2007 Higher Education CIO Effectiveness Study

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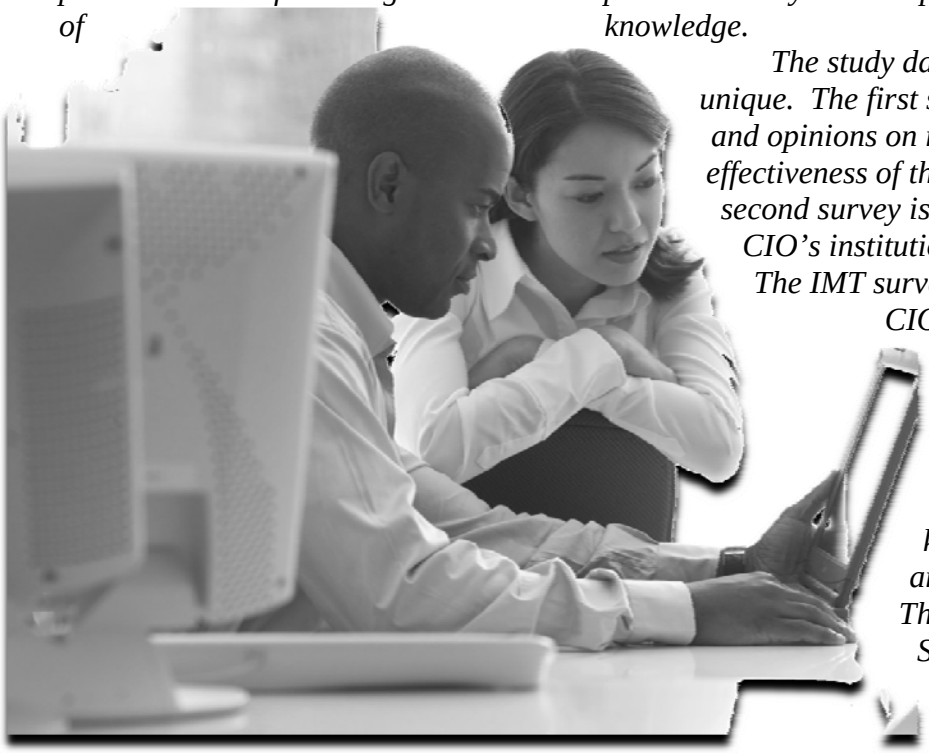
Authors note: This research was first conducted in higher education in 2003-2004, studying four-year institution CIOs in the United States (Brown, 2006a). In 2005-2006, the study was conducted in two-year U.S. institutions (Brown, 2006b). During the summer of 2007, I teamed with Gartner to recreate the study for both two- and four-year institutions internationally. This article is based on that research. These studies have established the foundation for annual follow-up research, which will be conducted to create a longitudinal view of the higher education chief information officer (CIO). I'd like to thank the respondents in this study and the previous studies for taking the time to complete the surveys and help contribute to the CIO body of knowledge.



The study data collection format is unique. The first survey gathers information and opinions on role importance and effectiveness of the CIO from the CIO. A second survey is sent to the responding CIO's institution management team (IMT). The IMT survey seeks information about CIO role importance and effectiveness. Additionally, this second survey gathers information on four CIO attributes: technical knowledge, business knowledge, political savvy, and communication skills. This study is based on Dr. Herb Smaltz' 1999 doctoral healthcare CIO research.

The Survey

The chief information officer (CIO) position has been in existence for approximately 25 years. Throughout this period, the position requirements have morphed; the qualifications of the people filling the role have changed, and the organization expectations and definition of success from the CIO's and IMT member's point of view have also been adjusted. Understanding the CIO and where he or she comes from is critical if the information technology (IT) department, and one of the newest members of the higher education institution leadership team, is going to be successful.

An international group of 173 higher-education CIOs participated in this study. The CIOs worked in community colleges, liberal arts colleges, major research universities, and Ivy League institutions in the United States and leading higher-education institutions in Africa, Asia, Australia, Canada, and Europe. The second survey was sent to the IMTs from the 173 CIO institutions. 33 IMT members from 28 unique institutions responded to the second survey.

As depicted in Table 1, the responding CIOs are employed at a wide size-range of institutions, from 13 IT employees serving 500 or less school employees to 847 IT employees at schools with an overall employee population at or exceeding 10,000.

Table 1. Size of Institution and IT Employees, Contractors, and External IT Service Providers

	1-500 EMPLOYEES	500-999 EMPLOYEES	1,000-2,499 EMPLOYEES	2,500-4,999 EMPLOYEES	5,000-9,999 EMPLOYEES	10,000 OR MORE
IT employees	13.17	35.20	71.08	124.08	172.57	847.29
IT contractors	1	2.83	4.02	12.44	9.37	32.14
External IT service provider	1	1.29	2.21	7.16	8.12	50.00

Title, Reporting, and Management Team Membership

The title of the senior IT executive in the institution is something that varies wildly. In the two previous studies, director was the most commonly used title. In this study, as shown in Table 2, the CIO title was reported by the single largest percentage of the respondents.

Table 2. Title

TITLE	NUMBER	PERCENTAGE
CIO	68	39.30
Director	50	28.90

Vice president	28	16.18
Other (dean, associate, head)	12	6.93
CTO	9	5.20
Manager	6	3.46
Total	173	100

To whom the CIO reports may be seen as an indication of how important the organization views technology. Furthermore, the argument is often made that in order to be effective the CIO must report to the Chief Executive Officer (CEO). However, in the two previous studies, the reporting level, from the IMT's perspective, did not have an impact on the perceived effectiveness of the CIO. In fact, in the 2004 study, reporting to the CEO had a negative impact on the perceived effectiveness of the CIO from the IMT perspective. In the 2007 study, the IMT perception was that reporting to the CEO did not have an impact on CIO effectiveness.

In the 2004 four-year school study, 34% of the CIOs reported directly to the CEO; and in the 2006 two-year school study, that percentage was noted as 41%. As Table 3 depicts, while reporting to the CEO in this study was not the reporting configuration for the majority of the CIOs, at 31%, it was the single highest percentage of all reporting structure configurations. The next closest group, 18%, was reporting to the Chief Financial Officer (CFO). Among the institutions with less than 500 employees (42%) and institutions with employees numbering between 2,500 and 4,999 (53%), the percentage of CIOs reporting directly to the CEO was significantly larger than the other sized institutions.

Across all institutions in the 2007 study 92% of the respondents reported within one level of the CEO (Table 4). Furthermore, it was interesting to note the CIOs who reported to the CEO were members of the IMT in 87% of the cases.

In the institutions with less than 500 employees and between 2,500 and 4,999 employees the percentage of CIOs reporting within one level of the CEO was 100%. The reasons for this reporting structure occurrence may be varied. Perhaps, the smaller and midsize institutions can more effectively accommodate a CEO-CIO reporting relationship.

Table 3. Title of the CIO's Supervisor

TITLE	NUMBER	PERCENTAGE
Chief executive officer	54	31.21
Chief financial officer	32	18.49
Assorted VP	27	15.60
Academic VP	27	15.60
Administrative VP	24	13.87
Other	9	6.93
Total	173	100

Table 4. Number of Reporting Levels the CIO is From the CEO

NUMBER OF LEVELS FROM CEO	PERCENTAGE
One	61.3
Zero	31.2
Two or more	7.5
Total	100

Another perceived indication of the value of the CIO, and therefore the IT department, and the CIO's ability to be effective is whether or not he or she is a member of the IMT. In the 2004 study, 59.17% of the respondents were members of the IMT. In the 2006 study, that percentage was 66.42%. In this latest study, 53% of the respondents were members of the IMT.

Table 5. Member of the Institution Management Team

FORMAL MEMBER OF THE IMT	PERCENTAGE
Yes	53.2
No	46.8
Total	100

Tenure

The CIO title is jokingly referred as an acronym for "career is over" and the related anecdote is that most CIOs do not stay in their jobs for longer than three years. While that stereotype had begun to fade during the past several years, it is again being cited as an issue in industry (Kaneshige, 2007). However, in higher education, that stereotype does not hold true. On average, the responding CIO spent approximately seven years and five months in his or her current position.

When comparing the IMT responses to their CIO peers, the time in position is even more interesting. The CIOs from the IMT institutions had spent an average of 79 months in their current position compared to the IMT respondents who had spent 60 months in their current position. While there does not appear to be a crisis in regard to CIO time-in-position, the other members of the IMT did have less time in their positions. The 2006 study showed the CIO spent 77 months in their position and IMT members spent 73 months in their position.

Table 6. Time in Position

VARIABLE	COUNT	MEAN
Months	173	89.72

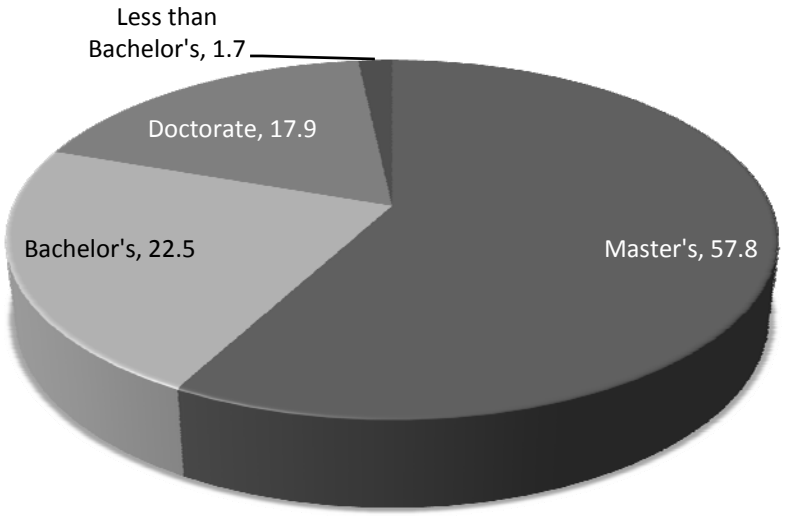
Another view of time in position is to examine the percentage of CIOs who had been in their position for certain time ranges (less than one year, one to five years, etc.). In this study, 67% of the responding CIOs had been in their current position for five or more years. Only 27.7% had been in their current position for one to five years, and 5% had less than a year in their role. Higher education CIOs have been in their position much longer than those CIOs in the cross-industry 2007 CIO Decisions survey, where 66% of the respondents had less than five years in their positions (Kaneshige, 2007).

CIO Background

Just as it is in industry, the question of the appropriate education level for the CIO is debated in higher education. As illustrated below (7), the combination of master's and doctorate degrees accounted for more than 75% of the responding CIOs in this study. The same combination accounted for 68% of the 2006 study respondents and 82% in the 2004 study.

In the 2007 study, institutions with 500-999 employees had a significantly higher percentage of CIOs with a master's degree (68.6%) than the 2,500-4,999 employee institutions (38.5%), where the percentage of CIOs with a doctorate (30.8%) was significantly higher than for CIOs in the 500-999 employee institutions (8.6%). Incidentally, these percentages were the highest and lowest for the doctorate and the highest and lowest for the masters' degrees across all sizes of institutions in the study.

7. Education Level



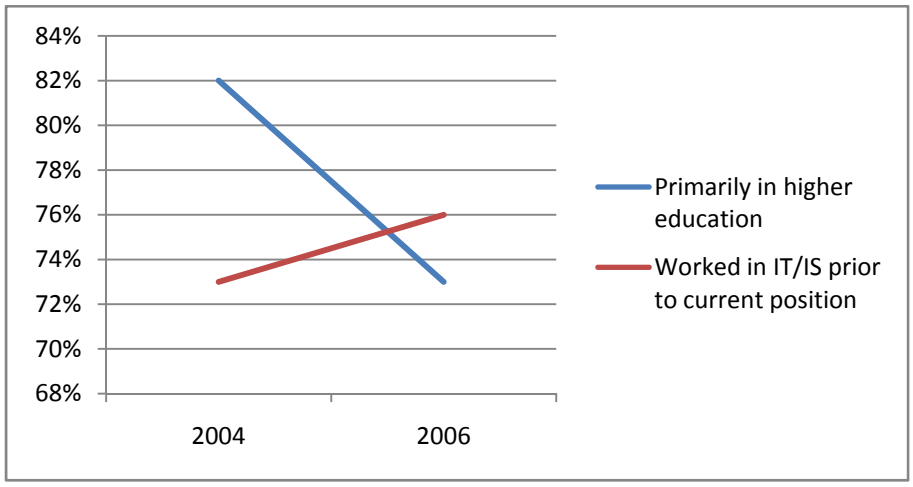
Gathering information about CIOs' degree major was new for this study compared to the earlier research. During previous studies' presentations, individuals interested in becoming a CIO wanted to know the education path the current CIOs took to get to that position. While the majority of the respondents in this study (63%) had a business administration, technology (computer science or information systems), or education administration/technology degree major, it is interesting to note the majority of the leadership of EDUCAUSE, a U.S. higher education IT professional organization, have a wide variety of degree majors, including biology, political science, history, psychology, law, and math degrees (EDUCAUSE, 2007). Perhaps the technical degree had not been widely available at the time these leaders joined the ranks of technology leadership, or the CIO position had not matured enough to develop specific major requirements.

Table 8. CIO Degree Majors

DEGREE	NUMBER	PERCENT
Business Administration	53	30.63
Other (biology, literature, graphic design, physics, theology, etc.)	27	17.34
Computer Science	23	13.29
Education Admin/education technology	19	10.98
Information systems	15	8.67
Engineering	14	8.09
Administration (public, industrial, etc.)	6	3.46
Mathematics	4	2.31
Law	3	1.73
Library	3	1.73
Economics	2	1.15
Communications	2	1.15
Chemistry	2	1.15
Total	173	100

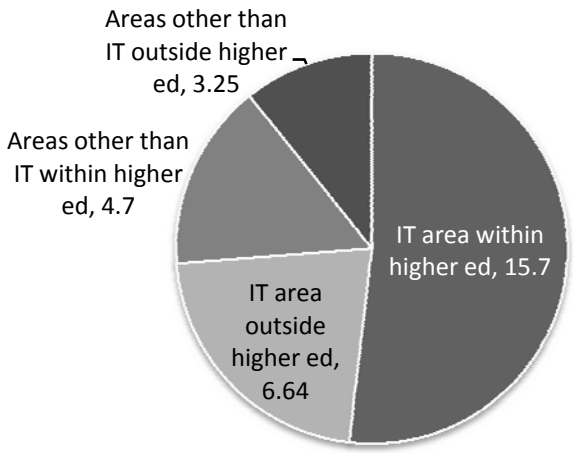
In the two previous studies, the CIO respondents had been asked whether they had spent the majority of their career in higher education or outside of it and also whether they had been working in IT or outside of it prior to their current position. The results from the 2004 and 2006 study are depicted in Illustration 9.

Illustration 9. 2004 and 2006 Study: Work Experience



The question and results had been identified as somewhat ambiguous. For this study, the question was changed to determine the respondents' average time spent in the four career configurations listed in Illustration 10. The IT area within higher education category, with more than 15 years during the CIO's career, dominated the average time spent in different career configurations. The next closest amount of work experience was an average of 6.64 years in the IT outside of higher education category. The CIOs in this study came from or spent the majority of their career in the technology field, whether in higher education or outside of it. However, CIOs who worked in institutions with less than 500 employees had significantly less time than their larger-institution peers working in the IT area within higher education. This same small-institution group had significantly more time than their larger-institution peers working in areas other than IT outside higher education.

Illustration 10. Average Time in Field and Industry

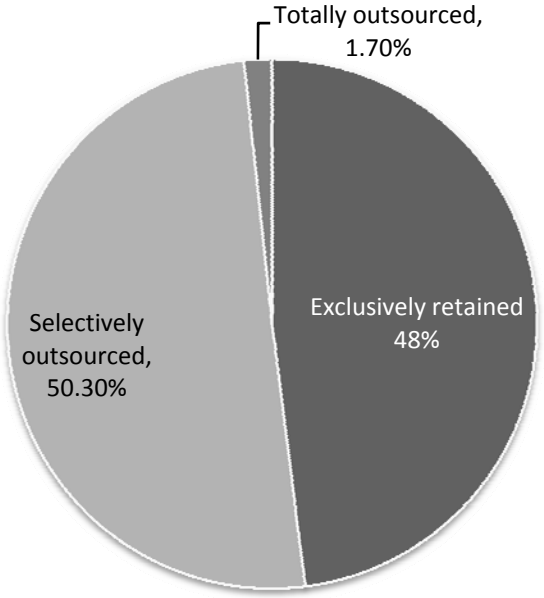


Technology Department Configuration and Governance

Outsourcing technology services is another pendulum that continues to swing. The 1990s brought a large number of complete IT department outsourcing agreements to major organizations, and 10 years later, some companies were "insourcing" their technology departments. Other organizations have gone to a more tactical approach, where they outsource specifics functions to obtain efficiencies. Selective outsourcing was reported in 50% of the institutions in this study.

In higher education, the total-outsourcing trend did not catch on. In this survey only a small percent, 1.7%, of institutions completely outsourced their technology departments, and all of those institutions had less than 500 employees. This same-size-institution group also had the highest percentage of institutions that had completely retained their IT functions. On the other end of the scale, those organizations with more than 10,000 employees had the smallest percentage of institutions that had completely retained their IT functions. In the two previous studies, the percentage of completely outsourced IT departments was 2% and 4% for 2004 and 2006, respectively.

11. Outsourcing



IT department centralization is another configuration that continues to change and evolve. In the two previous studies, the question was asked as an absolute – is the department centralized or not. For the 2007 version of the study the question was changed to a scale of one (not centralized at all) to six (very centralized). The average response was a 4.09, indicating a relatively centralized environment. Those indicating a four or five on the scale accounted for

77.5% of the respondents. As might be expected, the institutions with less than 2,500 employees were significantly more centralized than those with more employees. Furthermore, the responding CIOs indicated there was a significant difference in the IT organization structure complexity for those institutions with more than 2,500 employees.

Questions about IT governance effectiveness were new for this study. It was interesting to note the CIO from institutions with 2,500 to 4,999 employees believed in 76.9% of the cases they were slightly higher or much higher than peers in effectiveness of governance of IT services. The average for this question across other institutions was 39.6%. Perhaps the institution with 2,500 to 4,999 employees requires effective governance and at the same time actually makes it possible for the CIO to implement effective governance.

CIO Effectiveness

The heart of this research focused on whether or not the CIO, operating in six different fundamental CIO roles, was perceived as effective by him or herself and by the IMT. The role names and responsibilities are listed in Table 12. The CIO and IMT survey both provided answers that were used to determine the importance placed on the six roles by the respondents and the perceived effectiveness of the CIO operating in those six roles.

Furthermore, analysis was done to determine whether the four attributes (Table 13) had an impact on perceived CIO effectiveness. There was a correlation between the attributes and perceived CIO effectiveness. These four attributes had an impact on whether or not the IMT perceived the CIO as effective.

Tests were also conducted to determine if the CIOs' interaction with the IMT had an impact on the CIOs' perceived effectiveness. In this study, there was a relatively strong correlation between IMT interaction and the CIOs' perceived effectiveness. The IMT's perception of the CIO's effectiveness was also impacted by whether or not the CIO was a member of the IMT.

Table 12. CIO Roles

CIO ROLE	RESPONSIBILITY
Business partner	Organizational strategic planning and revising business processes
Classic IT support provider	Foundations of IT support and responsive department
Contract oversight	Relationships with IT vendors, contract negotiation, and contract supervision
Informaticist and IT strategist	Ensure security and accuracy of institutional data and alignment of IT department with the institution

Integrator	Integration of all internal and external systems
IT educator	Evangelist for computer use and understanding Educator of employees on how IT innovations bring value to the organization

Table 13. CIO Attributes

ATTRIBUTE	EXAMPLES
Communication skills	Fluent in business language Fluent in higher education language Able to communicate and present information without technical terms
IT knowledge	Understands how IT is applied in the organization Able to use current IT resources to fill institutional requirements Uses new technology for the institution Familiar with the acquisition of IT
Political savvy	Able to assess situations that might be confrontational and act tactfully Able to work well with a majority of people
Strategic business knowledge	Knowledge of institutional offerings Understanding of market and business processes Familiar with the competition

The 173 CIOs responses to the questions determining role importance and effectiveness are shown in Table 14. The importance scale was one (not important at all) to five (very important). The effectiveness scale was one (falling far below expectations) to five (far exceeding expectations). As in the two previous studies, the Classic IT role of putting computers on desks and providing a responsive technology department was the most important and the role where CIOs felt they were the most effective. This study and the two prior studies shared similar results regarding the Educator role, where the CIO was an evangelist for technology and responsible for educating the organization on technology; all of the studies indicated this is the least important role and the role where CIOs viewed themselves as the least effective.

Table 14. CIO Role Importance and Effectiveness as Perceived by all Responding CIOs

ROLE	IMPORTANCE	EFFECTIVENESS
Classic IT support provider	4.12	3.53
Informaticist	4.00	3.27
Business partner	3.86	3.43
Contract oversight	3.82	3.44
Integrator	3.80	3.47
IT educator	3.43	3.13

The response for role importance and effectiveness from the responding 33 IMTs and their CIOs are shown in Table 15 and 16, respectively. The Classic and Educator importance were again listed as first and last, respectively. However for perceived CIO effectiveness, the two groups disagreed about the most effective role for the CIO with the CIOs listing Business Partner and the IMT choosing Contract Oversight. For the least effective role, the CIOs again chose the Educator and, interestingly, the IMT chose Business Partner, a role where CIOs rated themselves as the most effective. Clearly, this major difference in perception could be a problem for CIOs.

Table 15. Role Importance Perceived by Responding IMTs and Their CIOs

ROLE	CIO IMPORTANCE	IMT IMPORTANCE
Classic IT support provider	4.33	4.15
Informaticist	4.25	4.09
Contract oversight	4.00	3.90
Business partner	3.98	3.75
Integrator	3.92	3.99
IT educator	3.64	3.66

Table 16. CIO Role Effectiveness as Perceived by Responding IMTs and Their CIOs.

ROLE	CIO EFFECTIVENESS	IMT EFFECTIVENESS
Business partner	3.63	3.38
Classic IT support provider	3.57	3.53
Integrator	3.50	3.51
Contract oversight	3.49	3.55
Informaticist	3.42	3.50
IT educator	3.41	3.47

Summary

Technology has become critical to higher education institutions. Therefore, the leadership of the technology department has to be understood if the department and institution are going to be effective. This ongoing CIO study provides much needed information about a number of aspects of this important position. Two of the most important aspects are the CIO attributes needed to be viewed as effective and the CIO and IMT view of the importance and effectiveness of the six roles in which CIOs operate. In addition, the reporting level, IMT membership, and IMT interaction impact on CIO effectiveness are examined along with demographics about the CIO, such as education level, field of study, and time in position. This research is the third in a series of CIO in higher education studies and will continue to be conducted annually in the future. As the CIO position ages and its early holders of the job begin to retire, it will be interesting to watch the position evolve.

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