

**Extracts From**

**THE COMPLEXITIES OF CIO LEADERSHIP:  
WHAT MAKES A SUCCESSFUL CIO?**

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What Makes a Successful CIO?**

**Abstract**

The performance expected of Chief Information Officers in today’s business environment demands a range of leadership skills and characteristics. Yet, the dynamic complexities of the CIO profession have received insufficient attention in Leadership research. Few empirical studies have been done to investigate what differentiates successful CIOs from their challenged colleagues in how they carry out their expanding leadership responsibilities. This study aims to investigate common practices and behaviors among successful CIOs, and whether Leadership and Adult Learning theories can be applied to help challenged CIOs be more successful in their organizations. The findings point to a need for both Chief Information Officers and their senior leadership peers to assume greater responsibilities in integrating IT with strategic business initiatives. This demands a complex set of leadership skills, mainly with regards to management and executive relationships.

## Introduction

Advances in technology are seen by Chief Executive Officers (CEOs) as the single most important driver of change in today's business environment. Yet, according to CEOs surveyed by the Economist Intelligence Unit, most Chief Information Officers (CIOs) and their organizations are not delivering the value expected of them by their businesses (The Economist Intelligence Unit, 2005).

As Information Technology is becoming widely commoditized, infrastructural, or operational, IT is no longer seen as a value-adding resource to business profitability (Carr, 2005). The challenge most CIOs seem to struggle with is the measurement of IT contribution. While capital spent on technology has increased over the years (Gartner, 2005), most organizations still view it as a cost center rather than a strategic investment that creates business results, mostly due to the difficulties of measuring IT contribution to business revenues (Langer, 2005). This lack of clarity around the role of IT seems to further cause friction between IT executives and the leaders of the businesses they are serving. Through interviews with Chief Executive Officers in various industries, Langer identified a prevalent negative perception of IT within their organizations, such as IT not being sufficiently pro-active, and focusing on responding to problems rather than offering solutions to strategic business issues (Langer, 2005). Further, research by the Economist Intelligence Unit (2005) indicates that the majority of business managers have an insufficient understanding of business technologies.

Among 98 CIOs surveyed by CIO magazine in 2005, only half felt that their company had an overall positive impression of IT value. Six percent said their company's perception of IT was poor, but the remaining forty-four percent felt their organization did not care one way or the other. Forty-eight percent of survey respondents felt that the greatest challenge was a lack of planning or strategic vision to change perceptions. Other reasons include a lack of corporate leadership commitment or interest (42 percent), lack of resources or time on the part of business leaders (41 percent), and business leaders' lack of clearly defined needs and expectations (40 percent). A majority of the surveyed CIOs (58 percent) reported a recent improved perception of IT value, but eleven percent said that perception had worsened in the last few years (Pastore and Cosgrove, 2005).

Langer's (2005) research tributes the cause of the failure of many businesses to leverage IT for its strategic purposes to the marginalization of the majority of corporate IT departments from the core areas of the businesses that they serve. Marginalization is defined as the feeling of not fitting in, and results in the individual or team's isolation of themselves from the rest of the organization, or the organization's rejection of the individual or team as an integrated part of its system. Marginalization results in self-consciousness, which in turn results in the inability to perform up to one's capabilities. In contrast, when people believe that they matter to their organization, the elements of marginality diminish. Individuals and

teams succeed when they are recognized by their leaders and their organization at large (Schlossberg, 1989). In a study conducted by Langer, marginalization of IT departments - physical, cultural and managerial - was identified as a key reason why most businesses were not leveraging IT to its full potential. Despite the common notion that IT is an integral aspect of the vast majority of business processes today, the lack of integration between IT departments and the businesses they serve is prevalent in nearly one third of business organizations.

With today's business organizations struggling in a volatile economy and increasing monitoring of corporate governance, a large portion of corporations are looking for Chief Information Officers who can establish a successfully integrated IT operation within either of three types of situations: a company in crisis, a company with fundamentally flawed IT, or a company going through business transformation through strategic change (Holmes, 2005). According to McKinsey, 30-50 percent of companies looking to hire a new Chief Information Officer need this kind of turnaround technology manager (Holmes, 2005).

These challenges indicate that the performance expected of a CIO in today's business environment demands a broad set of leadership skills. This study aims to investigate what these skills are, and whether Leadership and Adult Learning theories can be applied to make a CIO successful in his or her organization.

### **The Problem and its Significance**

Technology has become the single most important variable in the delivery of business services and products in today's market. Yet, the majority of Chief Information Officers are not perceived as strategic partners in their business organizations, and are often marginalized among other senior executives. Sixty percent of CEOs view their CIO as an executive at risk (Gartner 2004).

Moreover, as technology and information needs vary substantially between organizations and industries, there is no clear definition of the CIO role and its responsibilities. CIOs who want to succeed in their jobs are struggling to strike a balance between delivering flawless operational support while offering strategic technological advantage for the competitive advancement of their businesses. Success in the CIO profession is becoming less about best practices and more about staying in tune with the business' constantly changing needs and opportunities.

### **The evolution of the CIO role**

Over twenty years ago, technical expertise was the critical variable for a CIO's success. Today, in the world of mature corporate IT, many users do not fully know what new things IT will enable them to do, or fully appreciate how differently they will have to do things in order to reap the benefits of these new

capabilities. Consequently, today's CIO must shift fundamentally from managing activities within the IT department to managing change throughout the rest of the organization (Byrnes, 2005). In addition, the emergence of the Internet radically altered business processes, management methodologies, product strategies, and with them the role of the CIO from a technology expert to an organizational relationship manager. Further, the use of the Internet for both commerce as well as customer service, extended CIO's responsibilities beyond the corporate boundaries to include e-Business partnerships. With an emphasis on business relationships and cross-institutional data exchange, the CIO's role evolved into a primary relationship with customers, suppliers, and partners (Kern, 2003).

Most IT executives today must dedicate an extensive amount of time to business issues, and it has become essential for the functionality of IT that a person empowered into such a position must be able to partake in the socioeconomic aspects of an IT organization as well as that of its company overall. Hence, executives in the field of IT, especially CIO's, need a broad skill set including strong abilities to lead and communicate, in order to maintain their success as CIOs. However, because all organizations have varying cultures, there is no guarantee of a high level of success. Nevertheless, what CIOs can do as leaders is ensure that they have a full understanding of the requirements, incentives, and expectations of their role. In addition, they must assure their organization and the CEO that the CIO is and will remain closely aligned to the business' overall interest (Kern, 2003).

### **The Driver vs. Supporter roles of IT**

Langer (2005) stipulates that the functions of an organization can be categorized as either Driver functions or Supporter functions. The Driver functions are defined as those that are engaged in front-line or direct-revenue generating activities. Supporter functions are those that do not generate obvious direct revenues, but are designed to support front-line activities.

Information Technology is unique in that it is both a driver and a supporter. However, Information Technology researchers debate the extent to which technology fulfills these two roles and contributing value to business organizations. Carr (2003) argues that infrastructural technologies offer no competitive advantage because their value increases the more they are shared. Technologies that do offer competitive advantage are those that are proprietary, i.e. technologies owned by and only available to the organization. However, as such a technology often becomes subject to replication by competitors, it too loses its strategic value and should no longer be seen as a strategic resource. Hence, he argues, what is strategic about technology in today's business environment is the way in which it can sustain uniqueness to a company by enabling its operations to be more efficient or innovative: "As long as they remain protected, proprietary technologies can be the foundations for long-term strategic advantages, enabling companies to reap higher profits than their rivals" (Carr, 2003).

However, such technological advantage is not a constant. Carr (2003) further argues that a common trap executives fall into is assuming that opportunities for advantage will be available indefinitely. In actuality, the window for gaining advantage from an infrastructural technology is open only briefly. When the technology's commercial potential begins to be broadly appreciated, a large amount of money is inevitably invested in it, and its development proceeds rapidly. The rush to invest in new technology leads to more competition, greater capacity, and falling prices, making the technology broadly accessible and affordable. At the same time, the development forces users to adopt universal technical standards, turning proprietary systems obsolete. Even the way the technology is used begins to become standardized, as best practices become widely emulated. Both the technology and its modes of use then become commoditized. Hence, Carr takes the position that the technology's potential for differentiating one company from its competition inevitably declines as it becomes accessible and affordable to all, and should therefore always be seen as a supporter (Carr, 2003).

Kern in contrast, argues that technology, as a facilitator of all business processes, is critical in every aspect of its role as a business driver. He states that a basic tool for understanding the influence of Information Technology on businesses is the Value Chain, defined as the set of activities through which a product or service is created and delivered to customers. When a company competes in any industry, it performs a number of discrete but interconnected value-creating activities - such as operating a sales force, manufacturing a component, or delivering products - and these activities have points of connection with the activities of suppliers, channels, and customers. “The Value Chain is a framework for identifying all these activities and analyzing how they affect both the company's costs and the value delivered to buyers. The complexity of each stage of the value chain increases along with the continuing evolution of technology. This is a result of a fundamental integration of technology within and across every stage of the value chain” (Kern, 2003). Kern concludes that IT has therefore become mission-critical and hence needs to be managed as a strategic asset from both driver and supporter perspectives.

### **The importance of executive relationships for the integration of IT with business strategy**

For IT to be able to respond rapidly to the overall needs of individual business groups, it needs a planning process that is tightly integrated with each of the business groups and an enterprise-wide vision within which all needs of the value chain can be met. To accomplish this CIOs must establish working relationships at individual and group levels with all business partners (Kern, 2003; Gartner, 2004; Byrnes, 2005; Langer, 2005).

Relationships are critical both on an individual level as well as on a group level. For example, if a business partner has been unable to form a relationship with technology staff, the technology department must acknowledge this and take steps to forge the right relationships. In so doing senior technology managers will be forced to identify the source(s) of the problem and proactively correct them (Kern, 2003). This process may involve issues of competence, mutual respect, credibility, business knowledge

and perspective, or communication. Establishing relationships, then, requires great amounts of patience and extensive consistency, and communication is a relationship-building opportunity that must be taken full advantage of.

IT's relationships and ability to partner with business units depend strongly on senior management support, as standards for collaboration are set at the executive or senior management committee level. Hence, despite all the potential for a CIOs success, is probable that IT leadership may not rise beyond a certain level in the organization without active senior management support (Kern, 2003; Langer, 2005).

## **Discussion**

### **Common Practices and Leadership Behaviors among Elite CIOs**

The common patterns in actions and behaviors of successful CIOs demonstrate correlation with the wide range of leadership theories previously discussed. All three elite CIOs exhibit high conceptual complexity as well as behavioral complexity, as defined by Zaccaro (2001). Moreover, the capacity to plan and execute successfully integrated IT initiatives requires relationship building and motivational skills, which points to strong visionary and inspirational leadership capabilities. Strategic Decision making characteristics, such as the ability to see cause and effect of actions and behaviors, on both individual and organizational levels, and plan and execute accordingly was also highly exhibited by Elite CIOs. A highly developed cultural sensitivity and ability to perceive and read the environment and act appropriately was also a common element among successful CIOs, specifically as it related to responding to and producing change according to Schein's leadership model for organizational change (Schein, 1992). Further, each elite interviewee related several scenarios in their career in which they had to adapt to significant changes in their environments and needs of their businesses, which reflects the conditions for transformation according to Mezirow's framework of transformational learning (Mezirow, 2000). In line with transformational leadership theory, elite CIOs demonstrate developed abilities to “relate” to multiple perspectives, as stated by Mezirow (2000) as the critical foundation for transformative learning. Leadership and Adult Learning theorists stress a need in a transformative leader to maintain and encourage inclusion and openness in order to adapt to changing circumstances. Mezirow (2000) points out that “we tend to embrace frames of reference that compliment each other. Particularly comprehensive and dominant paradigms or systems of belief that unite the particular with the universal become ‘worldviews.’” Further, Mezirow suggests that to fully and freely participate in discourse, learners must have an open mind to finding agreement, welcoming difference, trying on other points of views, identifying the common in the contradictory, tolerating the anxiety implicit in paradox, searching for synthesis, and reframing.

From the follower perspective of leadership, successful CIOs also seemed to dedicate substantial focus to building the right IT teams by hiring and promoting IT professionals based on personality profiles that match and support the organization’s mission and IT needs (Bass, 1997), delegating responsibility and accountability for execution at appropriate levels and functions, as well as developing employees to higher competency levels (Nahavandi, 2000).

Following is a summary of the key actions and behaviors demonstrated by researched expert CIOs that illustrate how these characteristics apply in their roles. Many of these are as above mentioned identified in theory as key characteristics of effective leaders, but frequently overlooked in practice.

#### Key Actions of Elite CIOs in integrating IT and Strategy:

- Managing the Driver and Supporter roles of IT
- Assertive but mindful approach to incorporating new technologies (learning from other companies’ mistakes)
- Integrating IT with business units through cross-functional teams and learning initiatives
- Pushing accountability to lower levels
- Recruiting and terminating employees based on commitment to vision and proposed changes

#### Key Behaviors of Elite CIOs:

- Focus on establishing credibility with senior leadership
  - Demonstrating business acumen
  - Executing well and delivering timely results
  - Managing organizational politics
  - Instilling trust and open communication between IT and other divisions
  - Relating to and incorporating multiple perspectives
- Continuous learning about the business and its industry
- Dealing with changing environments

#### **Impediments to success among aspiring Elite CIOs**

Common issues that came up among focus group participants pertained to maintaining a balance between the driver vs. supporter roles of IT, poor relationships with their senior leadership, and lack of strategic alignment capacity of their IT teams. Questions included:

- How do I focus my team on outcomes vs. infrastructure?
- How do I help my boss understand what I do?
- How do I transform the technology management and strategic alignment with a staff who hasn’t demonstrated that capacity?

The key challenges, paired with apparent marginalization of the IT division, indicate a unilateral perspective of ITs contribution to the organization among challenged technology executives. Relating to a foreign frame of reference is the prerequisite for developing transformative leadership skills as previously discussed, as well as the ability to build the relationships across organizational functions and integrate multiple perspectives in plans for successful business alignment and execution. The previously stated impediments to successful strategic execution further indicate behavioral limitations, such as inability to delegate and communicate, or a lack of the cognitive capabilities required to comprehend the bigger priorities of the organization and the visionary and inspirational leadership skills to execute on strategic plans.

### **Can Elite CIO skills be learned?**

With regards to the final research question in this study, of whether the skills that distinguish successful CIOs from challenged ones can be learned through Leadership Development, the answer is yes according to all theoretical frameworks, although to various extents.

Conceptual capacity is reflected in the complexity of the pattern or map an individual is capable of construing to cognitively represent work experiences. “As these experiences become increasingly complex, with more obscure cause and effect relationships, individuals require more abstract thinking abilities to develop the requisite cognitive maps” (Zaccaro, 2001). Most conceptual complexity theorists suggest that cognitive skills can be developed. However, Jaques argued that the capacity for cognitive complexity is dependent on hereditary factors, the highest degree to which a person can develop his or her conceptual skills can be mapped in their early life.

Most interventions that are designed to promote development of cognitive skills are primarily instructional-based programs. Little attention has been directed to the role of self-development efforts in pushing leaders to adjust their current frames of reference in favor of more complex ones that incorporate a wider span of factors. However, studies on cognitive complexity application by participants in programs sponsored by the Army Research Institute did suggest significant improvement in subjects’ creative problem solving, strategic decision making, and integrative thinking as a result of targeted training programs (Zaccaro, 2001).

Behavioral Complexity theories makes the conclusion that executive level leadership is characterized by a greater diversity of managerial roles than lower level leadership, and these roles reflect competing work orientations such as stability vs. innovation, production vs. personnel development, and internal vs. external focus. One process for developing behavioral patterns that sustain higher levels of role complexity focuses on impacting the existing mindsets or paradigms of leaders and spurring them to redefine their role in the organization. As an instruction-based program, this process has proven to be

successful in producing the new patterns of behavior and empowerment necessary to operate effectively in roles of higher complexity. However, researchers argue that growth in behavioral complexity comes not only from such training but also from a supportive work environment that induces and sustains new work role behaviors. Hence, work challenges and support from both leadership and the environment appear to be necessary elements of development in this area (Zaccaro, 2001).

Visionary and inspirational leadership theories emphasize the role of the executive leader in formulating direction for the organization and taking action within the organization to implement that direction. Theorists debate the extent to which visionary and inspirational leadership can be developed. Some argue that the personal qualities that promote effective visionary and inspirational leadership emerge from a combination of life experiences (Zaccaro, 2001). For example, the ability to inspire and intellectually stimulate followers is a charismatic behavior that has strong dispositional, trait like elements and is reported to develop early in life (Nahavandi, 2002). Many of the qualities of visionary and inspirational leadership, however, can be developed through focused personality style assessments and development interventions on such personality characteristics as self-awareness and communicative competence.

Delegation and development of employees is a skill that develops with practice, more or less easily depending on the leaders personality style, need for control, and fear of losing control. Leaders can follow guidelines to develop their delegation skills and find a proper framework for delegating within their specific teams. Such guidelines may include: clarification of goals and expectations, support and authority, distribution of tasks, monitoring and feedback, and coaching and mentoring. Suggested benefits of proper delegation include: freeing up the leader’s time for new tasks and strategic activities, providing employees with opportunities to learn and develop, allowing employees to be involved in new tasks, allowing observation and evaluation of employees in new tasks, and increasing employee motivation and satisfaction (Nahavandi, 2002).

A major consequence of organizational changes for leaders is the need to understand culture and its impact on followers and organizations. Hence, developing cultural awareness is critical for leaders. The main purpose of obtaining insights into the organization’s culture is to be able to decipher how different cultural assumptions enable or impede organizational effectiveness and changes (Schein, 1992). As a developmental intervention to this end, Schein (1992) suggests a process that enables members of an organization to identify important cultural assumptions and evaluate the degree to which those assumptions aid or hinder some strategic purpose that the group is concerned about. The most efficient way to accomplish this objective is to have an outsider work directly with a group of motivated insiders on a model of cultural artifacts, values and assumptions.

Transformational Learning theory suggests that Transformational Leadership skills can be learned through various methods that support critical reflection, integration of perspectives, and actions to bring about change, such as problem solving, planning and implementation (Mezirow, 2000). A wide range of events, situations, dilemmas, or interactions with others can act to stimulate critical reflection and consequentially transformative learning for Leaders. CIOs dynamic environments suggest a high level of opportunities for transformational learning. The process of becoming aware of and questioning basic assumptions is a key component of such learning. However, it is often a difficult task for the learner and may require support from a facilitator, such as an executive coach or an educator (Mezirow, 2000). For struggling CIOs, such support to spur transformative learning for themselves should further enable them to lead their teams through the process of transforming towards being more inclusive, discriminating, and capable of change. An executive coach can assist a CIO in developing along the continua of leadership characteristics required within their specific organizational contexts and situations. Executive Coaching is a professional partnership between the Coach and an individual that supports reflective practices to foster transformative learning with the aim to achieve certain developmental goals or actions. Throughout the coaching engagement, the coach contributes observations and questions as well as concepts and principles to assist in generating possibilities and identifying actions for the client to take. Coaching can generate fresh perspectives on business challenges and opportunities, enhanced thinking and decision making skills, enhanced relationship effectiveness, increased confidence in carrying out various professional roles, and appreciable results in the areas of productivity, satisfaction with life and work, and the achievement of relevant goals.

The goal of Transformational Learning in an organization is to allow the organization to more effectively realize its performance goals. This involves substantial and fundamental change in how the organization functions, breaking with dysfunctional patterns of organizational action and requiring entirely new behaviors on the part of the organizational members (Marsick & Yorks, 2000). As demonstrated by elite CIOs' Organization Development efforts and evident results, CIOs can employ learning techniques to overcome limiting belief systems within their teams and integrate their IT organizations with business strategy, and encourage behaviors that spur and sustain continuous transformative learning. CIOs can, in fact, leverage their changing environments as triggers for transformative learning. Two Leadership Development strategies that can produce transformative learning in teams are Action Learning and Collaborative Inquiry. Both strategies are highly participatory and designed to foster learning form experience through cycles of action and subsequent reflection on that action (Marsick & Yorks, 2000).

Action learning is an approach to development that uses real projects or problems to spur transformative learning. As in the GE model for integrating IT with business strategy, adapted by Charles Williams at Pfizer, participants work in small groups and learn through developing solutions to an organizational challenge. Action Learning programs in organizational settings most often involve project teams including

members from diverse areas of specialization and experience, sponsored by a senior manager. Each team is presented with a real organizational challenge, and members are required to structure their problem solving process themselves. The team’s recommendations are finally presented to the sponsor and a group of senior managers, who then decide whether or not to implement them within the organization. The elements of this model that spur transformative learning are the conditions that force team members to learn to leverage each other’s different strengths and skillsets, which spurs them to expand their frames of reference beyond their individual and functional boundaries in including the multiple perspectives involved. Consequences of Action Learning programs not only include transformational learning by expanding frames of reference, but it also enables team members to establish valuable relationships across multiple divisions and with senior managers, as well as deepen their knowledge about the various functions of their organizations.

Collaborative Inquiry is an approach more oriented towards understanding and knowledge creation, and involves a process consisting of repeated episodes of reflection and action through which a group of peers strives to answer a question important to them. To the same learning objectives as in Action Learning, the notion of peers reflecting together – shaping the question, designing the inquiry process, participating in the learning experience, and making and communicating meaning of the topic – defines collaborative inquiry as a transformational learning experience (Marsick & Yorks, 2000). To diminish marginalization and build for sustainable transformational learning, Daryl G. Smith (1996) proposes steps that learning environments can take to make each individual feel included, such as: acknowledging membership in multiple groups, recognizing how the feeling of belonging is created, and developing a process to work through conflict. These concepts are especially important to keep in mind when designing training efforts for sustainable integration of teams.

## **Conclusions**

The results of the study point to a need for both Chief Information Officers and their senior leadership peers to assume greater responsibilities in integrating IT with strategic business initiatives. This demands a wide set of leadership skills, mainly with regards to management and executive relationships. Successful CIOs perform beyond the functional aspects of their job descriptions and apply various leadership characteristics in creating plans, inspiring and developing their followers, and building the relationships with business units that are crucial for effective strategic IT integration and execution. Challenged CIOs face one or both of two impediments to such success in their roles: they either lack or demonstrate only part of the range of leadership skills necessary to perform at elite CIO levels, or their organizational environments do not support integration and strategic involvement of IT. In the former case, CIOs can use various leadership and organization development practices to increase their skill

levels in each of the areas identified as core CIO leadership competencies to varying degrees. Because these core competencies have proven effective in integrating IT with the rest of the organization, as well as building credibility with senior leaders, challenged CIOs who develop these competencies and apply them successfully may in turn reduce the level of marginalization of IT within the organization as a result.

As of recently, business leaders and institutions are recognizing the importance of information technology skills at the executive and board-level leadership. A study by Burson Marsteller shows that 5 percent of Fortune Global 500 companies have CIO skills on their board, and these companies have outperformed the industry index by 6.4 percent per year since the CIO-skilled member was elected. Further, business schools are increasingly incorporating IT into their core curriculum. In a study by NYU Stern Business School professors, forty-three out of the forty-five business school deans interviewed “believed that it was critical for executives of the future to have a clear understanding of how IT affected business and society” (Bradshaw, 2006). This suggests a question for future research: How can CEOs and board members improve their understanding of technology’s impact and further potential to drive business results?

## References

- Bass, B.M. (1997). Does the transactional-transformational leadership paradigm transcend organizational and national boundaries? *American Psychologist*, 52(2), 130-139.
- Bradshaw, Della (2006). IT back on the MBA agenda. *Financial Times*. July 24.
- Burke, W.W. (1986). Leadership as Empowering Others. In S. Srivasta & Associates (Eds.), *Executive Power: How Executives Influence People and Organizations*. San Francisco: Jossey-Bass. Chapter 3 (pp. 51-77).
- Burke, W.W. (1997). Leadership Development. In L.J. Bassi and D. Russ-Eft (Eds.), *What Works: Training and Development Practices*. Alexandria, VA: American Society for Training and Development. Chapter 1 (pp. 1-25).
- Byrnes, Jonathan (2005). Working Knowledge. Harvard Business School. June 13.
- Carr, Nicholas (2003). IT Doesn't Matter. *Harvard Business Review*. May 1, 2003. Vol. 18, Issue 5.
- Cramm, Susan (2006). Leadership at All Levels: How to Involve Everyone in the Leadership and Management of IT. *CIO*. Framingham. Jan. 1. Vol. 19, Iss. 6; pg. 1.
- Cranton, Patricia (1994). *Understanding and Promoting Transformative Learning*. San Francisco. Jossey-Bass.
- Deasy, Dana. Senior Vice President and Chief Information Officer, Tyco International, Inc. Interview. February 2, 2006.
- Dillman, Linda (2005). Interview. *Optimize*. Manhasset. Oct. Vol.4, Iss. 10; pg. 56, 3 pgs.
- Gardner, H. (1995). *Leading Minds: An Anatomy of Leadership*. New York, Basic Books.
- Gartner (2004). Improving the CEO's view of the CIO. *Gartner EXP Premier*. July.
- Gartner (2005). Delivering IT's contribution: The 2005 CIO Agenda. *Gartner EXP Premier*.
- Hoffman, Thomas (2005). Managing Up. *Computerworld*. Framingham. Dec. 12. Vol. 39, Iss. 50; pg. 46, 1pgs.
- Hogan, R., Curphy, G.J., & Hogan, J. (1994). What we know about Leadership. *American Psychologist*, 49 (6), 493-504).
- Holmes, Allan (2005). Rules of the Road for Turnaround CIOs: Turnaround CIOs are in Demand. Here are six steps for righting a troubled IT ship. *CIO*. Framingham: Aug, 2005. Vol. 18, Iss. 20; pg.1.
- Hugos, Mike (2005). How to Become a Change Agent; If You Want People to Follow You, Take a Walk In Their Shoes. *CIO*. Framingham. Oct 15. Vol. 19, Iss. 2; pg. 1.
- Kasper, Hans (2002). Culture and leadership in market-oriented service organizations. *European Journal of Marketing*. Bradford : Vol.36, Iss. 9/10; pg. 1047, 11 pgs

Kegan, Robert (2000). What 'Form' Transforms? A Constructive-Developmental Approach to Transformative Learning. *Learning as Transformation: Critical Perspectives on a Theory in Progress*. Jossey Bass, San Francisco, CA.

Kern, Harris (2003). The History of the CIO. Harris Kern's Enterprise Computing Institute. [www.harriskern.com](http://www.harriskern.com). July 30.

Laiken, Marilyn E. (2003). Models of Organizational Learning: Paradoxes and Best Practices in the Post Industrial Workplace. *Organization Development Journal*. Chesterland: Spring, 2003. Vol. 21, Iss. 1; pg. 8.

Langer, Arthur M. (2005). *IT and Organizational Learning: Managing Change Through Technology and Education*. Routledge, New York.

Langer, Arthur M. (2006). Comments during interview with Charles Williams, CTO, Pfizer.

Lin, Jean; Hitchens, Sheridan; O Davenport, Thomas (2001) *Fast Learning: Aligning Learning and Development with Business Strategies*. *Employment Relations Today*. Autumn, p.28.

Madhavan, Ravindranath; Rajiv Grover (1998). From embedded knowledge to embodied knowledge: New product development as knowledge management. *Journal of Marketing*. Chicago . Vol.62, Iss. 4; pg. 1, 12 pgs.

Marsick, Victoria; Yorks, Lyle (2000). *Organizational Learning and Transformation. Learning as Transformation: Critical Perspectives on a Theory in Progress*. Jossey Bass, San Francisco, CA.

Mezirow, Jack (2000). Learning to think like an adult: Core concepts of transformation theory. *Learning as Transformation: Critical Perspectives on a Theory in Progress*. Jossey Bass, San Francisco, CA.

Moskowitz, Ken; Kern, Harris (2002). *Partnering for Success: Managing IT as an Investment*. Prentice Hall.

Most Powerful CIOs. *Optimize*. Manhasset: Oct, 2005. Vol. 4, Iss. 10; pg. 56, 3 pgs.

Nahavandi, A. (2003) *The Art and Science of Leadership*, 3<sup>rd</sup> Ed. Upper Saddle River, NJ: Prentice-Hall.

Nixon, Bruce (2003). Leading business transformation: learning by doing. *Industrial and Commercial Training*. Guiltsborough: Vol.35, Iss. 4/5; pg. 163, 5 pgs

Noble, Jim. Vice President and Chief Information Officer, Altea Group, Inc. Interview. January 6, 2006.

Nonaka, Ikujiro (1998) *The Knowledge Creating Company*. Harvard Business Review on Knowledge Management. Harvard Business School Press.

Pastore, Richard, and Cosgrove, Lorraine (2005). Turning IT Doubters into True Believers CIO research. June 1.

Prewitt, Vana (2003). Leadership development for learning organizations. *Leadership & Organization Development Journal*. Bradford Vol.24, Iss. 1/2; pg.58

Roberto, Michael A. (2005). Deciding How to Decide: Good Decisions Arise from Constructive Conflict. Here's How to Use Debate to Build a Sound Decision-Making Structure. *CIO*. Framingham. Nov. 1. Vol. 19, Iss. 3; pg. 1.

Schein, Edgar (1992). *Organizational Culture and Leadership*. San Francisco. Jossey-Bass.

Schlossberg, N.K. (1989). Marginality and mattering: Key issues in building community. In Roberts, D.C. (Ed.), *Designing campus activities to foster a sense of community*. San Francisco: Jossey-Bass.

Smith, D.G. (1996). Community and group identity: Fostering mattering. In Benally, S., Mock, J.J. and Odel, M. (Eds.), *Pathways to the multicultural community: Leadership, belonging, and involvement*. Western Interstate Commission for Higher Education, 94-100.

The Economist Intelligence Unit (2005). Staying Ahead of the Technology Curve: A Board-Level Perspective. January, 2005.

Tucker, Jennifer; Mackness, Abby; and Rutledge, Hile (2004). Booz Allen Hamilton and OKA. The Human Dynamics of IT Teams. *Cross Talk*. Feb. issue.

Williams, Charles. Chief Technology Officer, Pfizer, Inc. Interview. December 16, 2005.

Yukl, G (2002). Overview and Integration. *Leadership in Organizations*, 5<sup>th</sup> Ed. (pp.423-441). Upper Saddle River, NJ: Prentice Hall. Chapter 15.

Zaccaro, S.J. (2001). Executive Leadership: An Integrated Model. In *The Nature of Executive Leadership: A Conceptual and Empirical Analysis of Success*. (Chapter 10, pp. 279-315)