MIS QUARTERLY EXECUTIVE

UNDERSTANDING AN ORGANIZATION'S VIEW OF THE CIO: THE ROLE OF ASSUMPTIONS ABOUT IT [1]

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Executive Summary

At the 2003 Society for Information Management's (SIM) annual meeting in New York City, many of the sessions focused on what CIOs could do once they got a seat with their business peers at the executive meeting table. Heightened concerns about information security and legislative compliance have increased interest in the answer.

Despite the importance of IT to modern organizations, many IT executives are still not at that table because they are not viewed as equal to their business peers. Even elevating IT executives to C-level management and giving them the title of Chief Information Officer (CIO) do not guarantee that they are accepted and invited to high-level business meetings.

This article provides one perspective on why some organizations are more open than others to affording their CIO an effective, influential, senior executive role. Our conclusion: Dominant assumptions about IT in different areas of an enterprise can explain differences in CIO status. Five assumptions that matter are:

1. *Who should control IT direction*
2. *How central IT is seen to business strategy*
3. *The value placed on IT knowledge*
4. *Justifications for investing in IT*
5. *Who are deemed winners and losers when a new IT system is installed.*

This article explores these assumptions, and the IT clusters they form, to help CIOs and other senior IT executive better address the different "assumption environments" they face.[2]

WHY STATUS MATTERS

In 1985, Benjamin, Dickinson, and Rockart wrote about the changing role of the Chief Information Officer (CIO).[3] They argued that the creation of the CIO position demonstrated that the status of IT executives was being elevated and integrated into top management. Paradoxically, twenty years later, one of the major problems many CIOs face is a lower perception of their IT function's status than other business units.[4]

Although there is little argument that IT has become integral to the strategic operation of most organizations, this in itself seems to have little to do with the status of the CIO (and the other senior IT executives) or the business' perceptions of the IT function overall. Status is more than a large office or special parking privileges. It is recognition from the organization, or at least key parts of it, of the IT function's capabilities and value.

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[1] Jack Rockart was the accepting Senior Editor for this article.

[2] My sincere thanks to the CIOs, management, and employees at the firms involved in this research, as well as, Barbara McNurlin for her editorial assistance and to the reviewers for their suggestions.

[3] Benjamin, R.I., C. Dickinson, Jr., and J.F. Rockart, "Changing Role of the Corporate Information Systems Officer," *MIS Quarterly*, 1985, 9(3), p 177.

[4] Levinson, M., "CIO and CEO: How To Work With Your Boss," *CIO Magazine*, 2004, 18(1), p 1.

A presentation at a recent conference was particularly telling. The CIO recounted the multi-million-dollar cost savings a new systems portfolio management program brought the company. But then he admitted that he was still working to get the top business people on his side. When asked "Why?" he replied, "IT is still not viewed as an equal at our firm, and we have to keep proving ourselves."[5] At another meeting, consultants, IT executives, and IT academics debated quite heatedly over whether the IT function was a second-class citizen and poor cousin to the business units. Sadly, the overwhelming consensus was that IT was all too frequently excluded or unwelcome in key decisions, such as setting organizational strategy.

The importance of status and credibility of CIOs and their IT organization go beyond job satisfaction. Status and credibility affect an organization's ability to extract value from its IT investments. Armstrong and Sambamurthy[6] found that a CIO's membership on the top management team and frequent informal interactions with business executives were almost as important to a firm's successful assimilation of IT as the other executives' level of IT knowledge. Business executives with greater IT knowledge can better assess a CIO's credibility and better leverage IT. Yet, having the CIO at the table was almost equally valuable.

Other researchers note similar findings. One is that CIOs who influence their executive peers using rational persuasion and personal appeal generated peer commitment, whereas those who used negotiated exchange or pressure encountered peer resistance.[7, 8]

Business executives who view their IT peers as having lower status invite negative outcomes for their enterprise: IT executives may not be involved in IT-related planning, which can lead to important oversights. IT may not be able to align with business objectives because IT management is not privy to them. IT may not receive the critical resources it needs because top management does not fully understand IT's role. And, top executives may continue to question whether or not IT delivers business value because they do not realize that value creation requires their involvement as well.[9, 10]

Achieving high status and a seat at the top management table does not solve a CIO's problems, however. In fact, it presents a different set of challenges that need to be managed. Nevertheless, the bottom line is that IT executives' status matters.

A CULTURAL EXPLANATION OF CIO STATUS

There are many common explanations for the low status of particular IT executives. To name only a few, they include: personality conflicts, a lack of corporate technology vision, poorly aligned IT goals, lack of business knowledge, lack of IT awareness among the business executives, incorrect formal structure and reporting relationships, even the location of the CIO's office. Communication ability and relationship with the CEO can influence perceptions of the CIO and the IT function as a whole.[11, 12] Organizational history with IT successes and failures, shared plans, and social factors can also affect relationships between CIOs and business executives.[13]

However, something deeper is going on here. CIOs' status may be low even when they are co-located with business peers, have an MBA degree, are surrounded by tech-savvy business executives, and have great personal charisma.[14] What, therefore, is the underlying cause?

One explanation is that an enterprise's history with IT becomes embedded in its culture. Organizational culture can influence all aspects of IT development, implementation, and management.[15, 16, 17, 18, 19] But cul-

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[5] 2003, identity concealed.

[6] Armstrong, C.P. and V. Sambamurthy, "Information Technology Assimilation in Firms: The Influence of Senior Leadership and IT Infrastructures, *Information Systems Research*, 1999, 10(4), pp 304-327.

[7] Enns, H.G., S.L. Huff, and C.A. Higgins, "CIO Lateral Influence Behaviors: Gaining Peers' Commitment to Strategic Information Systems", *MIS Quarterly*, 2003, 27(1), pp 155-174.

[8] Chan, Y., "Why Haven't We Mastered Alignment? The Importance of the Informal Organizational Structure," *MISQ Executive*, 2002, 1(2), pp 97-112.

[9] Ibid.

[10] Wheeler, B.C., G.M. Marakus, and P. Brinkley, "From Back Room

to Boardroom: Repositioning Global IT By Educating the Line to Lead at British American Tobacco," *MISQ Executive*, 2002. 1(1), pp 47-62.

[11] Stephens, C.S., "Five CIOs at Work: Folklore and Facts Revisited," *Journal of Systems Management*, 1993, 44(3), p 34.

[12] Op. cit. Enns, et al, 2003.

[13] Reich, B.H. and I. Benbasat, "Measuring the linkage between business and information technology objectives." *MIS Quarterly*, 1996. 20(1), 55-81. Also see: Armstrong and Sambamurthy, 1999, and Enns, et al, 2003.

[14] A new CIO at a research site moved his office up to the executive floor to be co-located with his business peers and increase his informal interaction with them. His personal efforts went a long way to improve already good relationships, but his assumptions about the role of IT and the IT function conflicted with those held by those other executives and departments heads.

[15] Gordon, G.G., "Industry Determinants of Organizational Culture," *Academy of Management Review*, 1991. 16(2), pp 396-415.

[16] Gordon, G.G., "The Relationship of Corporate Culture to Industry Sector and Corporate Performance," in *Gaining Control of the Corporate Future*, R.H. Kilmann, et al. (Editors), 1985, Jossey-Bass.

[17] Kaarst-Brown, M., "A Theory of Information Technology Cultures: Magic Dragons, Wizards, and Archetypal Patterns," 1995, York University.

[18] Kaarst-Brown, M.L. and D. Robey, "More on Myth, Magic and Metaphor: Cultural Insights into the Management of Information Technology in Organizations," *Information Technology & People*, 1999, 12(2), pp 192-217.

[19] Kaarst-Brown, M.L. and J.R.E. Evaristo, "International Cultures and

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ture is very difficult to define and assess. By focusing on the underlying assumptions that shape culture – specifically the assumptions related to IT – we can narrow our attention to a few key assumptions that provide insights into CIO status and the relationship of the IT function with the rest of the enterprise.

ASSUMPTIONS ABOUT IT

Our research uncovered five categories of "underlying assumptions"[20] about IT that affect the status of IT executives and their IT function, and therefore affect the resulting strategic management of IT. Just as organizational culture can account for differential treatment of women in management,[21] so too can assumptions about IT account for differences in treatment of the IT function and its leaders.[22, 23]

We uncovered these assumptions, and the clusters they form, mainly by studying IT-related assumptions in 31 departments or operating units of two large insurance companies. We recorded their history and experiences with IT from their first system through their recent exploration of Web-based applications.[24]

The Two Firms Studied

The two firms – called "Alpha Corp." and "Gamma Corp." (pseudonyms) – had their first experiences with IT about the same time: the mid-1960s and early 1970s. However, they had very different experiences, as did their various IT leaders, due to the different dominant assumptions about IT that developed in them.

Alpha Corp. was established over one hundred years ago. Its earliest experience with IT came in the late 1960s when it acquired a smaller, but innovative, firm. Alpha moved deeply into IT in the early 1970s when it automated many of its policy issuing and administration processes.

Gamma Corp., on the other hand, was established in the early 1970s by government mandate. It relied on IT from the beginning.

Insights Into Global Electronic Commerce," in *Global Information Technology and Electronic Commerce*, P. Palvia, S. Palvia, and E. Roche (Editors), 2002, Ivey Publishing.
[20] Underlying assumptions are what Edgar H. Schein, a well-known culture researcher, would refer to as the deep structure of culture. See also Schein, E.H., *Organizational Culture and Leadership: A Dynamic View*, 1985, San Francisco, CA: Jossey Bass, and Schein, E.H., *Organizational Culture and Leadership*, Second edition, Management Series, 1992, San Francisco: Jossey-Bass Inc.
[21] Hood, J.N. and C.S. Koberg, "Patterns of Differential Assimilation and Acculturation for Women in Business Organizations", *Human Relations*, 1994. 47(2), pp 159-181.
[22] Op. cit. Kaarst-Brown, 1995.
[23] Op. cit. Kaarst-Brown and Robey, 1999.
[24] A description of the research is found in the Appendix.

From 1989-1992, Alpha had approximately one-third the revenue of Gamma. Alpha's IT department of 55 was about one-sixth the size of Gamma's at that time, even though it had about half the employees and a similar number of branch offices. Alpha's revenues were about $300 million versus $1.2 billion for Gamma in 1992. Since that time, Alpha has been involved in a steady series of mergers and acquisitions, with final revenues of both firms reaching $2.9 billion in 2003.

While the management environments differed for the IT leaders, both companies exhibited the same five clusters of assumptions about IT. Both had similar functional divisions. Yet, the relationships and status assessments of the IT function and the senior IT executives varied depending on the assumptions of the business units and the groups within the IT organization. An interesting point is that even though the personalities of the senior IT executives differed significantly throughout the years of our study, these differences did not change the consistency of the assumptions about IT nor the perceived stature of the senior IT executives. Also, the assumptions did not coalesce over time into a single dominant cluster at either firm; rather, all five clusters continued at both firms.

The Five Categories of Assumptions About IT

The five assumption categories important to CIO status and IT management are:

1) Control assumptions – Who should control IT direction?

2) Centrality assumptions – How central is IT to business strategy?

3) IT Skill Value assumptions – What is the value of IT skills and knowledge at different organizational levels?

4) Justification assumptions – What justifies further IT investment?

5) Beneficiaries assumptions – Who benefits and who loses when IT is used?

Figure 1 provides descriptions of each category.

Throughout our research, we heard a variety of assumptions that varied in wording and emphasis. We synthesized this into a spectrum of five dominant assumptions for each category.

Control Assumptions. Given the volume of literature that links power with change or power with IT, it was not surprising that assumptions about control over IT direction emerged quite strongly at both companies.

FIGURE 1: Assumptions That Influence CIO and IT Status	
Assumption Category	**Description**
CONTROL Assumptions - Who controls IT direction?	Assumptions about organizational level or functional group that should control decisions about IT direction. These assumptions do not refer to a single individual, but rather to a position or group.
CENTRALITY Assumptions - How central is IT to business strategy?	Assumptions about the significance of IT to business strategy. These assumptions focus on past and future success or survival of either an entire organization or particular organizational units.
IT SKILLS VALUE Assumptions - What is the value of IT skills and knowledge?	Assumptions about the value or lack of value placed on IT skills and knowledge among different groups or levels.
JUSTIFICATION Assumptions - What justifies further IT investment?	Assumptions about the purposes for which IT should be used that justify further IT investment.
BENEFICIARIES of IT Assumptions - Who benefits or loses when IT is used?	Assumptions about who wins or loses as a result of IT development or adoption. Winners and losers are defined broadly, but cover the full range of stakeholder groups from employees to customers.

The spectrum of five assumptions in this category were that IT direction should be controlled by the IT function, corporate executives, business units, IT and user groups together, or no one at all (because IT was already out of control); see Figure 2. This assumption category provides an initial clue about the status of the IT function and its leader.

Centrality Assumptions. Control of IT direction was one issue. Importance of control was another. IT might or might not be viewed as strategic to the organization – that is, as being central and critical to achieving the organization's goals and business strategies. Despite being information intensive insurance companies, assumptions about the strategic significance of IT varied considerably across (and sometimes within) different divisions at Alpha and Gamma.

The spectrum of assumptions about IT's centrality were that IT was imperative to success, depended on whether or not IT work was sponsored, was only central to operational and tactical goals, depended on the strategic problem being addressed, or was not significant at all, unless required by external forces; see Figure 3. The centrality assumption of a business group provided insights into the status of IT and the senior IT executives, and the relationship quality between IT and the business group. As one would expect, where IT was viewed as significant, the IT leader was also viewed as more important.

IT Skills Value Assumptions. The companies demonstrated different levels of appreciation for IT skills and IT knowledge in general – that is, in business staff and in IT staff alike. The spectrum of assumptions were that IT skills and knowledge were highly valued and rewarded, not valued as highly as business skills, necessary for some people, neutral on their own but valuable when partnered with business skills, or not valuable at all and maybe even threatening; see Figure 4.

FIGURE 2: Control Assumptions	
Assumption Category	**Spectrum of Assumptions**
Who should control IT direction?	• *IT professionals* (IT) should control IT direction. • *Corporate business executives* should control IT direction. • *Business units* should each control their own IT direction. • Control should be *shared* between IT and users groups. • Let's *not control it*, let's avoid it because IT is out of control

FIGURE 3: Centrality Assumptions	
Assumption Category	**Spectrum of Assumptions**
How central is IT to business strategy?	• Embraced as *imperative* to corporate success • Significance *depends on whether a business leader is* sponsoring the IT project • *High level* of centrality to *operational and tactical goals* at the business unit level • *Selective centrality*, depending on nature of strategic business problems • *Not significant* at all unless required by external forces (industry standard; survival issue)

As expected, when a department placed a low value on IT skills, its managers assumed they didn't need these skills to be successful. A CIO working with these departments, whose business peers viewed him or her as too technical, would be at a perceptual disadvantage. A recent study found that technical ability did not *necessarily* undermine a CIO's ability to influence business peers.[25] However, if technical skills were viewed as *inferior* to core business skills, then the CIO could still face this disadvantage.

As an example, a new senior vice president of administration at Alpha, to whom the vice president of information systems reported, admitted that he downplayed his level of IT expertise out of concern that he would be branded as a "techie" and lose his business credibility. He felt he was especially vulnerable because he was new to the insurance industry. He lacked credibility by not having proven insurance skills. After joining the firm, he quickly became aware of the underlying assumption that business skills in general and insurance skills in particular were superior to technology skills. His interpretation was supported by several IT staff at Alpha who felt that their opinions were less valued because they were seen as not being part of the core business and not sufficiently knowledgeable about insurance.

Justification Assumptions. Justification assumptions answer the question, "What opportunities justify the costs and risks of investing further in IT? Some assumptions lead to proactive investments; others lead to reactive investments. In the 31 business units in the two insurance firms, IT investments were justified based on a spectrum of assumed reasons: when they could lead to innovation, reduce staff or costs, increase unit level productivity, assist a strategy (such as increase quality), or only when there was no other choice to survive or stay competitive; see Figure 5.

These variations could be loosely linked to corporate strategy, such as low cost, product differentiation (focused), or innovation.[26] More specifically, however, the differences reflected distinct justifications for in-

FIGURE 4: Value of IT Skills and Knowledge Assumptions	
Descriptive Assumption	**Spectrum of Assumptions**
What is the value of IT skills and knowledge?	• IT skills are *highly valued and rewarded*; may give one status regardless of position or gender. • IT skills are *not as important* as insurance skills, *but* people with IT skills can *be useful if directed* by business leaders. • IT skills and knowledge are *necessary* for certain business unit managers and staff. • IT professionals or skill holders are valuable when *partnered* with holders of business skills but neutral on their own. • IT skills are not valued and may be *threatening*.

[25] Enns, H.G., S.L. Huff, and B.R. Golden, "CIO Influence Behaviors: The Impact of Technical Background," *Information & Management*, 2003, 40(5), pp 467-476.

[26] Porter, M.E., *Competitive Advantage: Creating and Sustaining Superior Performance*, 1985, New York: The Free Press, p 557.

FIGURE 5: Justification Assumptions	
Descriptive Assumption	**Spectrum of Assumptions**
What justifies further IT investment?	• Experimentation and research and development in IT provide opportunities for finding new or improved services (innovation) • Justified when IT will help reduce staff or operating costs (same output with less staff) • Justified when IT can support unit-level strategy or improve personal and unit productivity (i.e., more output of better quality with same people) • Justification varies depending on business problem or strategy and IT opportunity (cost, quantity, quality, variety, or innovation). • Investment in new IT is justified when there are competitive or survival pressures – that is, when there is no choice but to invest in IT to survive or stay current with industry standards.

vestment that provided important signposts for the CIO and his or her team.

Beneficiaries of IT Assumptions. Adoption of a new technology leads to expected and unexpected consequences, both positive and negative. The "beneficiaries of IT" assumptions reflect expected outcomes, that is, which people are believed to win or lose from the new use of an information technology. These assumptions may be about individuals, the IT function, shareholders, customers, or even the organization as a whole.

This spectrum of assumptions reflects more than the expected business value of IT. It reminds us that technological change can produce fears about being on the losing side of change. Business groups that fear the effect of a potential IT investment on themselves are likely to view the CIO and the IT team negatively. On the other hand, technological changes pushed by some departments can take a heavy toll on the IT function

itself, making IT staff feel like losers as they attempt to meet unreasonable expectations.

The two firms demonstrated a spectrum of five assumptions about beneficiaries: everyone wins, the organization and shareholders win but IT may lose, only certain business units win and IT may win or lose, selective loses are inevitable, or no one wins; see Figure 6.

CLUSTERING THE ASSUMPTIONS

Rather than assess each assumption individually, CIOs can gain greater insights by looking for dominant patterns, that is, clusters of assumptions. At the two insurance companies, we pattern-matched main assumptions of departments and groups. We found that the dominant assumption for each category clustered into discernable patterns of behavior toward information technology, the senior IT executive, and the IT func-

FIGURE 6: Beneficiaries Assumptions	
Descriptive Assumption	**Spectrum of Assumptions**
Who wins and who loses with IT adoption?	• Everyone wins – IT, the IT professionals, the organization, shareholders, and customers. • The organization and shareholders win; IT and other staff may lose. • Specific business units may win; no one loses (except maybe IT). • The organization, shareholders, and customers win, but selective losses may be unavoidable. • No one wins; or non-technology staff lose.

FIGURE 7: Clusters of Assumptions about IT					
Assumption Clusters **Assumption Categories**	**"A Necessary Evil"**	**"IT is Support, Not a Partner"**	**"IT Rules!"**	**"Business Can Do IT Better"**	**"Equal Partners"**
WHO SHOULD CONTROL IT DIRECTION	Let's not control it, let's avoid it because IT is out of control	Corporate business executives should control IT direction	IT professionals should control IT direction	Each business unit should control its own IT direction	Control should be shared by IT professionals and business units
CENTRALITY of IT to BUSINESS STRATEGY	Not assumed to be central to business strategy	Must have senior business champion or sponsor	Crucial at corporate (strategic) level	Important at operational or tactical levels	Balanced importance depending on issues
VALUE of IT SKILLS and KNOWLEDGE	Not valued; potentially a threat	Business knowledge superior; IT second class but used when needed	IT skills highly valued and rewarded	IT knowledge and/or skills REQUIRED at mid-managerial and staff business levels	IT skills valued as partnered with business skills
JUSTIFICATION for IT INVESTMENT	No choice but to adopt IT solution as a survival measure	To reduce costs and/or staff (or at executive decree of benefits)	R&D; innovation; to improve or create new services	Improved services; personal productivity and unit level services	Customer oriented; problem-specific
BENEFICIARIES of IT (Winners or Losers)	Non-IT staff will lose; no one wins	Staff may lose; organization wins; IT staff may suffer demands	IT staff win; organization and clients win	Business units win so organization wins; IT may lose if shut out of projects	Selective losses; organization and customers win

tion as a whole. We refer to these as clusters.

Here is an example of one cluster, which we call "IT Is Support, Not a Partner."

- *Control assumption:* IT should be controlled by the senior business executives.

- *Centrality assumption:* The significance of IT depended on whether or not a business manager championed the IT project.

- *Value assumption:* IT skills were not valued as highly as core business skills.

- *Justification assumption:* IT investments were justified only when they reduced either costs or staff.

- *Beneficiaries assumption:* The organization as a whole would benefit from IT, but some losses would be unavoidable. Generally, IT staff would lose because their job was to serve the business.

In this assumption cluster, the CIO and other senior IT executives have little status, and the IT function is treated as a second-class corporate citizen.

We found five such clusters of assumptions and gave each a name that reflects IT's implicit status in the eyes of the business group.[27] Figure 7 shows the five clusters.

Following are examples of each cluster of assumptions about IT, and the impact of the assumption cluster on CIO status. CIOs will likely recognize their enterprise or certain departments in these examples.

"IT Is a Necessary Evil"

The human resources division of Gamma Corp. contained many different departments that provided a variety of corporate and employee services. One group was the benefits department. Although the CIO had an excellent relationship with the vice president of HR, his status, and the status of his team, was significantly less with the benefits department.

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[27] These status patterns are based on the archetypal cultural patterns published by Kaarst-Brown, 1995, and Kaarst-Brown and Robey, 1999. In these papers, the cultural archetypes are called: the Fearful IT Culture, the Controlled IT Culture, the Revered IT Culture, the Demystified IT Culture, and the Integrated IT Culture.

The benefits employees did not question the CIO's competency or personality, but they did question everything else about IT. They saw IT as a necessary evil, so they were not welcoming to IT staff. They avoided IT at worst, and only "tolerated" IT staff at best. Employees in other departments fully recognized the benefits department's low view of IT. One employee in the department called his department "very cautious." An employee in another department called them "resistant."

Employees in benefits expressed strong concern that people would suffer once a new pension system was implemented. Rather than state their concerns directly, though, these concerns surfaced as complaints and challenges during implementation. These employees did not get involved during development. In fact, they opposed having to include their processes in the new corporate HR system They lost that battle, so they dragged their feet throughout development.

This group also placed high value on their specialized skills, experience, and knowledge about benefits. They viewed IT staff as arrogant for not understanding the importance of these skills. In fact, the group unanimously assumed that if technology spread to all their tasks, their efficiency, effectiveness, and control over their work would suffer. They would also be subjected to increased monitoring. They might be let go. The director of another group that shared this set of assumptions, and also viewed the CIO and IT function as a necessary evil, explained:

> "Some people are scared to death. They say 'I love the feeling that you can give me all this information, but now you can measure me, too.'"

A potentially positive aspect of this group's concerns surfaced as zealous testing of the new pension module that automated a formerly manual process. Unfortunately, when the group found errors in the pension calculations, they viewed these errors as yet more proof that computers could not be trusted, and neither could the people who developed and managed them. The CIO's credibility suffered, even though the calculation errors were generally measured in cents.

This cluster of assumptions about IT is more common than expected and is perpetuated in many organizations by systems failures, media hype on security problems, and corporate downsizing after automation. The CIO should not expect a seat at the executive table when this cluster is dominant among senior management.

"IT Is Support, Not a Partner"

Alpha Corp.'s senior management viewed IT as support, not a partner, setting the tone for much of the company's view of IT. Because of this view, the CIO and his IT management team faced challenges on budgets, priorities, and resources every day. Senior management believed that IT needed to be almost totally directed by the business executives – *excluding* the vice president of IT – because they knew their business best. It did not matter that their knowledge or use of IT was limited.

Management also viewed IT folks as "different," which translated into "lower power status." IT even struggled to get resources for basic maintenance and upgrades. Technical problems were viewed as signs of IT's inferior abilities. None of the vice presidents of IT during the course of this study had high status with the executive group, even though one had been with the company for twenty years and was viewed as a highly competent executive by external peers.

The vice president of IT was not part of the strategic planning process and was often excluded from providing official input until the majority of project decisions had been made. In fact, when a special committee was formed to discuss the future of Alpha's most important information system, the new senior vice president of administration (to which IT reported) had to use considerable political maneuvering to get the vice president of IT on the committee. It was then stressed that the IT vice president's role was only to "clarify technical issues rather than serve as an equal member." The rationale for his secondary role was as follows:

> "The vice president of IT might be biased about technology options, whereas the branch and head office end user members were not biased."

Another line executive reiterated this view, explaining that

> "[The VP of IT] was on the committee as a technical expert, but he didn't try to guide their decisions. It was their business committee."

This cluster of assumptions was shared and reinforced by several other groups at Alpha Corp. Being the dominant cluster among the executives, it had a strong organizational impact at Alpha Corp. The CIO rarely reported to a senior executive with extensive computer knowledge. One senior vice president explained the history:

> "Every senior [business] vice president has had IT at one time or another. There has been no continuity, no first-hand knowledge [with IT]. At senior levels there has been no representative who has been familiar with IT."

One vice president of IT noted his frustration:

"Our previous senior vice president was anti-computers, and we reported to him. No one understood us and so no one supported us. We (IT) were viewed as a cost, not an investment."

Many of the long-tenured IT staff were also frustrated that IT was viewed as not understanding the business problems or business strategy. Most had been with the company between ten and twenty years and did, indeed, understand company and industry issues. In fact, they were frequently highly respected outside their company, despite limited business credibility inside.

In line with these views, IT skills did not elevate a business unit employee's status. Employees could only expect to receive rewards if their IT knowledge led to significant benefits in the long term.

Alpha's IT group was expected to continually reduce and offset costs by saving money in the rest of the business through its services. Even the president focused on reducing IT expenses. The irony is that IT costs included all computer equipment costs and related office overhead and supplies – whether or not IT had any control over these expenditures.

Rather than focus on innovation or competitive new services, every IT project had to be cost-justified on reducing expenses. The senior vice president of insurance operations noted that he had been particularly vitriolic about the IT division a few years earlier due to their perceived lack of responsiveness to the business units. But he had since mellowed. His earlier frustrations were rather ironic, considering the line executives controlled how IT was used:

"The computer technology tail doesn't wag the company dog here!"

The result for the CIO and his team, however, was frustration.

"We work on something and it comes to a dead halt…. We don't know why…."

"IT RULES!"

One IT manager at Gamma stated:

"It is not part of our culture to criticize the technology."

While this acceptance of IT might seem to be every CIO's dream, "beware the company with a sacred cow at its helm. Sacred cows rarely make things happen. They want things to work the way they have always worked, and thus can be blindsided in a crisis."[28] We

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[28] Deal, T.E. and A.A. Kennedy, *Corporate Cultures: The Rites and Rituals of Corporate Life*, 1982: Addison-Wesley, p 55. This book was recently released in a second edition. It provides an interesting historical account of several high tech firms.

found pros and cons for CIOs who worked with departments that held the "IT Rules!" assumptions.

As noted earlier, Gamma was created during the early 1970s, when IT was beginning to move out of the back room and into the front line. PCs emerged a decade later and IT-based innovation has been a roller coaster ride ever since. Many Gamma employees saw IT as critical to company success, based mainly on the company's rocky start-up that had required the IT function to quickly develop many basic systems. IT staff appreciated others' recognition that the company's formation depended on IT:

"We couldn't have been born without the technology. We saved the baby company."

The IT "old heroes" became part of the company's myths and, for many years, their dominance went unchallenged. Underwriting support services was one of the departments that held this view. It relied heavily on systems developed in the chaotic early years. The CIO and the IT function had high status with this department and with the large number of other departments at Gamma that also held the "IT Rules!" mindset.

Three "pros" we found with this viewpoint were as follows:

1) Business executives viewed IT as having strategic importance.

2) The organization placed a high value on IT skills and knowledge.

3) In some cases, business-unit champions had to have an IT sponsor for their projects to ensure that their IT development was consistent with the enterprise's overall technology strategy.

All three pros made the CIO's job much easier. In fact, in the cases where IT skills were seen as valuable, business employees aspiring to management had to spend some time in the IT department or be involved in a major IT project to advance in their career. One junior business employee commented that in her department,

"People who can't or won't learn the technology and update their skills will find they don't have a job."

In addition, investment in IT research and development was an easy sell for IT, with support for exploration of emerging technologies. The senior IT executives and the CIO received considerable support for pilot project test sites not only in the underwriting support department but also in the other departments where managers believed that IT was the way to go and the IT function would lead the way. These groups'

management believed it was IT's job to continually talk with vendors, evaluate the potential of new technologies, and determine their suitability and timeliness to Gamma.

During Gamma's first decade, the underwriting support group was highly tolerant of system errors and failures because they assumed the IT staff was doing its best under the challenging circumstances. Despite constant changes to fix premature systems, this group did not waver in its assumption that everyone ultimately wins through effective use of IT.

However, we also found three "cons" for IT functions dealing with departments with the "IT Rules!" assumption:

1) Departments sometimes did not question who should direct the future of IT. They defaulted to the CIO and the technical experts, sometimes missing the business strategy view – which was a significant oversight.

2) Some IT development units developed such a high sense of ownership of specific systems that they occasionally did not re-evaluate processes and systems that had outlived their usefulness. Those who believed that IT ruled did not question this judgment.

3) Management was complacent about the company's technological superiority. As one Gamma CIO noted, *"They have begun to believe their own press releases, which are not always true."*

Interviews in 2003 with a later CIO found that this perspective did, indeed, lead to system risks and significant financial losses prior to his arrival. He stated,

> *"I had to clean house and rebuild a lot of bridges that had been burnt because prior IT managers had stopped listening to the users."*

CIOs that can leverage the pros of the "IT Rules!" mindset, and avoid the cons, can use their trusted relationships with these groups to demonstrate the value of IT's potential to the other, less supportive, business groups.

"Business Can Do IT Better"

Decentralization of control over IT has presented both opportunities and challenges for senior IT management. Decentralization to business units and smaller departments created tension between IT professionals and business managers, as well as between business managers who had different visions and resource requirements.

CIOs at Gamma and Alpha experienced such conflicts, not only because some departments fit in this cluster but because other departments fit in the other clusters. The result was various degrees of dispute over IT control. The view that business should control grew more common as a former IT manager (now working in HR at Gamma) noted,

> *"It's not us (IT) and them. There isn't the awe anymore... The wall is definitely being broken down. IT is not an elitist thing anymore."*

The actuarial/operations research department at Alpha exemplified the assumption that business units could – and should – support their own IT needs better. The department's vice president had been with Alpha for over eleven years, so he saw many of the largest system changes and upgrades. He noted,

> *"Our work unit has to be very conversant with IT, but again, it's not a savior or a bane.... We just view it as a tool .... If IT is viewed as a bane, it is when we can't make the changes ourselves. Within our department, we do have control .... We do programming right to the level of JCL and rely on high level languages."*

IT skills were assumed to be a requirement in groups that thought they could do IT better:

> *"If we don't know how to run a computer, we don't have a job."*

Some end users were even reported to be "at a technical level on par with the IT department." In fact, the demystification of computer technology appeared to demystify IT skills as well:

> *"We are all computer people now, just like we are all telephone people now...."*

By demystifying technology, they saw themselves gaining power over their own processes:

> *"...When using a can opener, you don't think you are involved with mechanical engineering .... To use a telephone, you don't think you are using information technology.... I still think of IT in terms of interaction – the 'information' is more important than the 'technology' part of the term."*

The "We Can Do IT Better" cluster was among the more politicized because it was held by departments within larger divisions. They all seemed highly conscious of the power dynamics that revolved around who should control IT direction. They believed that IT was just a tool for business units to wield. Frequently, the end users in these departments were more frustrated with their own department executives than with the CIO, because the CIO often supported offloading work to them, if they were skilled. However, in dealing with these departments, the CIOs did face resource and standards challenges.

"Partners All the Way"

People who viewed IT and the CIO as valued partners did so because they saw IT as an important asset to the organization. But they also realized that meeting expectations required collaboration, equal contributions of IT and business skills, and an understanding that IT might not always be the best solution.

Despite strong and dominant representation of the other four clusters, both Alpha and Gamma had several significant groups committed to building relationships between IT and the line. The information centers at both firms and the finance and planning division at Gamma[29] were in this partnering cluster.

The vice president of finance and strategic planning at Gamma, for example, firmly believed the business units and IT division had to work together to maximize the benefits of IT. He readily gave examples where working together had led to success in a finance and planning software project, in evaluating a new technology (imaging), and in pilot testing that technology in his department.

His department gained a reputation for cooperatively working with different IT functions, without being unduly influenced by them. He and his staff valued IT professionals' perspectives on business problems, but they made it clear to IT staff not to push technology on them:

> "It was, in fact, a move from a world of technological dependence – which is seen as not being appropriate – to a view that technology was simply a tool for everyone to use..."

This vice president also saw value in the information technology steering committee (ITSC). It was a means to grow support for the collaborative view that the CIO wanted. Interestingly, the finance vice president, rather than the CIO, acted as the mediator on this committee to engender a balanced business-IT view of investments. As one member noted:

> "Each area has a rotating member of the ITSC... I'm one... There is a buying into projects. If there is not a total buy-in, it is because there are some things we must do – such as a recent legislative change."

Some projects benefited from the integrated IT-business view; others did not. Committee members with IT knowledge were valued because they took a balanced view of the different roles IT could play in the business. Some departments wanted independence from IT. Others accepted the partnership view. As one executive explained,

> "Self-sufficiency also means that I know when to ask IT. We both need to have skills."

RECOMMENDATIONS FOR CIOS

In this research, we found no ideal world for CIOs. For every example provided above, several more exist that illustrate both pros and cons for CIOs and their IT function. The five categories of assumptions cluster into distinct patterns that influence the status of the CIO and the IT function. Figure 8 summarizes the functional and dysfunctional impacts of each cluster.

What are the benefits of diagnosing the assumptions of your CEO, your executive peers, your own departments, and various business groups? One is for new CIOs. If they can quickly identify the dominant assumptions of important groups, they can predict potential relationship issues and act to address them. A second benefit is for all CIOs. They can use this perspective to identify potentially conflicting assumptions among multiple groups to head off these conflicts, and even stay out of the middle of them.

"A Necessary Evil" Recommendations. To make IT's working life bearable, let alone achieve strategic alignment, CIOs and IT functions viewed as "A Necessary Evil" need to expend large amounts of time and resources reassuring, educating, and meeting with the business units that take this view. It has been proven that assumptions can be changed when knowledge and skills are changed.[30] Such change can take time, but it is in the CIO's and the enterprise's long-term interest to move these recalcitrant units toward a more positive view of IT.

In some cases, IT projects may need to be "railroaded" through, especially when competitive advantage or organizational survival is at stake. However, it's better to encourage involvement and trust these business folks to see the weaknesses and risks in plans. They might even become strong supporters.[31]

"IT Is Support, Not a Partner" Recommendations. CIOs who face assumptions that IT is only support, not a partner, need to cultivate business sponsors and senior line supporters who will either speak on IT's behalf or invite the CIO to meetings. Rather than resent IT's low status, these CIOs need to continually reinforce to key business supporters how IT supports business strategy.

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[29] The CIO supported these assumptions and staffed the information centers with supporters. While one would expect such user support groups to be staffed with folks who believe in a partnership between IT and users, we also found this assumption cluster in other operational groups at both firms.

[30] Sackmann, S., *Cultural Knowledge in Organizations: Exploring the Collective Mind*, 1991, London: Sage.
[31] Op. cit. Wheeler, Marakus, Brinkley, 2002.

FIGURE 8: Functional and Dysfunctional Impact of Clusters on CIO Status			
Cluster	**Functional Impact**	**Dysfunctional Impact**	**Recommendations for CIO**
"A Necessary Evil"	CIOs can count on support for risk analysis. These individuals and groups are generally resistant to new IT and have low expectations of practical benefits from new technologies. These individuals or groups are risk-adverse and will be very cautious about new projects, expecting the CIO and his/her team to provide solid (and often additional) justification.	While personally well-liked, the CIO may not be accepted as a part of business. Negative attitudes towards CIO and IT function include tight budget constraints. CIO may Avoid planning meetings and/or fail to accept proposed IT solutions. Inconsistent diffusion of IT can result in mixed project results and therefore exacerbate low status of CIO and IT.	CIO may have to budget scarce resources (time and money) for education and training of key business management or users before moving forward on plans. CIO will need to provide lots of reassurance, including business plans that include risk assessments and contingency plans. CIO should encourage participation throughout various stages of R&D, pilot tests, systems development, and testing of products before deployment. Third-party endorsements from respected business leaders may be helpful. Internal success stories are also helpful, but not from those branded as "techies."
"IT Is Support, Not a Partner"	Business executives want to be highly involved in all IT decisions. Projects can move more quickly when working with a business sponsor, especially an executive-level sponsor or champion.	CIO is frequently viewed as a servant to the line rather than a peer. Despite low status with business executives, the CIO is called upon to deliver. The level of business executives' IT knowledge may constrain effective alignment and integration of IT. Regardless of skill or knowledge level, business executives may push "pet" projects that do not fit infrastructure plans, IT strategy, IT budget, or available IT manpower. Paradoxically, this mismatch can lead to even more executive business unit control over IT.	Make sure the CIO office is on the same floor as the other business executives. Be where you can participate in discussions. Recruit business-savvy IT staff or educate IT staff on business issues. Get them out in the business interacting with business staff. Educate the executive group on existing and emerging technologies, but be realistic about criteria for fit, risks and rewards. Market internally by promoting project successes and IT's contributions to the business. Cultivate a senior business-unit mentor who can speak for IT when the CIO is not invited. Require business plan justification that links IT and business, with a clear focus on how IT supports business goals.

Where formal structure fails – such as when the CIO is not part of the top executive team – CIOs need to leverage their personal savvy and informal networking. Informal relationships are necessary anyway to align IT with business goals.[32]

"IT Rules!" Recommendations. In the enviable situation where "IT Rules!," the CIO's seat at the executive table is fairly guaranteed. But our research and others' research show that these CIOs need to "manage expectations" and "communicate, communicate, communicate" what IT is doing and why,[33] because high expectations can quickly become seeds of dissatisfaction and criticism. Likewise, praise and support can lead to IT complacency and lack of responsiveness.

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[32] Op. cit. Chan, 2002.

[33] Op. cit. Sambamurthy and Zmud, 1999; Enns et al, 2003.

FIGURE 8 (cont): Functional and Dysfunctional Impact of Clusters on CIO Status			
Cluster	**Functional Impact**	**Dysfunctional Impact**	**Recommendations for CIO**
"IT Rules!"	CIO and IT have very high status and credibility in general, with CIO sharing an equal or elevated executive status. CIO has possible preferential status with CEO. CIO has high tolerance for IT risk and innovation, and anticipates positive outcomes from new IT and communication technologies. CIO can count on support for R&D investment, early adoption, and technical innovation. CIO supports IT championship behavior.	CIO and organization can become complacent and sit on their laurels during periods of rapid technology change. Other executives resent CIO's power and status with CEO. Conflicts occur over scarce resources Blind acceptance of IT value may lead to biased evaluation of ROI and other benefits of innovation that can come back to haunt CIO and successors. High (and unreasonable) expectations exist that CIO and IT function will have a technology solution for every business problem. Problems may be sought to take advantage of emerging IT solutions, putting pressure on CIO and IT to ride "bleeding edge" or lose image as technology leaders.	CIO must keep the focus on cost/benefit and IT business value. With power and status comes responsibility, creating a high pressure position. Management of expectations is critical. Communicate, communicate, communicate. Keep the IT function's focus on business processes and adding business value, not just on the joys of the technology. Since the buck stops in IT, the CIO needs to gain educated business supporters and business sponsorship for projects so that the business executives and other management are equally committed and accountable.
"Business Can Do IT Better"	CIO will find a high level of IT knowledge among business colleagues. CIO will find support for IT innovation throughout the firm and IT champions at every level of the business. Assessment of IT projects will be seen on business unit level.	CIO status will vary depending on current level of conflict with various business units over business unit versus corporate IT plans and budgets. CIO and IT function may encounter resistance to standards and strategic IT planning. CIO may experience sub-optimization of resources as business units seek to control their own IT spending and department level benefits.	CIO must work with various business units to educate and negotiate support for standards and internal controls. CIO should support training of business personnel on IT and IT development methodologies. Communicate and internally promote joint successes of IT projects. CIO and IT function should negotiate to play support roles in business-driven projects. Manage data as an organizational, not just a departmental, resource.

It is unwise to take one's technological superiority for granted, as various CIOs at Gamma learned. They enjoyed their place at the strategy table, but faced disaster when they could not manage the increasingly complex IT environment and live up to diverse expectations. As assumptions among business groups changed, some IT staff could not change their view to see IT as a tool of the business units. And several of the IT executives made enemies of business managers who felt that control over IT budgets and direction should be shared or in the hands of the business units.

"Business Can Do IT Better" Recommendations. To harness the technological enthusiasm and independence of those who believe the business units can manage IT better, CIOs need to build their relationships with these units to negotiate a common infrastructure and technology standards. CIOs can also instill standards by supporting training in proven IT development methodologies and project management techniques. Sharing IT knowledge, building coordinating liaison mechanisms, and providing support to the business units will go a long way to keep the various units aligned.

"Partners All the Way" Recommendations. In situations where people congratulate themselves on how well IT and the business work as equal partners, CIOs need to beware of falling prey to blended roles and ritualistic interactions. These can mask poor

FIGURE 8 (cont): Functional and Dysfunctional Impact of Clusters on CIO Status			
Cluster	**Functional Impact**	**Dysfunctional Impact**	**Recommendations for CIO**
"Partners All the Way"	The CIO has equal status and is involved as a partner and contributor to business strategy and goals. CIO will find balanced and realistic expectations of IT's role. CIO will find acceptance for IT solutions coming from either the business or IT function, and projects will be debated on their merit rather than politics or techno-centricity. CIO will find collaborative and firm-wide benefits sought for new information and communication technologies.	CIO may find that rituals of collaboration may obscure problems with prioritization or assessment procedures. Individual power and prestige in groups, along with the usual turf battles, may supersede team processes and put the CIO in a position of choosing sides.	While seeming the ideal, having an equal role at the table puts the CIO on the same level as other executives, so good relations continue to be important. The CIO will want to allocate resources to keep the business folks up-to-date on IT and also to make sure IT staff are current on key business issues. There may be opportunities IT staff to move laterally into the business and create cross-functional teams.

communications, limited knowledge sharing, and failure to assess the true value of IT proposals.[34] As an example, one manager explained that after a successful joint development project, the system itself floundered. The reason:

> *"ISD developed a wonderful piece of technology…. HR did not do as good a job implementing it."*

This result is a reminder that partnering requires cross-functional teams with an eye to maximizing knowledge sharing, creative conflict, resource allocations, and cost/benefit analyses at all stages of projects.

Managing Multiple Assumption Clusters

One of the biggest and most obvious challenges facing CIOs is managing multiple assumption clusters – such as where one group welcomes the CIO as a partner while another wants nothing to do with IT. Knowing what to expect from each group can go a long way to managing the diversity of assumptions that most CIOs face. We found all five clusters of assumptions in both companies, in this study and in dozens of other companies as well. Identifying the assumptions held by different groups can help mitigate potential conflict between groups with different views who are involved in the same corporate projects.

Different groups in the IT function may also hold different assumptions. At Gamma, for instance, the help

desk and the security group held partnership assumptions. But one of the application development groups strongly held the "IT Rules!" assumptions. As noted earlier, this stance led to problems for various CIOs at the company.

Not all assumptions line up neatly into the five clusters described. Our research suggests that these clusters are actually "archetypal" patterns that are fairly stable across a surprisingly large range of IT issues. But perhaps some groups may be fragmented, due to different, strongly held views of individuals. In these cases, it is best to try to find the dominant assumptions of the key decision makers and monitor those assumptions regularly.

CONCLUSION

Can assumptions about IT change? Do they change? We found the answer to be "Yes." People come and go, IT knowledge evolves, and project successes and failures become embedded in company history. All these influences on organizational culture and on assumptions about IT can change. That is why the best advice is to keep relationships strong, understand people's current assumptions (because they may have changed), and realize that beyond the boardroom table is the dining table. Make the time to socialize and uncover assumptions about IT. Listen to what is said and implied about the IT function and its leaders. Talk to the CEO, even when your assumptions about the role of IT differ.

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[34] Robey, D. and L.M. Markus, "Rituals in Information Systems Design," *MIS Quarterly*, 1984, 8(1), pp 5-15.

Whether you are waiting for a seat at the strategy table, or have been there for years, using the five assumption categories and the clusters of assumptions to decipher the implicit status of IT may save you frustration and provide a strategy for managing critical relationships with business colleagues.

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She completed one of the first organizational-level studies seeking to identify specific assumptions about IT, the influencers of these assumptions, how these assumptions shape organizational IT cultural patterns, and how they subsequently impact IT management at the organizational level.

She has published in a number of top academic and business journals including *MIS Quarterly*, *Information Technology and People*, the *Journal of Strategic Information Systems*, the *Journal of Organizational Change Management*, the *Journal of Global Information Management*, the *Journal of the American Society for Information Science and Technology* (JASIST), and *CIO Canada*. She serves as associate editor for *MIS Quarterly* and is on the editorial boards of *MISQ Executive* and the *Journal for Enterprise Architecture*.

APPENDIX

This paper is based on an extensive study of assumptions about IT in 31 operating groups or smaller departments of two large insurance organizations. These departments include marketing, claims, human resources, finance, strategic planning, actuarial, underwriting, as well as various departments with IT and public affairs, to name only a few. The original study included 87 intensive interviews (1½ to 2 hours each) with members at all levels of the two firms, analysis of corporate and public documents, participant and direct observation, and dozens of follow-up interviews.

The time period of the study included significant on-site presence from 1989-1992 and ongoing follow-up from 1993-2003. It extended through the collective experiences of six CIOs and 11 other senior IT executives at these firms, as well as dozens of major systems development projects.

Results of this study have been presented in 25 academic settings with portions of the study published in *Information Technology and People* by Kaarst-Brown and Robey.[35] A full report on the early study is available in *A Theory of Information Technology Cultures: Magic Dragons, Wizards, and Archetypal Patterns.*[36]

Additional experiences were informally collected from CIOs and IT executives in a variety of other organizations from 1993 to 2005, or as part of other research studies. Some of the other firm examples are included as anecdotal support, including IT executives' experiences gathered in a study published in *MIS Quarterly* by Reich and Kaarst-Brown.[37]

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[35] Op. cit. Kaarst-Brown and Robey, 1999.
[36] Op. cit. Kaarst-Brown, 1995.

[37] Op. cit. Reich and Kaarst-Brown, 1999 and 2003.