international publishing company specializing in information science, technology and management books, journals, and teaching cases. The book supports the discussion of the role of CIO and CIO leadership requirements].

Gottschalk, P. (2002). The Chief Information Officer: A study of managerial roles in Norway. *Proceedings of the 35th Annual Hawaii International Conference on System Sciences* 3133-42. Retrieved April 29, 2008, from <http://doi.ieeecomputersociety.org>

ABSTRACT: This study provides some empirical insight into managerial roles of chief information officer (CIO) based on Mintzberg's classic managerial role model and CSC's information systems (IS) leadership roles. A survey was conducted in Norway to investigate potential predictors of leadership roles. Statistical results indicate that CIOs find the role of

entrepreneur most important, and this role has growing importance with increasing end-user computing maturity, IS management maturity, administrative effectiveness, number of persons reporting to the CIO, number of persons working in IS/IT and level of education. While end-user computing maturity has significant influence on the importance of the entrepreneur, spokesman, leader and liaison roles, IS management maturity has significant influence on the entrepreneur, change architect and technology strategist roles. Results obtained in this study in Norway differ from earlier results obtained in the US. Both constructs and survey instrument should be revised in future research.

[Credibility: Author is Professor at the Norwegian School of Management, in the Department of Leadership and Organizational Management. His research and teaching areas include strategic IT planning and management; and he is an author and editor associated with the Idea Group Publishing, an innovated international publishing company specializing in information science, technology and management books, journals, and teaching cases. The article supports the discussion of the leadership roles of the CIO].

Johnson, A., & Lederer, A. (2007). The Impact of Communication between CEOs and CIOs on their Shared Views of the Current and Future Role of IT. *Information Systems Management*, 24(1), 85-90. Retrieved April 6, 2008, from Computer Source database.

ABSTRACT: This research compares the views of CEOs and CIOs in the same organizations about the relative richness of four communications media (face-to-face, e-mail, business memo, telephone), and the current and future roles of IT in their organizations. Overall, CEOs are found to be more optimistic about the expected impacts of future IT projects. Organizations in which there was greater shared vision about the future role of IT also reported more frequent CEO/CIO communications utilizing communications channels perceived to be richer: face-to-face and e-mail.

[Credibility: Authors are Professors of Management Information Systems, actively conducting research in information systems strategy, with articles and studies published in academic and peer-reviewed journals. Article discusses. [Credibility: Authors are Professors of Management Information Systems, actively conducting research in information systems strategy, with articles and studies published in academic and peer-reviewed journals. The article supports the discussion of the benefits of communication between the CIO and the organization, improving the understanding and vision of the role of IT].

Johnson, A., & Lederer, A. (2005). The Effect of Communication Frequency and Channel Richness on the Convergence Between Chief Executive and Chief Information Officers. *Journal of Management Information Systems*, 22(2), 227-252. Retrieved April 29, 2008, from INSPEC database.

ABSTRACT: Convergence (i.e., mutual understanding) between an organization's CEO and CIO is critical to its efforts to successfully exploit information technology. Communication theory predicts that greater communication frequency and channel richness lead to more

such convergence. A postal survey of 202 pairs of CEOs and CIOs investigated the effect of communication frequency and channel richness on CEO/CIO convergence, as well as the effect of convergence on the financial contribution of information systems (IS) to the organization. Convergence was operationalized in terms of the current and future roles of information technology (IT) as defined by the strategic grid. Rigorous validation confirmed the current role as composed of one factor and the future role as composed of three factors (i.e., managerial support, differentiation, and enhancement). More frequent communication predicted convergence about the current role, differentiation future role, and enhancement future role. The use of richer channels predicted convergence about the differentiation future role. Convergence about the current role predicted IS financial contribution. From a research perspective, the study extended theory about communication frequency, media richness, convergence, and the role of IT in organizations. From a managerial perspective, it provided direction for CEOs and CIOs interested in increasing their mutual understanding of the role of IT.

[Credibility: Authors are Professors of Management Information Systems, actively conducting research in information systems strategy, with articles and studies published in academic and peer-reviewed journals. The article supports the discussion of mutual understanding, or convergence, between the CEO and CIO facilitates alignment of IT and business objectives. Frequency of communication between the CEO and CIO positively affects use of IT for competitive advantage. Communication is a part of leadership and requirement of CIOs].

Kakabadse, A., & Korac-Kakabadse, N. (2000). Future role of IS/IT professionals. *The Journal of Management Development*, 19(2), 97-154. Retrieved May 5, 2008, from ProQuest database.

ABSTRACT: To meet the information processing needs of the new global organizations, IS/IT managers and their IS/IT staff need to develop new skills, so that they may be more focused on the business rather than on technical processes. In exploring the theme of the changing role and contribution of the IS/IT professional, this monograph provides a literature analysis of the changing skills of the IS/IT professionals and identifies the new skills and competencies required for successful IS/IT development and utilization. The monograph also presents capability-related models that have been tested in two global corporations. The results of the two case studies suggest that there is a need for improvement in the area of IS/IT leadership for effective IS/IT development and utilization. Strategies for developing IS/IT leadership capabilities are discussed at the end of the monograph.

[Credibility: Dr. Kakabadse is the Professor of International Management Development at Cranfield University, Cranfield School of Management, UK. He has published 30 books, over 190 articles and 18 monographs, and he is the co-editor of the Journal of Management Development and Corporate Governance: The International Journal of Business in Society. His current areas of interest focus on leadership, governance, change management, improving the top executives and top executive teams. Dr. Korac-Kakabadse, a Senior

Research Fellow also at the Cranfield School of Management, was employed as a Senior IT Officer with the Australian government, the Canadian government, and other international organizations. She has co-authored with Dr. Kakabadse, published 25 scholarly and reviewed articles, and is co-editor of *The Journal of Management Development*. The article supports the discussion of CIO job requirements and needed leadership skills at the executive level].

Karahanna, E., & Watson, R. (2006, May). Information systems leadership. *IEEE Transactions on Engineering Management*, 53(2), 171-176. Retrieved April 6, 2008, from INSPEC database.

**ABSTRACT:** Information system (IS) leadership is a critical area for many organizations because of their increasing dependence on ISs both for operational stability and for enablement of process innovation and business strategy. IS Leadership is distinctive from leadership in general because the Chief Information officer (CIO) is expected to combine IS technical skills with an in-depth understanding of the organization across all functions from operational to strategic. Thus, unique leadership challenges arise due to the technology/business interface. The breadth of the IS Leadership role implies that IS Leadership research needs to cover a wide range of topics concerning the role and characteristics of the CIO, the CIO's interface with the top management team, and the CIO's organizational impact. This essay discusses the distinctive aspects of IS Leadership, identifies the dominant themes in prior IS Leadership research, and introduces five papers on IS Leadership in this issue.

[Credibility: Dr. Karahanna is an Associate Professor of Management Information Systems and Director of International Business Programs at the Terry College of Business, University of Georgia, Athens. Her work has been published in the *IEEE Transactions on Engineering Management*, *Management Science*, *MIS Quarterly*, *Organization Science*, and elsewhere. She also serves as Senior Editor for *MIS Quarterly* and the *Journal of AIS* and has served on other editorial boards. Dr. Watson is the Chairman of Internet Strategy and Director of the Center for Information Systems Leadership also at the Terry College of Business. He is the past President of the Association for Information Systems, the major academic society for IS faculty. He has also served as a Senior Editor for *MIS Quarterly*, the leading IS journal. The article supports the discussion of aspects of IS Leadership and CIO roles and characteristics].

Kotter, J. P. (1998). What Leaders Really Do. In *Harvard Business Review on Leadership* (pp. 37-60). Boston: Harvard Business School Press.

Leadership is different from management, but not for the reasons most people think. Leadership isn't mystical and mysterious. It has nothing to do with having "charisma" or other exotic personality traits. It is not the province of a chosen few. Nor is leadership necessarily better than management or a replacement for it. Rather, leadership and management are two distinctive and complementary systems of action. Each has its own

function and characteristic activities. Both are necessary for success in today's business environment. Management is about coping with complexity. Its practices and procedures are largely a response to the emergence of large, complex organizations in the twentieth century.

Leadership, by contrast, is about coping with change. Part of the reason it has become so important in recent years is that the business world has become more competitive and more volatile. More change always demands more leadership. Most U.S. corporations today are over-managed and under led. They need to develop their capacity to exercise leadership. Successful corporations don't wait for leaders to come along. They actively seek out people with leadership potential and expose them to career experiences designed to develop that potential. Indeed, with careful selection, nurturing, and encouragement, dozens of people can play important leadership roles in a business organization. But while improving their ability to lead, companies should remember that strong leadership with weak management is no better, and is sometimes actually worse, than the reverse. The real challenge is to combine strong leadership and strong management and use each to balance the other.  
[ABSTRACT FROM PUBLISHER]

[Credibility: Kotter is the Konosuke Matsushita Professor of Leadership at the Harvard Business School. He is the author of seven best selling business books. He is widely regarded as the best speaker in the world on topics of leadership and change. The book supports the concept definition of leadership].

Luftman, J. N., Bullen, C. V., Liao, D., Nash, E., & Neumann, C. (2004). *Managing the Information Technology Resource: Leadership in the information age*. Upper Saddle River, NJ: Pearson Education.

ABSTRACT: Preparing readers for the challenge of integrating the technology resource. In order to understand the industry today, one must understand the ways companies align, partner, and communicate through technology to grow their business. IT is instrumental today in both integrating cross-organizational resources and shaping core business capabilities.

This text is not just a survey of Management Information Systems (MIS) topics. It presents a set of powerful tools to ensure students' understanding of the strategies, the tactics and the operational endeavors Chief Information Officers (CIOs) employ to assimilate technology across their firms.

Seven sections illustrate the critical topic areas inherent to IT managers in today's firm: Alignment, Partnership, Technology, Human Resources, Governance, Communications, and Metrics. [Back Cover]

[Credibility: Dr. Luftman is a Professor at the Wesley J. Howe School of Technology Management of Stevens Institute of Technology. His experience combs twenty-two years with IBM, and over ten years at Stevens. He has published three books and dozens of articles that address areas of improving the IT business leadership. Professor Bullen is

Professor of Management at Stevens. She was the Assistant Director of the MIT Sloan School Center for Information Systems Research. Liao, Nash, and Neumann are Ph.D. students in the Information Management program at Stevens Institute of Technology. The book supports the discussion of the role of CIO, IT in an organization, CIO Leadership vs. Management].

Mark, D., & Monnoyer, E. (2004). Next-generation CIOs. *McKinsey on IT*. Retrieved April 13, 2008, from <http://www.mckinseyquarterly.com>

Chief executives have been disappointed that IT hasn't done more to improve corporate performance. Some chief information officers are stepping up to that challenge, going beyond their traditional IT-management role and working closely with business-unit leaders to make the most of technology investments. To step up to the new responsibilities of an IT leader, CIOs must delegate or shed some operational duties and spend more time helping business leaders identify and use technologies that will help companies innovate.

[Credibility: Authors are McKinsey consultants who publish research in The McKinsey Quarterly, the business journal of McKinsey & Company that specializes in new ways of thinking about management to help business people run organizations more productively, more competitively, and more creatively. The article supports the discussion of the CIO at the executive level, and the need to involve business-unit leaders and concentrate on the big picture].

Monnoyer, E., & Willmott, P. (2005). What IT leaders do. *McKinsey on IT*. Retrieved April 13, 2008, from [http://www.mckinseyquarterly.com/Information\\_Technology/Management/What\\_IT\\_leaders\\_do\\_1652](http://www.mckinseyquarterly.com/Information_Technology/Management/What_IT_leaders_do_1652)

ABSTRACT: Companies can make smarter choices about IT when a member of the senior-management team defines technology's role within the company and manages IT in cooperation with business leaders. Too many companies rely on IT governance structures and processes to do the work that a single IT leader could do more effectively.

Leadership trumps governance because leaders drive results, motivate and inspire employees, and keep organizations focused—something committees and policies are ill equipped to do on their own. Top IT leaders foster trust with business colleagues and know how to work with one another. [Abstract from [www.mckinseyquarterly.com](http://www.mckinseyquarterly.com)]

[Credibility: Authors are McKinsey consultants who publish research in The McKinsey Quarterly, the business journal of McKinsey & Company that specializes in new ways of thinking about management to help business people run organizations more productively, more competitively, and more creatively. The article supports the discussion of the role of CIO and leadership].

Preston, D. S., Karahanna, E., & Rowe, F. (2006, May). Development of shared understanding between the Chief Information Officer and top management team in U.S. and French Organizations: a cross-cultural comparison. *Engineering Management, IEEE Transactions*, 53(2), 191-206. Retrieved April 29, 2008, from INSPEC database.

**ABSTRACT:** The gap in understanding between the Chief Information Officer (CIO) and the top management team (TMT) has often been cited as a cause of a troubled CIO/TMT relationship. Recent research has proposed the development of a shared understanding about the role of information systems (IS) in the organization as a key endeavor in bridging the "gap in understanding" between CIOs and TMT members. The authors propose a variety of knowledge exchange mechanisms, as well as relational similarity as key mechanisms for the development of this shared understanding. This study examines the cross-cultural efficacy of such mechanisms. Specifically, the study compares the development of this shared understanding between CIOs and the TMT in U.S. and French organizations. The research model is empirically tested using structural equation modeling via a field survey with two data samples: 1) 163 U.S. CIOs and 2) 44 French CIOs. The results show both similarities and differences in these mechanisms. Specifically, in both samples, CIO educational mechanisms impact the development of a shared understanding. However, while in the French sample social systems of knowing are key mechanisms, in the U.S. sample structural systems of knowing and relational similarity are key mechanisms of achieving a shared understanding between the CIO and TMT.

[Credibility: The authors are professors of management information systems, with current research interests in the role of the CIO, IS strategic alignment, IS leadership, and the use and effect of IS on organizations. All have published articles in multiple academic and peer-reviewed journals. The article supports the discussion of the CIO leadership responsibility (and other responsibilities) of communication with executive peers in the top management team and the limited understanding of business and strategic issues, as well as the CEO and other top management team members having limited understanding of IS capabilities].

Remenyi, D., Grant, A., & Pather, S. (2005). The chameleon: a metaphor for the Chief Information Officer. *Journal of General Management*, 30(3), 1-11. Retrieved April 29, 2008, from INSPEC database.

**ABSTRACT:** The role of the CIO has been around for a little more than 20 years. In that time it has evolved significantly. Much has been written about the specific challenges faced by incumbents, describing the characteristics needed to be a business-focused executive leading a technology-intensive function.

One aspect that has not been given enough consideration is that, because of the specific nature of role and use of Information and Communication Technology (ICT) in organizations and the different strategic and tactical issues faced by a CIO, the most needed characteristics may vary according to time and circumstance. Eight specific challenges that make the role difficult are identified and different perspectives on the competencies needed are reviewed.

This paper, through literature review and discussion, examines the specific challenges faced by ICT leaders and suggests that a range of personal characteristics are needed for long term success and that these can be compared to key features of the humble chameleon: 1. The ability to change 2. The ability to see in multiple directions 3. The ability to strike fast when required, and 4. The ability to hang on when the going gets tough!

[Credibility: Authors are professors in Information Systems Management, teaching in the areas of IT strategy and knowledge management. Dr. Remenyi has researched and been published widely in the area of information systems management. The article supports the discussion of what is needed to be a successful CIO and the diverse leadership skills required].

The Coming CIO Shortage. (2007, March). *CIO Insight*, 79, 46-53. Retrieved April 7, 2008, from Computer Source database.

ABSTRACT: The article discusses the report from the Society for Information Management in the U.S. regarding the shortage of qualified Chief Information officer (CIO) for the future years. According to the report titled "Grooming the 2010 CIO," the growing demand for CIO is not being counterbalanced by an increasing supply of talented and well-prepared executives. Report authors Ritu Agarwal from University of Maryland and Cynthia Beath of University of Texas interviewed information technology and human resources executives from companies known for leadership development. Authors found that CIO role is changing with an increasing focus on business knowledge and skills, the ability to manage relationships and overall leadership capability.

[Credibility: This article is by the Editors of *CIO Insight*, the business journal for today's senior IT decision-makers to provide the IT elite with articles about the cutting-edge strategies, management techniques and technology perspectives they need to succeed. The article is excerpted from "Grooming the 2010 CIO" by Agarwal and Beath for the Society for Information Management Advance Practices Council in 2007. The article supports the discussion of the need of CIO leadership capability – increasing focus]

## Review of the Literature

The purpose of this literature review is to identify the job requirements and responsibilities of the corporate CIO, specifically as related to the executive leadership role, from 1998 to 2007. This inquiry is designed to address an apparent lack of understanding of the expected leadership actions originally envisioned in the CIO position (Gottschalk, 2007). This study provides CIOs and members of the top management team knowledge of the current job requirements and responsibilities of the executive level Chief Information Officer position and analysis of what current job requirements and responsibilities can be categorized into Kotter's (1998) three leadership actions.

The Review of the Literature is designed in two parts. The first part provides a summary of the process utilized to derive the data set presented in Appendix A, concerning job requirements and responsibilities of the CIO, along with a descriptive overview of the information contained in the data set. The second part provides an analysis of the data set presented in Appendix A, from the viewpoint of Kotter's three categories of leadership. Data is recorded in three tables (see Appendices B, C and D), each described briefly below.

*Appendix B: Setting a direction.* The table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of setting a direction as defined by Kotter (1998). Selected literature pertains to the need to create a vision to produce change and competitive advantage, and the need to create and articulate feasible strategies to produce change and competitive advantage (Kotter, 1998, pp. 42-43).

*Appendix C: Aligning people.* The table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of aligning people as defined by Kotter (1998). This part includes a summary of literature that relates to CIOs needing to create networks of people and relationships at all levels of the organization to accomplish an agenda through the communication of the new vision and strategies (Kotter, 1998).

*Appendix D: Motivating and inspiring people.* The table is designed to analyze and describe the CIO job requirements and responsibilities that relate to the leadership action of motivating and inspiring people as defined by Kotter (1998). This part includes a summary of literature that relates to CIOs needing to motivate and inspire people at all levels of the organization to keep the organization energized and moving in the right direction (Kotter, 1998).

### ***Part 1: Job Requirements and Responsibilities of the CIO***

This part of the review first discusses the process used to identify the job requirements and responsibilities of the Chief Information Officer (CIO). Nine pieces of literature from 2000 to 2007 were scanned for all instances of: (a) what a CIO does, (b) what is suggested that the CIO should do, or (c) what is required that the CIO should do. Gottschalk's (2007) definition of a CIO describes the position as the individual who (a) is the highest ranking information technology executive, (b) reports no more than two levels from the Chief Executive Officer, (c) has areas of responsibilities that include information systems and computer operations, and (d) is responsible for strategic IS/IT planning. All instances of what a CIO does or should do is listed and organized by literature in the Appendix A data set. The data extracted from the selected literature is captured in Appendix A, representing the current job requirements and responsibilities of CIOs.

While the literature suggests CIOs hold many titles such as Information Systems Executive, Chief Information Systems Strategist, IT Director, Vice President of Information Systems, Director of Information Resources, Director of Information Services, Director of Management, and Information Systems (Gottschalk, 2007), the larger description of the function of the position remains very much the same as it was in the 1980s. Gottschalk (2007) explains that the original intention of the CIO position from the 1980s was to “align the worlds of business and technology” (p. 39). The position was to be an executive responsible and accountable for corporate information processing needs and to close the gap between organizational and information technologies through the aligning of strategies (Gottschalk, 2007).

However, data in Appendix A also reveals that more highly articulated requirements and responsibilities have been added to the job, since the original description of the CIO position was presented in the 1980s, particularly in the area of leadership. The additional job requirements and responsibilities help provide clarity to the intended leadership role organizations expect the CIOs to fill.

## ***Part 2: The Role of Leadership in Job Requirements and Responsibilities of the CIO***

To compete effectively and survive in a constantly changing business world, CEOs and the top executive team demand more leadership from the CIO position (Kotter, 1998). This part of the review presents the analysis of the CIO’s job requirements and responsibilities, from Appendix A, according to Kotter’s three executive leadership actions. Data are presented in Appendices B,

C and D. The information is summarized to present current knowledge of the role of leadership in job requirements and responsibilities of the CIO. Essentially, the CIO must lead the business and deliver competitive or strategic advantage for the organization with information systems (Remenyi, Grant, and Pather, 2005). Forging a clear agreement among peers, driving senior-level conversations, and articulating a vision for information technology, ensures that the CIO's goals are clearly understood throughout the organization (Monnoyer & Willmott, 2005).

***Setting a Direction (see Appendix B).*** For a CIO to lead an organization to change, or through change, setting the direction of that change is fundamental to CIO leadership (Kotter, 1998). The direction-setting aspect of leadership, as Kotter (1998) explains, creates vision and the strategies to accomplish that vision.

*Creating a vision.* To create a vision, direction-setting leaders gather data looking for patterns, relationships, and linkages to explain things (Kotter, 1998). To properly analyze data gathered, a CIO must possess a combination of interpersonal, technical, and business skills (Kakabadse & Korac-Kakabadse, 2000). For a CIO to create a vision, he/she must first assess the IT and information needs of the organization; work with peers to identify what is needed by the business (Dearstyne, 2006); be up to speed on issues confronting the business (Mark & Monnoyer, 2004); and understand how to apply IT at a strategic level (Gottschalk, 2007). All of these skills are essential to the CIO's responsibility of developing IT strategies that are aligned with the firm's business strategies (Luftman et al., 2004). To create a vision, the CIO must also understand the strengths and weaknesses of the technologies and the corporate-wide impact of those technologies (Luftman et al., 2004), and understand the organization's strategies, priorities, operating environment, problems and opportunities (Dearstyne, 2006).

*Creating a strategy.* To create a strategy, direction-setting leaders articulate a feasible way of achieving the vision and translate the vision into a realistic competitive strategy (Kotter, 1998). To achieve a shared vision with top executives in the organization, a CIO must build support with peers through a shared understanding and knowledge around issues of IT alignment and strategic information systems initiatives (Enns, Huff, & Higgins, 2003). As an agent of operational efficiency and change (Dearstyne, 2006), a CIO must communicate and convince peers, in non-technical language, of the potential strategic impact of information systems (Enns et al., 2003).

***Aligning People (see Appendix C).*** A CIO leading the organization in a new direction must create coalitions across the organization through communication, so that people understand and are committed to the vision (Kotter, 1998). Creating networks of people and relationships that can accomplish an agenda is achieved through aligning people and strategies: Kotter's (1998) second leadership activity.

*Communication.* Johnson and Lederer (2005) define communication as a process in which information is shared and created to reach a mutual understanding. A mutual understanding between the CEO and CIO is critical to the development of a shared vision of the role and contribution of IT to the organization and the success of an organization's alignment of IT with business strategy (Johnson & Lederer, 2005). Johnson and Lederer (2007) reinforced the impact of communication between the CEO and CIO by warning that the failure to realize the full potential of IT increases when communication between the two executives fail to share an understanding of the current role of IT, as well as a shared vision of the future role of IT. A CIO must also communicate with the other business executives to build a mutual understanding and

knowledge around issues of IT alignment with the business (Enns et al., 2003), to enable an understanding of business needs, and to communicate the value of IT (Luftman et al., 2004). To prevent a failure of mutual understanding between the CIO, CEO, and executive peers, the CIO needs to drive senior-level conversations and forge a clear agreement about IT investment choices and the role of IT in the organization (Monnoyer & Willmott, 2005).

A CIO's frequent communication with all areas of the business, as well as regular one-to-one communication with the CEO (Luftman et al., 2004), also benefits the social dimension of alignment within the organization. Johnson and Lederer (2005) explain the social dimension of alignment as a state where business and IT executives mutually understand and are committed to an organization's IT mission, objectives, and plans. A study by Johnson and Lederer (2007) concluded that the frequency of communication between the CEO and CIO has the potential to affect the extent to which there is a shared vision of the future role of IT. Additional benefits of frequent communication include:

- A common understanding of the organization's business functions and how IT can be used to support those functions;
- A positive effect on an organization's competitive use of IT;
- A positive influence to the alignment of IT and business strategy;
- Common definitions of situations; and
- A consensus between executives (Johnson & Lederer, 2005).

Effective application of IT depends on communication between the CIO and executive peers (Johnson & Lederer, 2005). The quality of that communication helps all areas within the organization develop a shared vision of the contribution of IT and ensures a more effective

application of system resources that address the objectives of top management (Johnson & Lederer, 2005). Communicating the importance of IT and information systems to all stakeholders of the organization requires the CIO to be a technology interpreter, both for the business (Booth & Philip, 2005) and within the business, so that non-experts understand the complex issues and problems (Dearstyne, 2006). The CIO must perform as both a lead role in educating business peers about how IT can raise the competitive agility of the firm (Gottschalk, 2007), and as a technology executive who acts as a counselor for the other business executives (Luftman et al., 2004).

At the executive level in an organization, the CIO is required to act diplomatically, possessing political and interpersonal skills (Kakabadse & Korac-Kakabadse, 2000) to establish partnerships, foster collaboration, and conduct political negotiation (Dearstyne, 2006). Being an active, participating, and contributing member of the internal top management board is one venue where CIOs must possess executive level communication skills to effectively improve the alignment between IT and the business functions (Luftman, et al., 2004). Booth and Philip (2005) also advise CIOs to play a formal role, or at the very least an informational role, in the top management team and immerse themselves in the development of strategic and operational objectives of the organization. Gottschalk (2002) stresses that CIOs must enhance their own position by building a power base and the right political connections to establish a web of intra- and inter-organizational contacts. To gain acceptance and achieve a shared vision with other executives, the CIO needs to convince executives and those of the top management team of the potential strategic impact of information systems using coalition and consultation tactics (Enns et al., 2003).

Mark and Monnoyer (2004) mention that while CIOs often spend considerable time with business-unit leaders and other executives in the company, unfortunately that time is not being well spent, and the CIOs may not be up to speed on the issues confronting the business. Effective communication with executive peers requires the CIO to understand the business and use of the business language (Monnoyer & Willmott, 2005). The ability to communicate to top management, in the context of the business, enables the CIO to affect the thinking and behaviors of his/her peers (Enns et al., 2003). Engaging in the preferred language of other executives also provides the opportunity for CIOs to use the powers of influence to encourage the support of others and use the powers of rational persuasion to promote a positive view of IT, new uses for IT, and the need for IT (Enns et al., 2003). Remenyi, et al. (2005) reiterated the requirement of CIOs to also be skilled in exercising influence on others, and Gottschalk (2007) confirmed the need for the CIO to be a corporate influencer, to lead and manage the direction of the organization.

*Relationships.* CIO leadership surveys since 2002 have rated communication and relationship building as the most critical leadership skills required of a CIO; however, CIOs still struggle to deal successfully with people because they haven't mastered key relationship-building skills (Alter, 2006). Enns et al. (2003) advise that building relationships with others in the organization requires the CIO to possess integrity and interpersonal skills, both important relationship developing skills. Agarwal and Beath (2007) reported in their "Grooming the 2010 CIO" report that CIOs also need a strong set of relationship management capabilities to manage the increasingly larger network of relationships that define today's IT environment – internal staff, contractors, outsourcing partners, internal business partners, an external network of peers, and in some instances, an external network of clients ("The Coming CIO Shortage," 2007, p. 52).

Being skilled in the general business area of relationship management requires the CIO to have skills at reading situations and cultivating relationships (Luftmant et al., 2004). Communicating and creating relationships with peers allows for the development of effective working relationships and combinative capacity knowledge of who knows what within the organization (Bassellier et al., 2001). Having a positive relationship with members of the executive team (Kakabadse & Korac-Kakabadse, 2000) enables the CIO to be a respected business peer and business leader (Monnoyer & Willmott, 2005). Enns et al. (2003) encourage CIOs to establish an effective working relationship with peers in three ways:

- By approaching peers in a “personal informal” style;
- By making casual contact with them to discuss initiatives; and
- By building support before the formal proposal is discussed.

A CIO must have a relationship with the CEO and the high-level business executive team to align the IT and business strategies (Luftman et al., 2004). Gottschalk (2007) notes that building a relationship with the CEO and other stakeholders also benefits the organization by increasing their influence and enhancing the contribution of IS and IT. Additionally, strong relationships between the CIO and executives in an organization are important to the success of the CIO (Enns et al., 2003), the successful innovation and deployment of IT, and for IT to change the way an organization competes (Bassellier et al., 2001). Luftman et al. (2004) also advise CIOs to create partnerships with executive peers and serve as a mediator between IT and business functions, supporting relationships between various parts of the organization.

Outside the boundaries of the organization, the CIO must be a good ambassador for the business (Kakabadse & Korac-Kakabadse, 2000) by fostering relationships with external

activities, such as vendor contacts and computer society associations, forge alliances, and ensure alignment with critical owners of business relationships (Gottschalk, 2007).

*Aligning strategies.* The fact that CIOs, CEOs and members of the top management team often have a limited understanding of business and information systems strategic issues presents a major obstacle to the effective operation of those information systems (Preston, Karahanna, & Rowe, 2006). Knowledge exchange is critical between the CIO and executives to create a shared understanding of the organization's business strategy and information systems strategy (Enns et al., 2003; Preston et al., 2006). To align an organization's IT and business strategies, Armstrong and Sambamurthy (1999) describe two forms of knowledge required of CIOs for IT assimilation: strategic IT-related knowledge and business knowledge. For a CIO to have strategic IT-related knowledge, he/she must have knowledge of the potential and limitations of the organization's IT infrastructure, strategic IT actions of the organization's competitors, and knowledge of the current and potential business impacts of emerging information technologies (Armstrong & Sambamurthy, 1999). Business knowledge encompasses knowledge of business strategies, organizational work processes, the organization's products and services, industry recipes for success, and competitor strengths, weaknesses, and potential actions (Armstrong & Sambamurthy, 1999).

Thomas (2000) also adds that an effective CIO must be knowledgeable about all the major functions of the business and have the ability to assess how all the components of the business fit together ("Are CIOs Obsolete?", 2000, pp. 61-62). The higher the strategic IT-related knowledge and business knowledge of the CIO, the better a CIO can advise, communicate, and align strategies, resulting in greater interaction with and acceptance by members of the top management team (Armstrong & Sambamurthy, 1999). Karahanna and

Watson (2006) reported similar guidance for CIOs in their study of information systems leadership, stressing that CIOs require social, political, business, and information systems intelligence to build trust between the CIO and top management and succeed in the complexity of the business environment.

Results of the study done by Johnson and Lederer (2007) suggested that CEOs are more optimistic than CIOs about the current strategic role of IT in the organization and its potential to provide competitive advantage. Understanding the forces that shape the business environment is essential to the CIO in order to assume the pivotal responsibility of aligning the business and technology strategies for competitive advantage and business survival (Gottschalk, 2007; Luftman et al., 2004). The responsibility of alignment tasks the CIO to transform the business through the creation of an IT strategy that creates integrated environments leveraging human skills, business processes, organizational structures, and technologies (Luftman et al., 2004). Booth and Philip (2005) warn that the creation of the IT/IS strategy is not a one-time event but an ongoing process that needs to be reviewed regularly, and suggests that the business and IT/IS strategy be developed in parallel, or combined into a single document.

***Motivating and Inspiring People (see Appendix D).*** After changing an organization's course with a new vision and aligning the organization to that new vision, keeping the organization moving towards the achievement of that new vision requires the CIO to generate the behavior to cope with the inevitable barriers to change (Kotter, 1998). The motivating and inspiring leadership activity, as Kotter (1998) explains, means motivating the organization in ways that ensure people will have the energy to overcome the obstacles to change, and to ultimately achieve the desired vision.

Achieving a vision requires an occasional burst of energy to energize the organization (Kotter, 1998). To elicit a powerful response from those within the organization, the CIO needs to satisfy basic human needs for achievement, a sense of belonging, recognition, self-esteem, a feeling of control over one's life, and the ability to live up to one's ideals (Kotter, 1998). CIOs must exude the leadership role of being a motivating and inspiring "Coach" in the organization to satisfy those basic human needs (Remenyi et al., 2005). Kotter (1998) offers three motivation techniques to be applied by executives in a leadership position:

1. Always articulate the organization's vision in a manner that stresses the values of the audience they are addressing;
2. Regularly involve people in deciding how to achieve the organization's vision;
3. Support employee efforts to realize the vision by providing coaching, feedback, and role modeling.

*CIO as the Coach.* Providing coaching and feedback that supports the efforts of employees and executive peers helps those within the organization grow professionally and enhances self-esteem (Kotter, 1998). A CIO needs to have the strength and character that can persuade the naysayers to stick to their commitments and make sure that systems are implemented successfully for the eventual benefits to be realized (Remenyi, et al., 2005). In addition, the CIO should often relate external IT success stories to his/her executive peers to reassure the value of the organization's new direction and illustrate how IT adds to that new direction (Luftman et al., 2004). A CIO should also show and report how the organization's hard efforts and investments in information resources are being deployed to meet company objectives (Dearstyne, 2006).

A CIO, like a coach, needs to have the ability to build a team, and then manage, empower, and inspire the people on that team (Dearstyne, 2006). Similarly, the CIO also needs to embrace the human resource role to attract, develop, and retain high quality IT professionals to build an effective IT organization (Gottschalk, 2002; Kakabadse & Korac-Kakabadse, 2000; Luftman et al., 2004). As a member on the top management team and mediator between IT and business functions, the CIO must be an open communicator with a business perspective, capable of leading and motivating senior leadership (Gottschalk, 2007; Luftman et al., 2004).

Current CIOs, as described by Rockart (2000), should be technology executives who provide direction and counsel to the senior leadership in an organization (“Are CIOs Obsolete?”, 2000, p. 57). The future CIO, Agarwal and Beath (2007) predict, must be a leader who is able to inspire, motivate, be confident in his/her capabilities and vision, and possess the energy that is essential to drive change (“The Coming CIO Shortage,” 2007, p. 52).

## Conclusions

This study identified the current job requirements and responsibilities of the corporate Chief Information Officer (CIO) in an executive leadership position. The CIO position was originally designed to align the worlds of business and technology to achieve competitive advantage (Gottschalk, 2007). However, the responsibility of closing the gap between business and IT strategies, long cited as a primary business concern and essential to an organization's survival, has eluded CIOs. Too few Chief Executive Officers (CEOs) recognize CIOs as business leaders (Gottschalk, 2007).

Surveys have indicated that the ability to lead is the most important attribute that CIOs need to succeed (Alter, 2006; Luftman et al., 2004). However, there is an apparent gap in understanding of the leadership actions required of the CIO (Gottschalk, 2007). In fact, a report by Agarwal and Beath (2007) concluded that the overall leadership capability is lacking as part of the CIO skill set ("The Coming CIO Shortage", 2007, p. 46).

The purpose of this study has been to address the gap with focus on two areas of literature. First, nine pieces of literature were examined to better understand the current job requirements and responsibilities of the CIO (see raw data in Appendix A). Then, using Kotter's (1998) three-part definition of leadership at the corporate executive level, the raw data in Appendix A was categorized into three refined sets, that corresponded with each of Kotter's leadership actions: (1) Setting a Direction (see Appendix B), (2) Aligning People (see Appendix C), and (3) Motivating and Inspiring People (see Appendix D).

The Review of Literature presented a synthesis of the current CIO job requirements and responsibilities and a discussion of the way in which these align with Kotter's (1998) three

leadership actions. The goal was to reveal what leadership actions CIOs must understand and implement to succeed at the executive level. A summary is presented below.

### ***Setting a Direction***

Kotter (1998) provided the base-line definition of this action category with the statement that the direction-setting leader creates vision and the strategies to accomplish that vision (Kotter, 1998). A direction-setting CIO needs to possess a combination of interpersonal, technical, and business skills (Kakabadse & Korac-Kakabadse, 2000) that will help him/her analyze gathered data and decide what needs to be done in the organization (Kotter, 1998). For a CIO to create a vision, CEOs and executive peers should expect a CIO to work with them to identify what is needed by the business (Dearstyne, 2006). To create an effective and welcomed strategy, a CIO must achieve a shared vision with top executives and build support by communicating the potential strategic impact of information systems in a non-technical language (Enns et al., 2003). Luftman et al., (2004) took this notion one more step and state that the CIO must develop IT strategies that are aligned with the organization's business strategies.

To be a leader who creates a shared understanding of the organization's business and information systems strategies, the CIO must exchange strategic IT-related knowledge and business knowledge with executive peers to align the business and IT strategies and improve the effectiveness of information systems (Armstrong & Sambamurthy, 1999; Enns et al., 2003; Preston et al., 2006). A CIO who raises his/her strategic IT-related knowledge and business knowledge can better advise and communicate with leaders of the top management team (Armstrong & Sambamurthy, 1999) and be more optimistic of the strategic role of IT and its potential to provide competitive advantage (Johnson & Lederer, 2007).

### ***Aligning People***

According to Kotter (1998), a leader in an executive position should be expected to communicate direction and align people and strategies by creating networks of people and relationships that are committed to achieving the vision. A CIO who communicates effectively will ensure a mutual understanding with the CEO through executive level alignment, to establish a shared vision of the role and contribution of IT to the organization (Johnson & Lederer, 2005).

The CIO's quality of communication with members of the top management team will directly affect the application of IT throughout the organization (Johnson & Lederer, 2005). Stakeholders should expect the CIO to be a technology interpreter and communicate the importance of IT through the education of how IT can raise the competitive advantage of the organization (Booth & Philip, 2005; Gottschalk, 2007). Communicating at the executive level in an organization also requires the CIO to act diplomatically and possess the political and interpersonal skills (Kakabadse & Korac-Kakabadse, 2000) to establish partnerships, foster collaboration, and conduct political negotiation with peers (Dearstyne, 2006).

Alter (2006) noted that communication and relationship building are the most sought after leadership skills in a CIO. Enns et al. (2003) believed that the CIO should strive to possess integrity and interpersonal skills to help with relationship development. Luftman et al. (2004) added that the CIO should possess general business skills in reading situations and cultivating relationships to help with relationship management. Having positive and effective working relationships (Bassellier et al., 2001; Kakabadse & Korac-Kakabadse, 2000) with executive peers and the CEO is important to the success of the CIO (Enns et al., 2003) and to the success of aligning the business and IT strategies of the organization (Luftman et al., 2004).

### ***Motivating and Inspiring People***

Ultimately achieving a desired vision requires a leader, at all levels in an organization, to motivate and inspire people to overcome the inevitable obstacles of change (Kotter, 1998). A CIO should operate at times like a “Coach” in the organization, providing bursts of energy through coaching and feedback that supports the efforts of employees and executive peers (Kotter, 1998; Remenyi et al., 2005). Business executives and stakeholders should expect the CIO to build a mutual understanding with them around IT alignment within their respective areas of the business (Enns et al., 2003) by driving frequent conversations and forging a clear agreement about the role of IT and IT investment choices (Monnoyer & Willmott, 2005). CEOs and members of the top management team should also expect the CIO to be a team builder and open communicator with a business perspective, capable of leading and motivating peers to stick to their commitments through the reassurance of the value of the organization’s new direction (Gottschalk, 2007; Luftman et al., 2004). A CIO who effectively communicates diplomatically and speaks the same business language as his/her peers will influence and persuade the support of others in the need for IT (Enns et al., 2003) and lead the new direction of the organization (Gottschalk, 2007).



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## Appendix A – CIO Job Requirements and Responsibilities

| Reference  | Year        | CIO Job Requirements & Responsibilities   |
|--|-------------|---|
| <p>Title: Information Program Leaders in Transition</p> <p>Author: Dearstyne, B.</p> | <p>2006</p> | <ul style="list-style-type: none"> <li>• Assess IT and information needs</li> <li>• Deploy information strategically in support of organizational priorities</li> <li>• Oversee the organization and deployment of information to meet organizational priorities</li> <li>• Create and implement new ideas</li> <li>• Assume responsibility for business process change</li> <li>• Transform business activities</li> <li>• Show impact and report on how they are deploying informational resources to meet company objectives</li> <li>• Serve as an agent for operational efficiency and change on the board of directors, or in close relationships with the board</li> <li>• Be a leader, manager, and entrepreneur</li> <li>• Equally balanced skills between technology, business, fiscal management, organization and culture, leadership and management</li> <li>• Ability to create a vision</li> <li>• Leadership</li> <li>• Interpret and explain complex issues and problems so non-experts understand</li> <li>• Ability to shape expectations and keep reshaping them as the organization moves ahead</li> <li>• Capacity to make IT and information policy dovetail with organizational priorities</li> <li>• Ability to build team and manage, empower, and inspire people</li> <li>• Build strong staff</li> <li>• Plan</li> <li>• Administer new initiatives</li> <li>• Monitor the technology</li> <li>• Change the institution's understanding of IT and information management</li> <li>• Be both master technologists and virtuoso strategic information managers</li> <li>• Leadership: work with business colleagues to identify what is need by the enterprise and set expectations, lead their staff to provide cost-effective services</li> <li>• Understand the organization's strategies, priorities, operating environment, problems, and opportunities –</li> </ul> |

|   |             |   |
|---|-------------|---|
|   |             | <p>particularly those that can be exploited through adaptive use of IT and information deployment</p> <ul style="list-style-type: none"> <li>• Partnership, collaboration, and political negotiation skills to work with other officers, outside vendors, and superiors</li> <li>• Develop a vision and set (and revise) expectations</li> <li>• Be an educator and publicist</li> <li>• Have clear priorities</li> </ul>   |
|   |             |   |
| <p>Title: CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems</p> <p>Authors: Enns, Huff, and Higgins</p> | <p>2003</p> | <ul style="list-style-type: none"> <li>• Critical strategic role: provide thought leadership to other top executives, making them aware of the potential information systems to support and enhance the strategy of the firm</li> <li>• Apply powers of influence to encourage other functional heads to become partners with the CIO and embrace ownership of initiatives</li> <li>• Apply <i>lateral</i> influence, in order to convince their peers in other functional areas to commit to SIS initiatives</li> <li>• Rely primarily on influence to affect the thinking and behavior of their peers</li> <li>• Good working relationships with peers</li> <li>• Integrity and interpersonal skills to develop important relationships</li> <li>• Establish effective working relationships by approaching peers in a “personal informal” style, to make casual contact with peers to discuss these initiatives and build support before a formal proposal is discussed</li> <li>• Communicate with other executives to build shared understanding and knowledge around issues of IT alignment with the business for IS project success</li> <li>• Use coalition and consultation tactics to convince executives of the potential strategic impact of IS, to gain acceptance of other executives, to achieve a shared vision of the IS department</li> <li>• Use rational persuasion to identify new uses of IT, create a positive view of IT, and convince top managers of the need for greater central IT coordination, and to effectively communicate in top management context</li> <li>• Use bargaining with IS resources and co-opting opposition tactics to overcome resistance to IS implementation</li> <li>• Use consultative behavior to communicate key IT issues to others</li> <li>• “Do their homework” when proposing new, SIS proposals so they can provide compelling, rationally argued case for how these proposals can benefit the organization</li> <li>• Good working relationships with peers are a necessary condition for the success of IT executives’</li> </ul> |

|  |             |  |
|--|-------------|--|
|  |             | <ul style="list-style-type: none"> <li>• Communicate with other executives in non-technical language, and characterize SIS projects as initiatives that assist the business, not as IT projects</li> <li>• Engage in the preferred language of other executives to demonstrate sensitivity to (peers) concerns</li> </ul>  |
|  |             |  |
| <p>Title: The chameleon: a metaphor for the Chief Information Officer</p> <p>Authors: Remenyi, Grant, &amp; Pather</p> | <p>2005</p> | <ul style="list-style-type: none"> <li>• Overall responsible for the operation of all the computers and associated information systems in the organization</li> <li>• As a ‘Chief’ – provide corporate leadership for a key business function and on the top management team</li> <li>• Deliver competitive or strategic advantage for the organization with Information Systems</li> <li>• Responsible for activities that affect the organization’s strategic success</li> <li>• Supervise the biggest single capital expense, the Information and Communications Technology</li> <li>• Oversee the development and implementation of new systems and associated processes, and the operation and support of the implemented systems</li> <li>• Need management processes and client/customer relationship skill sets</li> <li>• Responsible for both manufacturing operations and research and development</li> <li>• Must contract or recruit, then develop and supervise, an often large and diverse workforce</li> <li>• Responsible for the actual delivery of primary functions in the organization’s value chain</li> <li>• Be a change master and strategy maker</li> <li>• Need technical competence</li> <li>• Need to be able to manage decisions concerning technology selection, development, implementation and maintenance</li> <li>• Need knowledge of Information and Communications Technology trends</li> <li>• Need a vision of where IT is going and how the organization might use it effectively</li> <li>• Needs to know about the sourcing of IT capabilities and about the cost implications related to different sourcing options</li> <li>• Need corporate strategy competence</li> <li>• Need to have a good grasp of the core business of the organization – including key markets and processes</li> <li>• Need appropriate qualification mix of both Information and Communications Technology and background in core business disciplines, and the right leadership abilities</li> <li>• Build and maintain the technical platform and service</li> </ul> |

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|                        |      | <p>delivery</p> <ul style="list-style-type: none"> <li>• Ensure and demonstrate excellent value and performance</li> <li>• Develop IS technical, service, and management skills</li> <li>• Source intelligently from the external market</li> <li>• Create an environment of opportunity</li> <li>• Champion the impact of ‘e’</li> <li>• Lead the business</li> <li>• Must exude the leadership roles of: Informational, Decisional, Interpersonal, Chief Architect, Change Leader, Product Developer, Technology Provocateur, Coach and Chief Operating Strategist</li> <li>• Must have ability to change</li> <li>• Must have ability to see in multiple directions</li> <li>• Must have ability to strike fast when required</li> <li>• Must have ability to hang on when the going gets rough</li> <li>• Be both technically competent and a business strategist and a business leader</li> <li>• Be contributor to major change within the wider organization (a change agent)</li> <li>• Manage continuous and rapid change within their own area of responsibility (a target of change)</li> <li>• Skilled in exercising influence on others and overcoming behavioral barriers</li> <li>• Strategy alignment for business advantage</li> <li>• Determine technology strategy for business advantage</li> <li>• Leverage technology for business advantage</li> <li>• Create a more adaptive and flexible organization</li> <li>• Ensure IT security</li> <li>• Ensure business continuity</li> <li>• Reduce cost of doing business</li> <li>• Provide the stability and incremental evolution of major infrastructure and key operational systems, and respond very quickly when the need arises</li> <li>• Respond in good time to the corporate need while ensuring high quality systems</li> <li>• Needs to have the strength and character that can persuade the naysayers to stick to the commitments and make sure that systems are implemented successfully and the benefits realized</li> <li>• Needs to be highly skilled, self confident and quite robust when it comes to taking criticism</li> <li>• Change rapidly, be tolerant of ambiguity, contradictions and paradoxes, strike quickly when required and hang in when the going gets tough</li> </ul> |
| Title: Next-generation | 2004 | <ul style="list-style-type: none"> <li>• Lead their companies’ efforts to get real business benefits</li> </ul>   |

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| <p>CIOs</p> <p>Authors: Mark &amp; Monnoyer</p> |  | <p>from IT investments</p> <ul style="list-style-type: none"> <li>• Improve corporate performance</li> <li>• Facilitate more business-unit involvement and accountability in technology-investment decisions</li> <li>• Increased emphasis on using IT to change the company rather than just run it</li> <li>• Get business value from IT</li> <li>• Deliver IT resources and services to support business functions</li> <li>• Help the business innovate through its use of technology</li> <li>• Delegate or shed some operational duties</li> <li>• Spend more time helping business leaders identify and use technologies that matter</li> <li>• Persuade business leaders to be better owners of the technology they leverage</li> <li>• Keep the engine running cost-efficiently and reliably</li> <li>• Spend considerable time with business-unit leaders and other executives in the company and talk to customers, suppliers, and business partners</li> <li>• Align IT and business strategies</li> <li>• Be up to speed on issues confronting the businesses and think through the implications of system trade-offs, on a business-level, for planned implementations or proposed IT investments</li> <li>• Proactively bring new ideas about how technology can help business leaders compete more effectively</li> <li>• Reduce total IT spending</li> <li>• Engage in battle over ownership of and accountability of IT</li> <li>• Have a clear financial understanding of IT costs and potential investments</li> <li>• Seek innovations that will help change the business</li> <li>• Drive changes in accountability</li> <li>• Lead broad change initiatives</li> <li>• Have the vision to cut through the complex tangles of business and technology to see – as an innovator would – patterns and meaning and to distinguish opportunities from fads</li> <li>• Ensure that IT is efficient and then make the transition to effectiveness</li> <li>• Describe the performance of the infrastructure in business terms</li> <li>• Spend more time creating real business value from IT</li> <li>• Reengineer relationship with business leaders</li> <li>• Provide insights about how technology can help the business develop new capabilities</li> </ul> |
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|  |             | <ul style="list-style-type: none"> <li>• Become adept at business intelligence</li> <li>• Provide systems and tools to support managerial decision making and in gaining the scale advantages of deploying common systems and processes across business units</li> <li>• Be involved in drawing up business-unit strategies</li> <li>• Assess and monitor IT benefits</li> </ul>   |
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| <p>Title: Future role of IS/IT professionals</p> <p>Authors: Kakabadse &amp; Korac-Kakabadse</p> | <p>2000</p> | <ul style="list-style-type: none"> <li>• Maintain a competitive edge through value adding activities and cost-efficient operations (p. 100)</li> <li>• Focus on business rather than technical process</li> <li>• Be multi-faceted, multi-skilled</li> <li>• Possess a combination of interpersonal, technical, and business skills to analyze problems, integrate applications, and implement new business processes built around information technology</li> <li>• Recognize the opportunity to introduce new technology and information systems</li> <li>• Make a case for new or existing information systems</li> <li>• Analyze and recommend how a new or existing information system fits into changing organizational needs</li> <li>• Anticipate the implementation issues associated with new or current information systems</li> <li>• Required skills in diplomacy, political, interpersonal and business</li> <li>• Analyze operational processes, support processes, managerial information flows, and network processes</li> <li>• Enable change</li> <li>• Have a combination of IS/IT knowledge, management skills, leadership experience and high motivation</li> <li>• Train, develop, replace and recruit IS/IT staff</li> <li>• Have interpersonal and business skills</li> <li>• Have soft skills and business orientation</li> <li>• Have positive relationships with other members of the executive team and be a good ambassador for the business</li> <li>• Have business knowledge and aptitude</li> <li>• Have solid interpersonal skills</li> <li>• Have customer and service-driven attitudes</li> <li>• Must be capable of viewing the totality of the business of the organization beyond the confines of the IS/IT function</li> <li>• Must be able to think, feel and act as an executive of the enterprise</li> <li>• Position the IS/IT function to be able to service the organization to achieve its strategic and missionary aims</li> <li>• Form a view as to the current and future capabilities of the IS department in keeping with the strategic development of the organization, the level of investment necessary for</li> </ul> |

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|  |             | <p>both systems development and R&amp;D, the revenue potential of the distribution channels and/or channels to market, the expected financial performance, form a view as to how the IS function should be developed in terms of its identity, shape and size in order to support the business</p> <ul style="list-style-type: none"> <li>• Design policy on how and where technology makes the best contribution to the development of the organization</li> <li>• Integrate new technology with new ways of working in specific areas of the organization</li> <li>• Display maturity and wisdom</li> <li>• Recognize dynamics in the organization and identify the best ways forward where little guidance exists</li> <li>• Promote teamwork</li> <li>• Resolve conflicting agendas</li> <li>• Enhance visioning capability</li> <li>• Lead through change</li> <li>• Effectively influence individuals and teams</li> <li>• Effectively address internal politics</li> <li>• Balance transactional management with transformational leadership</li> <li>• Recognize the opportunity to introduce new technology and information systems</li> <li>• Make a case for new or existing information systems</li> <li>• Analyze and recommend how a new or existing information system fits into changing organizational needs</li> <li>• Anticipate the implantation issues associated with newly installed information systems</li> <li>• Have a solid business background</li> </ul> |
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| <p>Title: What IT leaders do</p> <p>Authors: Monnoyer &amp; Willmott</p> | <p>2005</p> | <ul style="list-style-type: none"> <li>• Forge a clear agreement among peers about IT investment choices and drive senior-level conversations needed to make tough trade-offs</li> <li>• Demonstrate an understanding of the company in business terms, by examining IT options as business investments</li> <li>• Manage the IT function as a business – using business metrics to quantify results</li> <li>• Articulate a vision for IT’s role in the company and ensure that this vision is clearly understood throughout the organization</li> <li>• Inspire other executives to pursue new IT-enabled business opportunities and keep everyone focused on the right issues and on making the most effective decisions</li> <li>• Understand the business and use business language</li> <li>• Understand the constraints of the business and work within them</li> <li>• Plan, sequence, and finance necessary investments within</li> </ul>   |

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|  |             | <p>the constraints of the bottom line of each business unit</p> <ul style="list-style-type: none"> <li>• Avoid competing agendas</li> <li>• Have coherent IT strategies</li> <li>• Seek and take advantage of opportunities for the business to leverage IT</li> <li>• Promote communication and alignment between IT and business managers</li> <li>• Be a business person who understands IT</li> <li>• Create change</li> <li>• Be a peer of business leaders, yet respected as “one of us” by the IT staff</li> <li>• Have clear frameworks for decision making and alignment</li> </ul>  |
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| <p>Title: Managing the Information Technology Resource: Leadership in the Information Age</p> <p>Authors: Luftman et al.</p> | <p>2004</p> | <ul style="list-style-type: none"> <li>• Provide and sustain competitive advantage</li> <li>• Be skilled in technology</li> <li>• Be skilled in general business (such as Financial, Human Resource, Relationship Management, Legal, Governance, Marketing, Negotiating, Leadership)</li> <li>• Be business savvy</li> <li>• Communicate with all areas of the business</li> <li>• Support relationships between various parts of an organization</li> <li>• Support ability to integrate the information that exists throughout the organization</li> <li>• Support the inter-relationships between various external entities (i.e., vendors, customers, suppliers) within the business</li> <li>• Deliver a competitive advantage with IT</li> <li>• Create or maintain dynamic stability supporting a business environment where changes in products or services can be made with no change in business processes</li> <li>• Educate business management on technology’s possibilities and limitations</li> <li>• Set IT priorities for projects, develop resources and skills, and integrate systems with corporate strategy</li> <li>• Keep business and IT aligned as business strategies and technology evolve</li> <li>• Use IT to help enable or drive business success</li> <li>• Know how to change the business areas of process, product, service, management, and environment</li> <li>• Apply IT in an appropriate and timely manner, in harmony with business goals, strategies and needs to achieve alignment</li> <li>• Transform the business, and drive business strategy through the alignment of IT and business</li> <li>• Bring the opportunity to share corporate information</li> </ul> |

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|  | <p>between departments</p> <ul style="list-style-type: none"> <li>• Create some level of synergy between departments</li> <li>• Provide strategic advantage</li> <li>• Develop IT strategies that are aligned with the firm's business strategies for sustainable competitive advantage</li> <li>• Be an architect of alignment linking business and IT</li> <li>• Create an IT strategy – create integrated environments that leverage human skills, business processes, organizational structures, and technologies to transform the competitive position of the business</li> <li>• Be an architect of alignment by considering the organization across functional and process boundaries (expanded to external partners and customers)</li> <li>• Be knowledgeable about how the new IT technologies can be integrated into the business as well as among the different technologies and architectures</li> <li>• Understand the strengths and weaknesses of the technologies in question and the corporate-wide implications</li> <li>• Leverage information technology through alignment</li> <li>• Understand the forces that shape the business environment to better align business strategy and IT strategy for competitive advantage and business survival</li> <li>• Quickly adapt to change or face extinction or assimilation by competitors</li> <li>• Participate in development and corporate strategies</li> <li>• Foster business-IT relationship and confidence</li> <li>• Demonstrate business value of IT</li> <li>• Maintain technology competency</li> <li>• Attract, retain, and develop talented people</li> <li>• Meet project commitments</li> <li>• Practice sound financial principles</li> <li>• Facilitate change</li> <li>• Build a governance framework</li> <li>• Continuous improvement of IT processes</li> <li>• Manage external contractors, vendors, and partners</li> <li>• Be an Organizational Designer</li> <li>• Be a Strategic Partner</li> <li>• Must align business and IT strategy</li> <li>• Must understand the business strategy</li> <li>• Must understand how to connect the IT strategy and business strategy</li> <li>• Be a Technology Architect</li> <li>• Must scan for emerging technologies</li> <li>• Be an informed buyer</li> <li>• Must understand the relative risks and benefits of vendor</li> </ul> |
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|  | <p>and outsourcing choices</p> <ul style="list-style-type: none"> <li>• Deliver the most effective and efficient combination of resources</li> <li>• Know how to apply IT to the business</li> <li>• Know how to lead</li> <li>• Enhance customer satisfaction</li> <li>• Have skills in security</li> <li>• Know how to evaluate technology</li> <li>• Be knowledgeable of budgeting</li> <li>• Know how to staff</li> <li>• Apply ROI analysis</li> <li>• Build new applications</li> <li>• Outsource hosting</li> <li>• Focus on business needs as they relate to the IT organization</li> <li>• Educate business executives by relating stories of external IT success, illustrate how IT can add value to the business</li> <li>• Demonstrate the importance of IT and foster more interaction, thereby increasing communication channels with the business community</li> <li>• Communicate the success and value of IT to the business</li> <li>• Involve the business in maintaining the correct focus of IT development efforts to provide value</li> <li>• Have a good understanding of the business vision to concentrate the development efforts on the goal of a shared IT-business vision</li> <li>• Play a key role in transforming the business through a cross-functional view of the business</li> <li>• Enable changes in the business processes and models by enabling communication channels and information flow among the organization's functions and beyond its boundaries</li> <li>• Be knowledgeable about cultural differences, geography, and history to more successfully implement global information systems</li> <li>• Manage projects across time zones and effectively deal with language and cultural differences</li> <li>• Use leadership to influence the forces of project delivery</li> <li>• Effectively manage the IT organization by managing the use of technology</li> <li>• Have relationship with the CEO and high-level business executive team</li> <li>• Be an active, participating, and contributing member of the internal management board in order to effectively improve the alignment between IT and the business functions</li> </ul> |
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|  | <ul style="list-style-type: none"> <li>• Have an analyst background and orientation</li> <li>• Promote IT as an agent of business transformation</li> <li>• Contribute beyond IT function</li> <li>• Have an accurate perception of CEO views on business and IT</li> <li>• Integrate IT with business planning</li> <li>• Have experience in consultative leadership and creativity</li> <li>• Delegate operational tasks</li> <li>• Have expenditure authority</li> <li>• Avoid adversarial positions</li> <li>• Have skills at reading situations and cultivating relationships</li> <li>• Initiate contacts outside the information technology unit</li> <li>• Recast IT language into mainstream business terms to support the notion that IT is another business function</li> <li>• Hire, develop, and retain high quality IT professionals</li> <li>• Have international or global experience</li> <li>• Have knowledge of, and experience in, a specific industry</li> <li>• Create and manage change</li> <li>• Have communication skills</li> <li>• Have management skills</li> <li>• Have relationship skills</li> <li>• Be business savvy</li> <li>• Have expertise in aligning and leveraging technology for the advantage of the enterprise</li> <li>• Know how to be a leader</li> <li>• Speak in business terms rather than technical jargon</li> <li>• Serve as a mediator between IT and the business functions/executives (communicator, educator, motivator, leader, politician, relationship builder)</li> <li>• Select the technology that is most appropriate for the business and ensure it can be deployed in a timely manner</li> <li>• Be a neutral player in the executive team, and be able to commit to the appropriate direction (change-oriented team player, catalyst to business thinking)</li> <li>• Must possess a combination of business, technology, and leadership skills</li> <li>• Be primarily concerned with direction, goal setting, support, and encouragement</li> <li>• Focus on getting things done, not with doing things</li> <li>• Communicate visions and strategies</li> <li>• Develop a common set of goals for the organization</li> <li>• Be at the center of operations for strategy pertaining to technology and its implementation</li> <li>• Be a technology executive who acts as a counselor for the business executives</li> </ul> |
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|  |             | <ul style="list-style-type: none"> <li>• Responsible for strategy, change, and information resources</li> <li>• Communicate with business executives to enable an understanding of the business needs and to communicate the value of IT</li> <li>• Have regular one-to-one communication with the CEO</li> <li>• Create a partnership with peers</li> <li>• Study the corporate culture</li> <li>• Understand the business model</li> <li>• Define current commitments and ensure follow-through</li> <li>• Build a personal board of directors</li> <li>• Contribute ideas and knowledge appropriate to the business needs</li> <li>• Listen to what others view as problems, then turn them into opportunities</li> <li>• Be a team player through being accessible and responsive</li> <li>• Set realistic goals for achievable results</li> <li>• Take inventory of people, applications, technology, and services to understand the capabilities of the organization</li> <li>• Assess your people</li> <li>• Understand the value and threat of outsourcing</li> <li>• Conduct business IT strategic planning and IT strategy planning</li> <li>• Ensure the IT function looks across all the other functions that comprise the enterprise</li> <li>• Integrate the business perspectives of the other organizational functions into the enterprise IT perspective that address strategic (outward-facing) and internal technology (architecture and infrastructure) requirements</li> <li>• Responsible for Strategic IT planning</li> <li>• Focus on the external environment and making decisions about the allocation of resources for competitive advantage</li> <li>• Own the IT strategy planning process that provides the general direction of how to attain the goals of information systems and the constraints of the enterprise</li> <li>• Manage emerging technologies</li> <li>• Sell technology to senior executives</li> <li>• Prioritize and focus on the right emerging technology</li> <li>• Develop the business case for emerging technology</li> <li>• Decide when to deploy emerging technologies while minimizing risks but not getting left behind</li> <li>• Manage all IT resources</li> </ul> |
| <p>Title: The Chief Information Officer: A</p> | <p>2002</p> | <ul style="list-style-type: none"> <li>• The usual human resources roles of recruiting, staff training and retention, and the financial roles of budget</li> </ul>  |

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| <p>Study of Managerial Roles in Norway</p> <p>Author: Gottschalk</p> | <p>determination, forecasting and authorization.</p> <ul style="list-style-type: none"> <li>• Significant amount of work in publicity, promotion, and internal relations with user management</li> <li>• The CIO has to coordinate sources of information services spread throughout and beyond the boundaries of the firm</li> <li>• As the chief information systems strategist, the CIO has a set of responsibilities that must constantly evolve with corporate information needs and with information technology itself</li> <li>• As the IT director, the CIO needs the ability to add value and be the biggest single factor in determining whether the organization views information technology as an asset or a liability</li> <li>• Responsible for the organization’s processing needs</li> <li>• Create alignment of business and IT objectives, to achieve competitive advantage...and for the survival of the firm</li> <li>• Sustain competitive advantage by having ability to consistently deploy IT faster, cheaper, and more strategically than one’s competitors</li> <li>• The CIO must change with the organization</li> <li>• Must possess the ability to integrate the diverse elements of information resources into the organization</li> <li>• Conduct out-flowing communications to establish a web of intra- and inter-organizational contacts through the liaison and spokesman roles</li> <li>• Must be an internal and external network manager</li> <li>• Improve links between information systems strategy and business planning for competitive advantage</li> <li>• Plan information technology projects for competitive advantage</li> <li>• The CIO must be a technology strategist</li> <li>• Must possess self-serving behaviors to enhance one’s position, build power base, and establish the right political connections</li> <li>• Through the spokesman role, use political “muscle” with end-user rational</li> <li>• CIO political role includes greater budgetary control as resource allocator of the corporate information resources</li> <li>• Accountable for effectively utilizing IS resources</li> <li>• The CIO has be a change architect</li> <li>• CIO has operating responsibility, which is comprised of information systems, computer operations, communications networks, information architecture, technical infrastructure, IS/IT budget and IS/IT personnel</li> <li>• CIO has strategic responsibility, which is comprised of strategic IS/IT planning, bridging strategy and benefits</li> </ul> |
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|   |             | <p>realization</p> <ul style="list-style-type: none"> <li>• CIO has to concentrate on the IS organization as leader and resource allocator when IS effectiveness is low</li> <li>• CIO can spend more time in the inter-organizational environment as liaison, monitor, and technology strategist when IS effectiveness improves</li> </ul>   |
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| <p>Title: CIO and Corporate Strategic Management: Changing Role of CIO to CEO</p> <p>Author: Gottschalk</p> | <p>2007</p> | <ul style="list-style-type: none"> <li>• Organize the infrastructure and architecture</li> <li>• Apply modern information technology in emerging business models</li> <li>• Ability to develop and implement appropriate responses to a variety of problem situations</li> <li>• Must solve an array of problems including resource allocation, interdepartmental coordination, interpersonal conflict, and subordinate morale, to name a few</li> <li>• Foster relationships with external activities, such as vendor contacts and computer society meetings</li> <li>• In the internal management, main focus is on personnel leadership and resource allocation</li> <li>• Must focus on firm performance (for ex., ERP)</li> <li>• Be an expert at the operational level, including supply chain management</li> <li>• Must relate to professionals and executives in their knowledge work</li> <li>• Must represent attractive executive capital for the firm (executive capital is tasks performed to mobilize strategic IT resources, apply IT resources to the value configuration, participate in corporate strategic management, sourcing IT services, supporting IT governance, and linking information management and knowledge management)</li> <li>• Effectively communicate with top management</li> <li>• Have a broad corporate perspective in managing information resources</li> <li>• Influence organizational strategy</li> <li>• Responsible for the planning of IT</li> <li>• Responsible for information systems, computer operations, telecommunications and networks, office automation, end-user computing, help desks, computer software and applications</li> <li>• Responsible for strategic IS/IT planning</li> <li>• Build relationship with CEO and other stakeholders – to increase their influence and to enhance the contribution of information systems and information technology</li> <li>• Must apply information technology at a strategic level to facilitate competitive advantage through an understanding</li> </ul> |

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|  | <p>of how business processes function and may be adapted to a changing corporate environment</p> <ul style="list-style-type: none"> <li>• Assume human resource roles of recruiting, staff training, and retention</li> <li>• Assume financial roles of budget determination, forecasting, and authorization</li> <li>• As provider of technological services to user departments, must provide a significant amount of work in publicity, promotion, and internal relations</li> <li>• Coordinate sources of information services spread throughout and beyond the boundaries of the firm</li> <li>• As chief information systems strategist, has responsibilities that must constantly evolve with the corporate information needs and with information technology</li> <li>• Responsible for the organization's processing needs</li> <li>• Close the gap between organizational IT strategies</li> <li>• Deploy IT faster, cheaper, and more strategically than one's competitors</li> <li>• Establish policy and control information resources</li> <li>• Be politically savvy</li> <li>• Be an open communicator with a business perspective, capable of leading and motivating staff, and as an innovative corporate team player</li> <li>• Be a business strategist, understanding and visualizing the economic, competitive, and industry forces impacting the business and the factors that sustain competitive advantage</li> <li>• Must be capable of plotting strategy with executive peers</li> <li>• Be the information technology champion within the organization</li> <li>• Know both the business and the information technology</li> <li>• Must understand information technology and how it can be applied to positively impact the business</li> <li>• Understand current and emerging information technologies</li> <li>• Ability to foresee breakthrough strategic opportunities as well as disruptive threats</li> <li>• Play a lead role in educating business peers about how IT can raise the competitive agility of the firm</li> <li>• Align business and technology (pivotal responsibility)</li> <li>• Forge alliances and ensure alignment with critical owners of business relationships, both within and outside the corporate boundary</li> <li>• Be a technology leader – incorporate various engineering and IT functions within a common functional area</li> </ul> |
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|  | <ul style="list-style-type: none"><li>• Be a business leader – take ownership of some IT-based tools and systems to satisfy their business requirements, be more knowledgeable about these tools and systems</li><li>• Be a strategist and mentor – operate in a high-tech environment</li><li>• Be a corporate influencer</li><li>• Wear the many hats of service provider, business enabler, business partner, strategic visionary, and company executive</li><li>• Be more businessperson than technologist</li><li>• Lead and manage direction, by means of influence, or through combination of both</li><li>• Relate to professionals and executives in their knowledge work to add value based on how they carry out their tasks</li><li>• Relate to topics such as logistics, production, supply chains, and projects</li></ul> |
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## Appendix B – Setting a Direction

| Reference   | Year | Leadership Action   | CIO Job Requirements & Responsibilities   |
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| <p>Title: Information Program Leaders in Transition</p> <p>Author: Dearstyne, B.</p>  | 2006 | Setting a Direction | <ul style="list-style-type: none"> <li>• Assess IT and information needs</li> <li>• Oversee the organization and deployment of information strategically in support of operational priorities</li> <li>• Create and implement new ideas</li> <li>• Responsible for business process change</li> <li>• Transform business activities</li> <li>• Agent of operational efficiency and change</li> <li>• Create a vision</li> <li>• Interpret and explain complex issues and problems so non-experts understand</li> <li>• Shape and reshape expectations as the organization moves ahead</li> <li>• Administer new initiatives</li> <li>• Change the institution's understanding of IT and information management</li> <li>• Work with business colleagues to identify what is needed by the enterprise and set expectations, lead their staff to provide cost-effective services</li> <li>• Understand the organization's strategies, priorities, operating environment, problems, and opportunities</li> </ul> |
| <p>Title: CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems</p> <p>Authors: Enns, Huff, and Higgins</p> | 2003 | Setting a Direction | <ul style="list-style-type: none"> <li>• Make top executives aware of the potential information systems to support</li> <li>• Enhance the strategy of the firm</li> <li>• Apply <i>lateral</i> influence, in order to convince their peers in other functional areas to commit to SIS initiatives</li> <li>• Discuss initiatives and build support with peers before a formal proposal is discussed</li> <li>• Build shared understanding and knowledge with other executives around issues of IT alignment</li> <li>• Convince executives of the potential strategic impact of IS, to achieve a shared vision of the IS department</li> <li>• Identify new uses of IT</li> <li>• Create a positive view of IT</li> </ul>   |

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|  |      |                     | <ul style="list-style-type: none"> <li>• Convince top managers of the need for greater central IT coordination</li> <li>• Rationally argue how new SIS proposals can benefit the organization</li> <li>• Communicate with other executives in non-technical language, and characterize SIS projects as initiatives that assist the business, not as IT projects</li> </ul>   |
| <p>Title: The chameleon: a metaphor for the Chief Information Officer</p> <p>Authors: Remenyi, Grant, &amp; Pather</p> | 2005 | Setting a Direction | <ul style="list-style-type: none"> <li>• Deliver competitive or strategic advantage for the organization with Information Systems</li> <li>• Responsible for activities that affect the organization's strategic success</li> <li>• Oversee the development and implementation of new systems and associated processes</li> <li>• Be a change master and strategy maker</li> <li>• Need a vision of where IT is going and how the organization might use it effectively</li> <li>• Need corporate strategy competence</li> <li>• Create an environment of opportunity</li> <li>• Lead the business</li> <li>• Must exude the leadership roles of: Informational, Decisional, Interpersonal, Chief Architect, Change Leader, Product Developer, Technology Provocateur, Coach and Chief Operating Strategist</li> <li>• Must have ability to change</li> <li>• Must have ability to see in multiple directions</li> <li>• Be a business strategist and a business leader</li> <li>• Be a contributor to major change within the wider organization (a change agent)</li> <li>• Strategy alignment for business advantage</li> <li>• Determine technology strategy for business advantage</li> <li>• Leverage technology for business advantage</li> </ul> |
| <p>Title: Next-generation CIOs</p> <p>Authors: Mark &amp; Monnoyer</p>   | 2004 | Setting a Direction | <ul style="list-style-type: none"> <li>• Lead their companies' efforts to get real business benefits from IT investments</li> <li>• Improve corporate performance</li> <li>• Increased emphasis on using IT to change the company rather than just run it</li> <li>• Align IT and business strategies</li> <li>• Be up to speed on issues confronting the</li> </ul>   |

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|  |      |                     | <p>businesses and think through the implications of system trade-offs, on a business-level, for planned implementations or proposed IT investments</p> <ul style="list-style-type: none"> <li>• Proactively bring new ideas about how technology can help business leaders and how technology can help the business develop new capabilities</li> <li>• Have a clear financial understanding of IT costs and potential investments</li> <li>• Lead broad change initiatives</li> <li>• Have the vision to cut through the complex tangles of business and technology to see patterns and meaning and to distinguish opportunities from fads</li> </ul>   |
| <p>Title: Future role of IS/IT professionals</p> <p>Authors: Kakabadse &amp; Korac-Kakabadse</p> | 2000 | Setting a Direction | <ul style="list-style-type: none"> <li>• Maintain a competitive edge through value adding activities and cost-efficient operations</li> <li>• Possess a combination of interpersonal, technical, and business skills to analyze problems, integrate applications, and implement new business processes built around information technology</li> <li>• Recognize the opportunity to introduce new technology and information systems</li> <li>• Enable change</li> <li>• Must be capable of viewing the totality of the business of the organization beyond the confines of the IS/IT function</li> <li>• Position the IS/IT function to be able to service the organization to achieve its strategic and missionary aims</li> <li>• Form a view as to the current and future capabilities of the IS department in keeping with the strategic development of the organization, the level of investment necessary for both systems development and R&amp;D, the revenue potential of the distribution channels and/or channels to market, the expected financial performance, form a view as to how the IS function should be developed in terms of its identity, shape and size in order to support the business</li> <li>• Design policy on how and where technology makes the best contribution to the development of the organization</li> </ul> |

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|  |      |                     | <ul style="list-style-type: none"> <li>• Integrate new technology with new ways of working in specific areas of the organization</li> <li>• Enhance visioning capability</li> <li>• Lead through change</li> <li>• Analyze and recommend how a new or existing information system fits into changing organizational needs</li> </ul>  |
| <p>Title: What IT leaders do</p> <p>Authors: Monnoyer &amp; Willmott</p>   | 2005 | Setting a Direction | <ul style="list-style-type: none"> <li>• Forge a clear agreement among peers about IT investment choices, drive senior-level conversations needed to make tough trade-offs</li> <li>• Articulate a vision for IT’s role in the company and ensure that this vision is clearly understood throughout the organization</li> <li>• Avoid competing agendas</li> <li>• Have coherent IT strategies</li> <li>• Seek and take advantage of opportunities for the business to leverage IT</li> <li>• Promote communication and alignment between IT and business managers</li> <li>• Create change</li> <li>• Have clear frameworks for decision making and alignment</li> </ul>   |
| <p>Title: Managing the Information Technology Resource: Leadership in the Information Age</p> <p>Authors: Luftman et al.</p> | 2004 | Setting a Direction | <ul style="list-style-type: none"> <li>• Provide and sustain competitive advantage</li> <li>• Deliver a competitive advantage with IT</li> <li>• Create a dynamic stability supporting a business environment where changes in products or services can be made with no change in business processes</li> <li>• Set IT priorities for projects, develop resources and skills, and integrate systems with corporate strategy</li> <li>• Keep business and IT aligned as business strategies and technology evolve</li> <li>• Use IT to help enable or drive business success</li> <li>• Know how to change the business areas of process, product, service, management, and environment</li> <li>• Apply IT in an appropriate and timely manner, in harmony with business goals, strategies and needs to achieve alignment</li> <li>• Transform the business, and drive business strategy through the alignment of IT and</li> </ul> |

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|  |  | <p>business</p> <ul style="list-style-type: none"> <li>• Provide strategic advantage</li> <li>• Develop IT strategies that are aligned with the firm’s business strategies for sustainable competitive advantage</li> <li>• Be an architect of alignment linking business and IT</li> <li>• Create an IT strategy – create integrated environments that leverage human skills, business processes, organizational structures, and technologies to transform the competitive position of the business</li> <li>• Be an architect of alignment by considering the organization across functional and process boundaries (expanded to external partners and customers)</li> <li>• Be knowledgeable about how the new IT technologies can be integrated into the business as well as among the different technologies and architectures</li> <li>• Understand the strengths and weaknesses of the technologies in question and the corporate-wide implications</li> <li>• Leverage information technology through alignment</li> <li>• Understand the forces that shape the business environment to better align business strategy and IT strategy for competitive advantage and business survival</li> <li>• Quickly adapt to change or face extinction or assimilation by competitors</li> <li>• Participate in development and corporate strategies</li> <li>• Facilitate change</li> <li>• Be an Organizational Designer</li> <li>• Be a Strategic Partner</li> <li>• Must align business and IT strategy</li> <li>• Must understand the business strategy</li> <li>• Must understand how to connect the IT strategy and business strategy</li> <li>• Must scan for emerging technologies</li> <li>• Deliver the most effective and efficient combination of resources</li> <li>• Know how to apply IT to the business</li> <li>• Know how to lead</li> <li>• Have a good understanding of the business</li> </ul> |
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|  |  | <p>vision to concentrate the development efforts on the goal of a shared IT-business vision</p> <ul style="list-style-type: none"> <li>• Play a key role in transforming the business through a cross-functional view of the business</li> <li>• Enable changes in the business processes and models by enabling communication channels and information flow among the organization's functions and beyond its boundaries</li> <li>• Be an active, participating, and contributing member of the internal management board in order to effectively improve the alignment between IT and the business functions</li> <li>• Promote IT as an agent of business transformation</li> <li>• Integrate IT with business planning</li> <li>• Have experience in consultative leadership and creativity</li> <li>• Recast IT language into mainstream business terms to support the notion that IT is another business function</li> <li>• Create and manage change</li> <li>• Have expertise in aligning and leveraging technology for the advantage of the enterprise</li> <li>• Know how to be a leader</li> <li>• Select the technology that is most appropriate for the business and ensure it can be deployed in a timely manner</li> <li>• Be a neutral player in the executive team, and be able to commit to the appropriate direction (change-oriented team player, catalyst to business thinking)</li> <li>• Be primarily concerned with direction, goal setting, support, and encouragement</li> <li>• Focus on getting things done, not with doing things</li> <li>• Communicate visions and strategies</li> <li>• Develop a common set of goals for the organization</li> <li>• Be at the center of operations for strategy pertaining to technology and its implementation</li> <li>• Responsible for strategy, change, and information resources</li> </ul> |
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|  |             |                            | <ul style="list-style-type: none"> <li>• Contribute ideas and knowledge appropriate to the business needs</li> <li>• Set realistic goals for achievable results</li> <li>• Take inventory of people, applications, technology, and services to understand the capabilities of the organization</li> <li>• Conduct business IT strategic planning and IT strategy planning</li> <li>• Ensure the IT function looks across all the other functions that comprise the enterprise</li> <li>• Integrate the business perspectives of the other organizational functions into the enterprise IT perspective that address strategic (outward-facing) and internal technology (architecture and infrastructure) requirements</li> <li>• Responsible for Strategic IT planning</li> <li>• Focus on the external environment and making decisions about the allocation of resources for competitive advantage</li> <li>• Own the IT strategy planning process that provides the general direction of how to attain the goals of information systems and the constraints of the enterprise</li> <li>• Develop the business case for emerging technology</li> <li>• Decide when to deploy emerging technologies while minimizing risks but not getting left behind</li> </ul> |
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| <p>Title: The Chief Information Officer: A Study of Managerial Roles in Norway</p> <p>Author: Gottschalk</p> | <p>2002</p> | <p>Setting a Direction</p> | <ul style="list-style-type: none"> <li>• Coordinate sources of information services spread throughout and beyond the boundaries of the firm</li> <li>• Have the responsibility to constantly evolve with corporate information needs and with information technology itself</li> <li>• Have ability to add value and be the biggest single factor in determining whether the organization views information technology as an asset or a liability</li> <li>• Create alignment of business and IT objectives, to achieve competitive advantage...and for the survival of the firm</li> <li>• Sustain competitive advantage by having ability to consistently deploy IT faster, cheaper, and more strategically than one's</li> </ul>   |

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|   |      |                     | <p>competitors</p> <ul style="list-style-type: none"> <li>• The CIO must change with the organization</li> <li>• Must possess the ability to integrate the diverse elements of information resources into the organization</li> <li>• Improve links between information systems strategy and business planning for competitive advantage</li> <li>• Plan information technology projects for competitive advantage</li> <li>• The CIO has be a change architect</li> <li>• CIO has strategic responsibility, which is comprised of strategic IS/IT planning, bridging strategy and benefits realization</li> </ul>   |
| <p>Title: CIO and Corporate Strategic Management: Changing Role of CIO to CEO</p> <p>Author: Gottschalk</p> | 2007 | Setting a Direction | <ul style="list-style-type: none"> <li>• Apply modern information technology in emerging business models</li> <li>• Must focus on firm performance (for ex., ERP)</li> <li>• Must represent attractive executive capital for the firm (executive capital is tasks performed to mobilize strategic IT resources, apply IT resources to the value configuration, participate in corporate strategic management, sourcing IT services, supporting IT governance, and linking information management and knowledge management)</li> <li>• Have a broad corporate perspective in managing information resources</li> <li>• Influence organizational strategy</li> <li>• Responsible for strategic IS/IT planning</li> <li>• Build relationship with CEO and other stakeholders – to increase their influence and to enhance the contribution of information systems and information technology</li> <li>• Apply information technology at a strategic level to facilitate competitive advantage through an understanding of how business processes function and may be adapted to a changing corporate environment</li> <li>• Coordinate sources of information services spread throughout and beyond the boundaries of the firm</li> <li>• Must constantly evolve with the corporate information needs and with information</li> </ul> |

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|  |  |  | <p>technology</p> <ul style="list-style-type: none"><li>• Close the gap between organizational IT strategies</li><li>• Deploy IT faster, cheaper, and more strategically than one's competitors</li><li>• Be a business strategist, understanding and visualizing the economic, competitive, and industry forces impacting the business and the factors that sustain competitive advantage</li><li>• Must understand information technology and how it can be applied to positively impact the business</li><li>• Understand current and emerging information technologies</li><li>• Ability to foresee breakthrough strategic opportunities as well as disruptive threats</li><li>• Play a lead role in educating business peers about how IT can raise the competitive agility of the firm</li><li>• Align business and technology (pivotal responsibility)</li><li>• Forge alliances and ensure alignment with critical owners of business relationships, both within and outside the corporate boundary</li><li>• Be a technology leader – incorporate various engineering and IT functions within a common functional area</li><li>• Be a business leader – take ownership of some IT-based tools and systems to satisfy their business requirements, be more knowledgeable about these tools and systems</li><li>• Be a strategist and mentor – operate in a high-tech environment</li><li>• Wear the many hats of service provider, business enabler, business partner, strategic visionary, and company executive</li></ul> |
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## Appendix C – Aligning People

| Reference   | Year | Leadership Action | CIO Job Requirements & Responsibilities   |
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| <p>Title: Information Program Leaders in Transition</p> <p>Author: Dearstyne, B.</p>  | 2006 | Aligning People   | <ul style="list-style-type: none"> <li>• Serve as an agent for operational efficiency and change on the board of directors, or in close relationships with the board</li> <li>• Interpret and explain complex issues and problems so non-experts understand</li> <li>• Leadership: work with business colleagues to identify what is needed by the enterprise and set expectations, lead their staff to provide cost-effective services</li> <li>• Partnership, collaboration, and political negotiation skills to work with other officers, outside vendors, and superiors</li> <li>• Be an educator and publicist</li> </ul>  |
| <p>Title: CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems</p> <p>Authors: Enns, Huff, and Higgins</p> | 2003 | Aligning People   | <ul style="list-style-type: none"> <li>• Critical strategic role: provide thought leadership to other top executives, making them aware of the potential information systems to support and enhance the strategy of the firm</li> <li>• Apply powers of influence to encourage other functional heads to become partners with the CIO and embrace ownership of initiatives</li> <li>• Apply <i>lateral</i> influence, in order to convince their peers in other functional areas to commit to SIS initiatives</li> <li>• Rely primarily on influence to affect the thinking and behavior of their peers</li> <li>• Good working relationships with peers</li> <li>• Integrity and interpersonal skills to develop important relationships</li> <li>• Establish effective working relationships by approaching peers in a “personal informal” style, to make casual contact with peers to discuss these initiatives and build support before a formal proposal is discussed</li> <li>• Communicate with other executives to build shared understanding and knowledge around issues of IT alignment with the business for IS project success</li> </ul> |

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|  |      |                 | <ul style="list-style-type: none"> <li>• Use coalition and consultation tactics to convince executives of the potential strategic impact of IS, to gain acceptance of other executives, to achieve a shared vision of the IS department</li> <li>• Use rational persuasion to identify new uses of IT, create a positive view of IT, and convince top managers of the need for greater central IT coordination, and to effectively communicate in top management context</li> <li>• Use bargaining with IS resources and co-opting opposition tactics to overcome resistance to IS implementation</li> <li>• Use consultative behavior to communicate key IT issues to others</li> <li>• “Do their homework” when proposing new, SIS proposals so they can provide compelling, rationally argued case for how these proposals can benefit the organization</li> <li>• Good working relationships with peers are a necessary condition for the success of IT executives’</li> <li>• Communicate with other executives in non-technical language, and characterize SIS projects as initiatives that assist the business, not as IT projects</li> <li>• Engage in the preferred language of other executives to demonstrate sensitivity to (peers) concerns</li> </ul> |
| <p>Title: The chameleon: a metaphor for the Chief Information Officer</p> <p>Authors: Remenyi, Grant, &amp; Pather</p> | 2005 | Aligning People | <ul style="list-style-type: none"> <li>• Need management processes and client/customer relationship skill sets</li> <li>• Skilled in exercising influence on others and overcoming behavioral barriers</li> <li>• Needs to have the strength and character that can persuade the naysayers to stick to the commitments and make sure that systems are implemented successfully and the benefits realized</li> </ul>   |
| <p>Title: Next-generation CIOs</p> <p>Authors: Mark &amp; Monnoyer</p>   | 2004 | Aligning People | <ul style="list-style-type: none"> <li>• Persuade business leaders to be better owners of the technology they leverage</li> <li>• Spend considerable time with business-unit leaders and other executives in the company and talk to customers, suppliers,</li> </ul>   |

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|  |      |                 | <p>and business partners</p> <ul style="list-style-type: none"> <li>• Reengineer relationship with business leaders</li> </ul>  |
| <p>Title: Future role of IS/IT professionals</p> <p>Authors: Kakabadse &amp; Korac-Kakabadse</p> | 2000 | Aligning People | <ul style="list-style-type: none"> <li>• Required skills in diplomacy, political, interpersonal and business</li> <li>• Have positive relationships with other members of the executive team and be a good ambassador for the business</li> <li>• Have customer and service-driven attitudes</li> <li>• Integrate new technology with new ways of working in specific areas of the organization</li> <li>• Recognize dynamics in the organization and identify the best ways forward where little guidance exists</li> <li>• Promote teamwork</li> <li>• Effectively influence individuals and teams</li> <li>• Effectively address internal politics</li> <li>• Recognize the opportunity to introduce new technology and information systems</li> <li>• Analyze and recommend how a new or existing information system fits into changing organizational needs</li> </ul> |
| <p>Title: What IT leaders do</p> <p>Authors: Monnoyer &amp; Willmott</p>                         | 2005 | Aligning People | <ul style="list-style-type: none"> <li>• Forge a clear agreement among peers about IT investment choices and drive senior-level conversations needed to make tough trade-offs</li> <li>• Articulate a vision for IT’s role in the company and ensure that this vision is clearly understood throughout the organization</li> <li>• Understand the business and use business language</li> <li>• Promote communication and alignment between IT and business managers</li> <li>• Be a peer of business leaders, yet respected as “one of us” by the IT staff</li> </ul>  |
| <p>Title: Managing the Information Technology Resource: Leadership in the Information Age</p>    | 2004 | Aligning People | <ul style="list-style-type: none"> <li>• Be skilled in general business (such as Financial, Human Resource, Relationship Management, Legal, Governance, Marketing, Negotiating, Leadership)</li> <li>• Communicate with all areas of the business</li> <li>• Support relationships between various parts</li> </ul>   |

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| <p>Authors: Luftman et al.</p> |  |  | <p>of an organization</p> <ul style="list-style-type: none"> <li>• Support ability to integrate the information that exists throughout the organization</li> <li>• Support the inter-relationships between various external entities (i.e., vendors, customers, suppliers) within the business</li> <li>• Educate business management on technology’s possibilities and limitations</li> <li>• Transform the business, and drive business strategy through the alignment of IT and business</li> <li>• Bring the opportunity to share corporate information between departments</li> <li>• Create some level of synergy between departments</li> <li>• Create an IT strategy – create integrated environments that leverage human skills, business processes, organizational structures, and technologies to transform the competitive position of the business</li> <li>• Be an architect of alignment by considering the organization across functional and process boundaries (expanded to external partners and customers)</li> <li>• Participate in development and corporate strategies</li> <li>• Foster business-IT relationship and confidence</li> <li>• Manage external contractors, vendors, and partners</li> <li>• Must understand the relative risks and benefits of vendor and outsourcing choices</li> <li>• Educate business executives by relating stories of external IT success, illustrate how IT can add value to the business</li> <li>• Demonstrate the importance of IT and foster more interaction, thereby increasing communication channels with the business community</li> <li>• Communicate the success and value of IT to the business</li> <li>• Enable changes in the business processes and models by enabling communication channels and information flow among the organization’s functions and beyond its boundaries</li> </ul> |
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|  |  |  | <ul style="list-style-type: none"> <li>• Be knowledgeable about cultural differences, geography, and history to more successfully implement global information systems</li> <li>• Manage projects across time zones and effectively deal with language and cultural differences</li> <li>• Have relationship with the CEO and high-level business executive team</li> <li>• Be an active, participating, and contributing member of the internal management board in order to effectively improve the alignment between IT and the business functions</li> <li>• Have skills at reading situations and cultivating relationships</li> <li>• Initiate contacts outside the information technology unit</li> <li>• Have communication skills</li> <li>• Have relationship skills</li> <li>• Have expertise in aligning and leveraging technology for the advantage of the enterprise</li> <li>• Serve as a mediator between IT and the business functions/executives (communicator, educator, motivator, leader, politician, relationship builder)</li> <li>• Be a neutral player in the executive team, and be able to commit to the appropriate direction (change-oriented team player, catalyst to business thinking)</li> <li>• Be primarily concerned with direction, goal setting, support, and encouragement</li> <li>• Communicate visions and strategies</li> <li>• Be a technology executive who acts as a counselor for the business executives</li> <li>• Communicate with business executives to enable an understanding of the business needs and to communicate the value of IT</li> <li>• Have regular one-to-one communication with the CEO</li> <li>• Create a partnership with peers</li> <li>• Take inventory of people, applications, technology, and services to understand the capabilities of the organization</li> <li>• Sell technology to senior executives</li> </ul> |
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| <p>Title: The Chief Information Officer: A Study of Managerial Roles in Norway</p> <p>Author: Gottschalk</p> | <p>2002</p> | <p>Aligning People</p> | <ul style="list-style-type: none"> <li>• Significant amount of work in publicity, promotion, and internal relations with user management</li> <li>• Conduct out-flowing communications to establish a web of intra- and inter-organizational contacts through the liaison and spokesman roles</li> <li>• Improve links between information systems strategy and business planning for competitive advantage</li> <li>• Must possess self-serving behaviors to enhance one's position, build power base, and establish the right political connections</li> <li>• Through the spokesman role, use political "muscle" with end-user rational</li> <li>• CIO has operating responsibility, which is comprised of information systems, computer operations, communications networks, information architecture, technical infrastructure, IS/IT budget and IS/IT personnel</li> <li>• CIO can spend more time in the inter-organizational environment as liaison, monitor, and technology strategist when IS effectiveness improves</li> </ul> |
| <p>Title: CIO and Corporate Strategic Management: Changing Role of CIO to CEO</p> <p>Author: Gottschalk</p>  | <p>2007</p> | <p>Aligning People</p> | <ul style="list-style-type: none"> <li>• Must solve an array of problems including resource allocation, interdepartmental coordination, interpersonal conflict, and subordinate morale, to name a few</li> <li>• Foster relationships with external activities, such as vendor contacts and computer society meetings</li> <li>• In the internal management, main focus is on personnel leadership and resource allocation</li> <li>• Must relate to professionals and executives in their knowledge work</li> <li>• Effectively communicate with top management</li> <li>• Build relationship with CEO and other stakeholders – to increase their influence and to enhance the contribution of information systems and information technology</li> </ul>   |

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|  |  |  | <ul style="list-style-type: none"><li>• As provider of technological services to user departments, must provide a significant amount of work in publicity, promotion, and internal relations</li><li>• Be an open communicator with a business perspective, capable of leading and motivating staff, and as an innovative corporate team player</li><li>• Must be capable of plotting strategy with executive peers</li><li>• Must understand information technology and how it can be applied to positively impact the business</li><li>• Play a lead role in educating business peers about how IT can raise the competitive agility of the firm</li><li>• Forge alliances and ensure alignment with critical owners of business relationships, both within and outside the corporate boundary</li><li>• Be a strategist and mentor – operate in a high-tech environment</li><li>• Be a corporate influencer</li><li>• Lead and manage direction, by means of influence, or through combination of both</li><li>• Relate to professionals and executives in their knowledge work to add value based on how they carry out their tasks</li></ul> |
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## Appendix D – Motivating & Inspiring People

| Reference   | Year | Leadership Action             | Relevant CIO Job Requirements & Responsibilities   |
|---|------|-------------------------------|--|
| <p>Title: Information Program Leaders in Transition</p> <p>Author: Dearstyne, B.</p>  | 2006 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Show impact and report on how they are deploying informational resources to meet company objectives</li> <li>• Serve as an agent for operational efficiency and change on the board of directors, or in close relationships with the board</li> <li>• Ability to build team and manage, empower, and inspire people</li> </ul>  |
| <p>Title: CIO lateral influence behaviors: Gaining peers' commitment to strategic information systems</p> <p>Authors: Enns, Huff, and Higgins</p> | 2003 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Apply powers of influence to encourage other functional heads to become partners with the CIO and embrace ownership of initiatives</li> <li>• Communicate with other executives to build shared understanding and knowledge around issues of IT alignment with the business for IS project success</li> <li>• Use coalition and consultation tactics to convince executives of the potential strategic impact of IS, to gain acceptance of other executives, to achieve a shared vision of the IS department</li> <li>• Communicate with other executives in non-technical language, and characterize SIS projects as initiatives that assist the business, not as IT projects</li> </ul> |
| <p>Title: The chameleon: a metaphor for the Chief Information Officer</p> <p>Authors: Remenyi, Grant, &amp; Pather</p>                            | 2005 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Must contract or recruit, then develop and supervise, an often large and diverse workforce</li> <li>• Create an environment of opportunity</li> <li>• Must exude the leadership roles of: Informational, Decisional, Interpersonal, Chief Architect, Change Leader, Product Developer, Technology Provocateur, Coach and Chief Operating Strategist</li> <li>• Needs to have the strength and character that can persuade the naysayers to stick to the commitments and make sure that systems are implemented successfully and the benefits</li> </ul>   |

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| Title: Next-generation CIOs<br><br>Authors: Mark & Monnoyer   | 2004 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Facilitate more business-unit involvement and accountability in technology-investment decisions</li> <li>• Spend more time helping business leaders identify and use technologies that matter</li> <li>• Persuade business leaders to be better owners of the technology they leverage</li> <li>• Spend considerable time with business-unit leaders and other executives in the company and talk to customers, suppliers, and business partners</li> </ul>  |
| Title: Future role of IS/IT professionals<br><br>Authors: Kakabadse & Korac-Kakabadse                                 | 2000 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Have a combination of IS/IT knowledge, management skills, leadership experience and high motivation</li> <li>• Train, develop, replace and recruit IS/IT staff</li> <li>• Have positive relationships with other members of the executive team and be a good ambassador for the business</li> <li>• Promote teamwork</li> </ul>  |
| Title: What IT leaders do<br><br>Authors: Monnoyer & Willmott   | 2005 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Forge a clear agreement among peers about IT investment choices and drive senior-level conversations needed to make tough trade-offs</li> <li>• Inspire other executives to pursue new IT-enabled business opportunities and keep everyone focused on the right issues and on making the most effective decisions</li> <li>• Be a peer of business leaders, yet respected as “one of us” by the IT staff</li> </ul>  |
| Title: Managing the Information Technology Resource: Leadership in the Information Age<br><br>Authors: Luftman et al. | 2004 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Be skilled in general business (such as Financial, Human Resource, Relationship Management, Legal, Governance, Marketing, Negotiating, Leadership)</li> <li>• Foster business-IT relationship and confidence</li> <li>• Attract, retain, and develop talented people</li> <li>• Educate business executives by relating stories of external IT success, illustrate how IT can add value to the business</li> <li>• Demonstrate the importance of IT and foster more interaction, thereby increasing</li> </ul> |

|  |      |                               |  |
|--|------|-------------------------------|--|
|  |      |                               | <p>communication channels with the business community</p> <ul style="list-style-type: none"> <li>• Have experience in consultative leadership and creativity</li> <li>• Hire, develop, and retain high quality IT professionals</li> <li>• Have communication skills</li> <li>• Have relationship skills</li> <li>• Serve as a mediator between IT and the business functions/executives (communicator, educator, motivator, leader, politician, relationship builder)</li> <li>• Be primarily concerned with direction, goal setting, support, and encouragement</li> <li>• Be a technology executive who acts as a counselor for the business executives</li> <li>• Communicate with business executives to enable an understanding of the business needs and to communicate the value of IT</li> <li>• Listen to what others view as problems, then turn them into opportunities</li> <li>• Be a team player through being accessible and responsive</li> </ul> |
| <p>Title: The Chief Information Officer: A Study of Managerial Roles in Norway</p> <p>Author: Gottschalk</p> | 2002 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• The usual human resources roles of recruiting, staff training and retention, and the financial roles of budget determination, forecasting and authorization.</li> </ul>   |
| <p>Title: CIO and Corporate Strategic Management: Changing Role of CIO to CEO</p> <p>Author: Gottschalk</p>  | 2007 | Motivating & Inspiring People | <ul style="list-style-type: none"> <li>• Must solve an array of problems including resource allocation, interdepartmental coordination, interpersonal conflict, and subordinate morale, to name a few</li> <li>• Assume human resource roles of recruiting, staff training, and retention</li> <li>• Be an open communicator with a business perspective, capable of leading and motivating staff, and as an innovative corporate team player</li> <li>• Be the information technology champion within the organization</li> </ul>   |



## Appendix E – Search Record

| Database/<br>Search Engine             | Search Terms                                 | # of Results | Quality of Results |
|--|--|--------------|--------------------|
| <b>Academic<br/>Search<br/>Premier</b> | Chief Information Officer                    | 3,584        | Fair               |
|  | Chief Information Officer & Definition       | 15           | Poor               |
|  | Chief Information Officer & Job Requirements | 1            | Excellent          |
|  | Chief Information Officer & Job Description  | 56           | Good               |
|  | Chief Information Officer & Responsibilities | 215          | Excellent          |
|  | Chief Information Officer & Leadership       | 156          | Good               |
|  | Chief Information Officer & Role             | 400          | Fair               |
|  | Information Systems & Leadership             | 205          | Fair               |
|  |  |              |                    |
| <b>MasterFile<br/>Premier</b>          | Chief Information Officer                    | 6,037        | Poor               |
|  | Chief Information Officer & Definition       | 25           | Poor               |
|  | Chief Information Officer & Job Requirements | 1            | Fair               |
|  | Chief Information Officer & Job Description  | 70           | Good               |
|  | Chief Information Officer & Responsibilities | 371          | Fair               |
|  | Chief Information Officer & Leadership       | 231          | Fair               |
|  | Chief Information Officer & Role             | 689          | Fair               |
|  | Information Systems &                        | 198          | Fair               |

|                                | Leadership                                   |       |      |
|--------------------------------|--|-------|------|
|                                |  |       |      |
| <b>Business Source Premier</b> | Chief Information Officer                    | 7,574 | Poor |
|                                | Chief Information Officer & Definition       | 36    | Good |
|                                | Chief Information Officer & Job Requirements | 23    | Good |
|                                | Chief Information Officer & Job Description  | 88    | Good |
|                                | Chief Information Officer & Responsibilities | 499   | Fair |
|                                | Chief Information Officer & Leadership       | 306   | Fair |
|                                | Chief Information Officer & Role             | 921   | Poor |
|                                | Information Systems & Leadership             | 476   | Fair |
|                                |  |       |      |
| <b>INSPEC</b>                  | Chief Information Officer                    | 209   | Fair |
|                                | Chief Information Officer & Definition       | 1     | Poor |
|                                | Chief Information Officer & Job Requirements | 2     | Poor |
|                                | Chief Information Officer & Job Description  | 0     | Poor |
|                                | Chief Information Officer & Responsibilities | 20    | Good |
|                                | Chief Information Officer & Leadership       | 21    | Good |
|                                | Chief Information Officer & Role             | 64    | Good |
|                                | Information Systems & Leadership             | 299   | Fair |
|                                |  |       |      |
| <b>Web of Science</b>          | Chief Information Officer                    | 54    | Good |
|                                | Chief Information                            | 0     | Poor |

|   |  |     |      |
|---|--|-----|------|
|   | Officer & Definition                         |     |      |
|   | Chief Information Officer & Job Requirements | 0   | Poor |
|   | Chief Information Officer & Job Description  | 0   | Poor |
|   | Chief Information Officer & Responsibilities | 5   | Fair |
|   | Chief Information Officer & Leadership       | 7   | Good |
|   | Chief Information Officer & Role             | 18  | Good |
|   | Information Systems & Leadership             | 137 | Fair |
|   |  |     |      |
| <b>ProQuest Databases</b><br>- ABI/INFORM Global<br>- Hoover's Company Records<br>- ProQuest Education Journals<br>- ProQuest Newspapers<br>- ProQuest Research Library | CIO Effectiveness                            | 30  | Good |
|   | Information Technology & Leadership          | 469 | Fair |
|   |  |     |      |