

3

Methodology

Though this be madness, yet there is method in't.
—Shakespeare, *Hamlet*

This ECAR study used a multifaceted research methodology to gather quantitative and qualitative data about 1,850 information technology (IT) professionals who work at 765 higher education institutions in the United States and Canada. We believe our study is the most comprehensive gathering ever of information on higher education's IT community. The data provide a view of one segment of higher education's collective experience as IT leaders and professionals. This study presents general findings as well as in-depth individual perspectives.

Research Approach

We undertook five data collection and analytical initiatives: a literature review, analyses of leadership models and survey instruments, a quantitative Web-based survey, qualitative telephone interviews, and three in-depth case studies.

The literature review helped us identify and clarify issues and create a working set of hypotheses. The literature covered important issues relating to CIOs and other IT leaders in both industry and higher education. Madhavi Gujja and James Penrod prepared an annotated bibliography of both literature and Web-based references for internal use.

Researchers have studied leadership extensively for decades and have developed, tested, and used numerous models and survey instruments. Using existing surveys is extremely helpful for comparing our higher education IT leaders with those in the general population across several dimensions. We therefore looked at survey instruments for general leadership style, innovation, and evaluation of CIOs in higher education, as well as the CIO surveys used in industry. Of these, we selected several for inclusion in our ECAR survey:

- ◆ To study leadership in general, we used the validated Multifactor Leadership Questionnaire (MLQ),¹ developed by Bernard Bass and Bruce Avolio.
- ◆ To study the IT organization innovation climate, we chose and adapted A. Carol Rusaw's multifactor questionnaire.²
- ◆ For CIO evaluation, we chose the "Creating the CIO Executive Success Cycle" self-assessment questionnaire, developed by Gartner and Korn/Ferry.³
- ◆ For general comparison with industry CIOs, we used selected questions from *CIO Magazine's* Web-based "2003 State of the CIO Survey"⁴ and their follow-on survey, "What Do You Think of Your CIO?"⁵

We'll discuss each of these in the following chapters. We also used questions from two previous surveys designed to gather demographic and professional data about higher education CIOs, one deployed by James Penrod and colleagues in 1990⁶ and the other by Dewitt Latimer in 2000.⁷ We also learned much from leadership frameworks such as IBM's 1994 working paper "The Role of the CIO in a Transforming World."⁸

Using these instruments and other literature in our review, the ECAR research team designed a quantitative Web-based survey to gather demographic, professional, attitudinal, and behavioral data on IT leaders in higher education. The EDUCAUSE staff sent an e-mail invitation with the survey's Web address and access code information to 13,115 EDUCAUSE members, and 1,939 responded to the survey. Of these, 1,850 were from the United States or Canada and formed this report's respondent base. The survey questions exist on the ECAR Web site at <http://www.educause.edu/ir/library/pdf/ecar_so/ers/ERS0306/esi0306.pdf>, and the information collected is confidential. We present no quantitative survey data that would make it possible to identify a particular institution or respondent, and we've purged the data files we used for analysis of any data that would have similar consequences.

We also conducted qualitative telephone interviews with 28 IT executives, managers, and faculty members at 28 institutions (see the appendix for names of participating individuals). All individuals are from EDUCAUSE member institutions. To obtain a diverse array of perspectives, we chose people from institutions that varied in size and mission. We also chose people who represented different levels of leadership in the organization and different placements within the institution.

We conducted three in-depth case studies to complement the core study. The first looks at the University of Memphis' exem-

plary positioning and role of the CIO, specifically, planning and management practices. The second explores the innovative approach to mentoring at the University of Kansas. The third highlights the experiences and insights on leadership of six experienced higher education CIOs from a roundtable discussion whose participants included Ron Bleed of Maricopa Community College; Polley McClure of Cornell University; Jack McCredie of the University of California, Berkeley; Martin Ringle of Reed College; Mike Roberts of The Darwin Group; and Dave Smallen of Hamilton College.⁹

Carnegie Class as a Distinguishing Factor

The study grouped the sample by a modified Carnegie Classification of Institutions of Higher Education.¹⁰ The Carnegie taxonomy describes the institutional diversity in U.S. higher education. Most higher education projects rely on the classification to ensure a representative selection of participating individuals and institutions. The study collapsed the Carnegie categories as follows to obtain larger numbers for statistical and descriptive purposes:

- ◆ Doctoral/research universities—extensive (Dr. Ext.) typically offer a wide range of baccalaureate programs and graduate education through the doctorate. They award 50 or more doctoral degrees per year in at least 15 disciplines.
- ◆ Doctoral/research universities—intensive (Dr. Int.) typically offer a wide range of baccalaureate programs and graduate education through the doctorate. They award at least 10 doctoral degrees per year in three or more disciplines, or at least 20 doctoral degrees per year overall.
- ◆ Master's colleges and universities (MA) typically offer a wide range of baccalaureate programs and graduate education through the master's degree. The study grouped both Master's Colleges and Universities I

and Colleges and Universities II together.

- ◆ Baccalaureate colleges (BA) are primarily undergraduate colleges with major emphasis on baccalaureate programs. The study grouped the three baccalaureate college groups (Baccalaureate Colleges–Liberal Arts, Baccalaureate Colleges–General, and Baccalaureate/Associate’s Colleges) into a single BA group.
- ◆ Associate’s colleges (AA) offer associate’s degree and certificate programs but, with few exceptions, award no baccalaureate degrees.
- ◆ Specialized institutions (Specialized) offer degrees ranging from the baccalaureate to the doctorate and typically award most degrees in a single field. Specialized institutions include theological seminaries and other specialized faith-related institutions; medical schools; schools for medical and other separate health professions; schools of engineering and technology; schools of business and management; schools of art, music, and design; schools of law; and teacher’s colleges. The data presented for these schools must be interpreted in light of the enormous diversity of institutions within this category.

Notably, we found that Carnegie class differences proved only modestly significant in this study. Salaries and titles, for example, vary by Carnegie class, but respondents’ attitudes and behaviors most often reflect

either an IT organizational or higher education culture that cuts across Carnegie class boundaries.

Overview of Respondents

We sent the survey to all 13,115 individuals in the EDUCAUSE database whose job titles were coded as CIO, senior IT professional, or IT support professional, 11,876 of them at U.S. institutions. Of the 1,939 respondents, 1,745 (90 percent) were from U.S. institutions, 105 (5.4 percent) from Canadian institutions, and 89 (4.6 percent) from other countries worldwide. Because there were so few respondents from foreign countries, and because of significant cultural differences, for analysis purposes we limited the study to U.S. and Canadian respondents.

The response rate from members of all Carnegie-classified institutions was 14.7 percent. The highest percentage of responses came from those at BA institutions (18.4 percent), the lowest from doctoral-intensive institutions (13.6 percent).

Well over half of those surveyed, however, were at doctoral institutions (56 percent), and more than half of the respondents (52 percent) were from doctoral institutions, which accurately reflects the EDUCAUSE community. Figure 3-1 compares the respondents’ distribution by their institutions’ Carnegie class and EDUCAUSE participation.

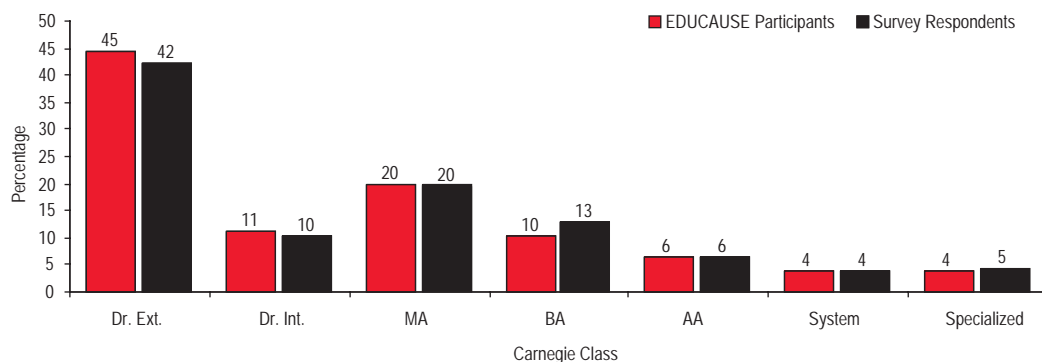


Figure 3-1. EDUCAUSE Participants and Survey Respondents, by Carnegie Class

Also, the study relied on EDUCAUSE participant volunteers rather than a random sample to complete the survey, and this limits the possible statistical conclusions. A statistical analysis of the data's representativeness proved inconclusive. The findings do not support the conclusion that the respondents surveyed represent the population as a whole. Nor, however, do they support the opposite conclusion, that the respondents fail to represent the EDUCAUSE participants. Neither conclusion is statistically significant.

In the following sections we present information about the people who responded to our survey. We look at key respondent groups, titles, organizational placement, and corresponding responsibilities of both the senior-most IT leaders and the other IT professional groups. These data are intended to serve as a backdrop for the demographic, professional, and leadership attributes analyses in subsequent chapters.

Senior-most IT Leaders and Other IT Professionals

Although the study looks at respondents as a whole, we found it useful to segment the IT leadership survey population into subgroups that help us better understand the leadership community and the key leadership issues. Figure 3-2 and the list below show the critical groups we created for our study.

- ◆ **Senior-most IT leaders**—the 330 respondents (18 percent) who hold the senior-most IT position at their institution and say they have overall responsibility for IT
- ◆ **Other IT professionals**—the 1,520 respondents (82 percent) who are not senior-most IT leaders as defined above
- ◆ **Other IT professionals: Aspirants**—the 286 respondents (15 percent) who say they aspire to the senior-most IT leadership position

Figure 3-2.
IT Leadership Roles



Key Definitions

Senior-most IT leader (18%)—respondents who hold the senior-most IT position at their institution and say they have overall responsibility for IT

Other IT professionals (82%)—all respondents who are not senior-most IT leaders as defined above

Other IT professionals: Aspirants (15%)—respondents who say they aspire to the senior-most IT leadership position

The most important distinction is between the senior-most IT leaders who reported that they hold the single top IT leadership position in their institution and all other IT professionals in the survey. Most analysis in the following chapters looks at these two groups in relation to each other. Figure 3-3 shows the distribution of these senior-most IT leaders and other IT professionals by Carnegie class. While just over half (53 percent) of senior-most IT leader respondents are from MA and BA institutions, approximately half (47 percent) of other IT professionals are at doctoral-extensive institutions. At times, we will also look at the subset of the other IT professional respondents (the aspirants) who say they aspire to a CIO position at some time

in their career. We use these groups and the related terminology extensively throughout this report.

Job Title and Reporting Relationships

Of the 1,850 survey respondents, 91.2 percent hold IT positions. The other respondents are, for the most part, managers and directors of non-IT units, and a few hold academic appointments such as professor. Table 3-1 shows survey respondents' official titles. Because respondents sometimes have multiple titles, the title counts (465 for senior-most IT leaders and 1,677 for other IT professionals) exceed the number of respondents—330 and 1,520, respectively. Those with joint titles are most often vice president/chancellor and CIO, vice provost and CIO, or associate or assistant vice president/chancellor and CIO. For the senior-most position, the most common title is CIO (47.9 percent), director (26.4 percent), vice president or vice chancellor (21.2 percent), associate or assistant vice president or vice chancellor (13.9 percent), or a combination of these titles. For the other IT professionals, the most common titles are director (39.7 percent) and manager or supervisor (31.6 percent).

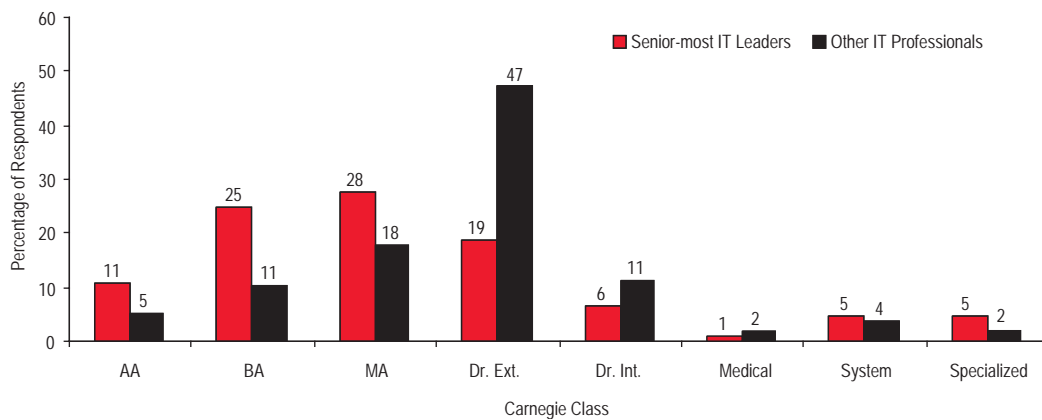


Figure 3-3. Respondents' Carnegie Class, by Role

Table 3-1. Job Title, by Role

Job Title	Senior-most IT Leaders (N = 330)		Other IT Professionals (N = 1,520)	
	Number	Percentage	Number	Percentage
President/chancellor	1	0.3	0	0.0
Provost/academic vice president/chancellor	1	0.3	3	0.2
Vice president/chancellor	70	21.2	2	0.1
Vice provost	14	4.2	1	0.1
Associate or assistant vice president/chancellor	46	13.9	36	2.4
Associate or assistant vice provost	9	2.7	14	0.9
Chief information officer	158	47.9	18	1.2
Chief operating officer	1	0.3	2	0.1
Chief financial officer	1	0.3	0	0.0
Chief technology officer	28	8.5	15	1.0
Chief security officer	2	0.6	17	1.1
Dean	8	2.4	3	0.2
Director	87	26.4	603	39.7
Manager/supervisor	2	0.6	480	31.6
College/university librarian	5	1.5	23	1.5
Professor	17	5.2	44	2.9
Lecturer	1	0.3	21	1.4
Other	14	4.2	395	26.0

We also looked for title differences by Carnegie class and found that CIO, vice president or vice chancellor, and assistant or associate vice president or chancellor for the senior-most IT officer are most prevalent at doctoral-extensive institutions, system offices, medical schools, and (to a lesser degree) MA institutions. The director title is

most prevalent at BA and AA institutions. We noted a movement toward creating the title of chief technology officer, yet our sample shows that only 43 (2.3 percent) of the 1,850 respondents hold this title, and 28 (8.5 percent) of these are the senior-most IT leaders. They are for the most part situated at BA institutions.

Excluding the senior-most IT leaders, the largest percentage (50 percent) of respondents report to the central IT organization, while the smallest percentage (9 percent) report to academic units, as Figure 3-4 shows. Combining those working in central administrative units other than IT and those in local academic units, nearly one-third of our respondents do not come from central IT. Thus the study reflects the experiences, observations, and opinions of IT leaders institution-wide.

Management Responsibilities

We asked respondents to identify all the areas of responsibility assigned to them (see Table 3-2). For the senior-most IT leaders, these included institution-wide policy and planning (96.7 percent), data communications (96.4 percent), administrative systems (96.1 percent), IT security (95.5 percent), and software licensing (95.5 percent). The other IT professionals had far more variation in their responsibilities. Top areas included user support and training (47.7 percent), followed by academic computing (46.7 percent) and Web support services (41.8 percent).

We asked respondents about the number of employees that report to them (see Figure 3-5). Nearly half (44.6 percent) of the senior-most IT leaders have between 11 and 50 individuals reporting to them. On the other end of the spectrum, 9.6 percent

have more than 200 employees reporting to them. Of the other IT professionals, 15.5 percent of the respondents have no individuals reporting to them, and another 16 percent have fewer than five. However, most other IT professional respondents (55.5 percent) have between six and 50 full-time employees reporting to them.

We also asked the respondents about the total IT budget for which they were responsible (see Figure 3-6). Slightly less than half (46.7 percent) of senior-most IT leaders reported having a budget between \$1 million and \$5 million, and approximately 10 percent reported having a budget exceeding \$20 million. For the other IT professional group, almost one-third (32.5 percent) have no budget responsibilities. Given that only 15.5 percent of this same group reported no responsibility for staff, it appears that supervisory responsibility often comes without budgetary responsibility.

Our data provide a snapshot of IT professionals in higher education. As a whole—in terms of institution type, position, areas of responsibility, and the staff and financial resources they command—respondents bring extensive and varied management and leadership experience to our study. This will become even more apparent as we explore the survey population in terms of demographics, professional experience, leadership style, and personal perspectives.

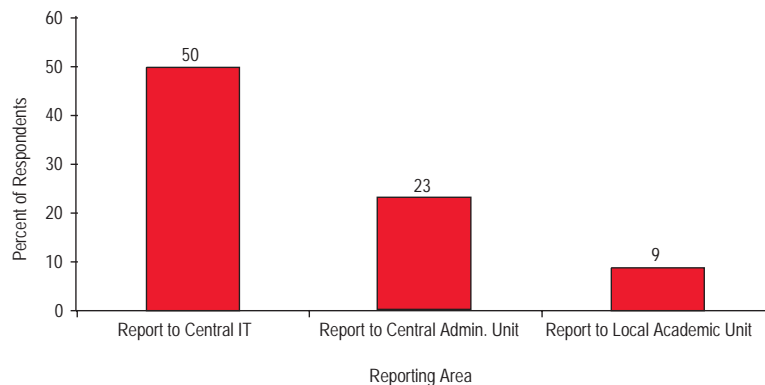


Figure 3-4. Respondents’ Reporting Area (Excluding Senior-most IT Leaders)

Table 3-2. Areas of Responsibility, by Role

Responsibilities	Senior-most IT Leaders (N = 330)		Other IT Professionals (N = 1,520)	
	Number	Percentage	Number	Percentage
Institution-wide IT policy	319	96.7	474	31.3
Institution-wide IT planning	319	96.7	527	34.8
Data communications	318	96.4	309	20.4
Administrative systems	317	96.1	619	40.9
Institution-wide IT security	315	95.5	346	22.9
Software licensing	315	95.5	436	28.8
Academic computing	305	92.4	707	46.7
User support and training	296	89.7	707	47.7
Web support services	290	87.9	633	41.8
Voice communications	249	75.5	168	11.1
Media services	162	49.1	217	14.3
High-performance computing	147	44.5	171	11.3
Distance education	139	42.1	382	25.2
Television services	138	41.8	121	8.0
Instructional development	124	37.6	346	22.9
Printing	103	31.2	189	12.5
Records management	77	23.3	132	8.7
Mail services	59	17.9	156	10.3
Other	58	17.6	353	23.3
Computer store	57	17.3	60	4.0
Copying/reprographic services	56	17.0	49	3.2
Library	54	16.4	114	7.5

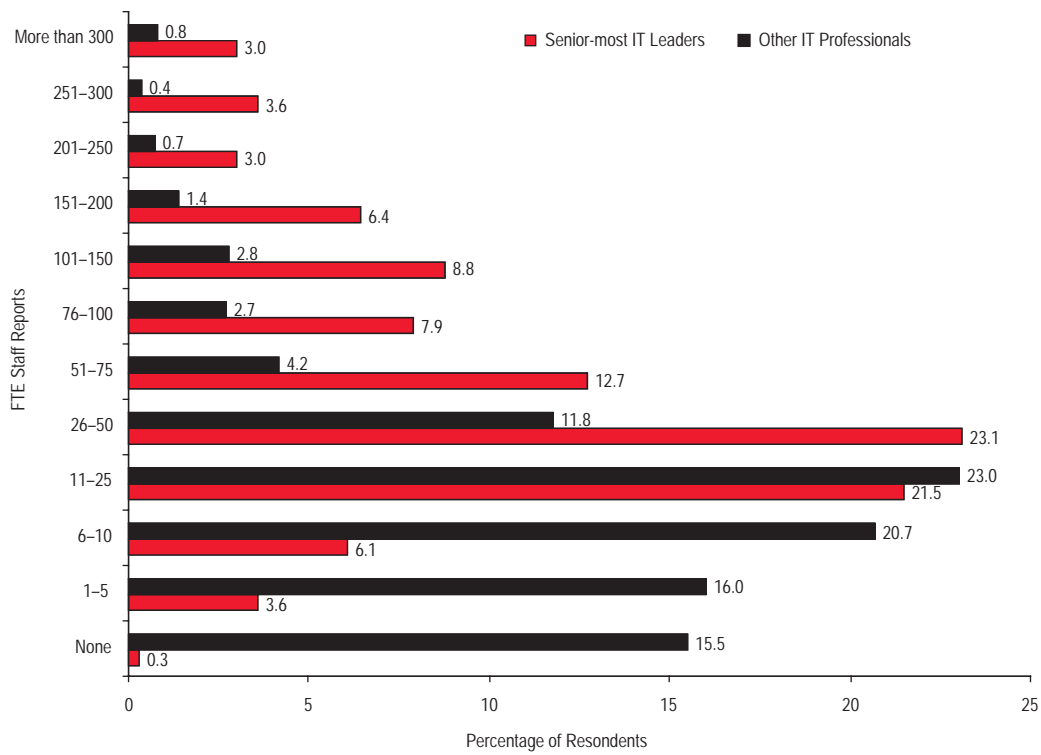


Figure 3-5. FTE Staff Reports, by Role

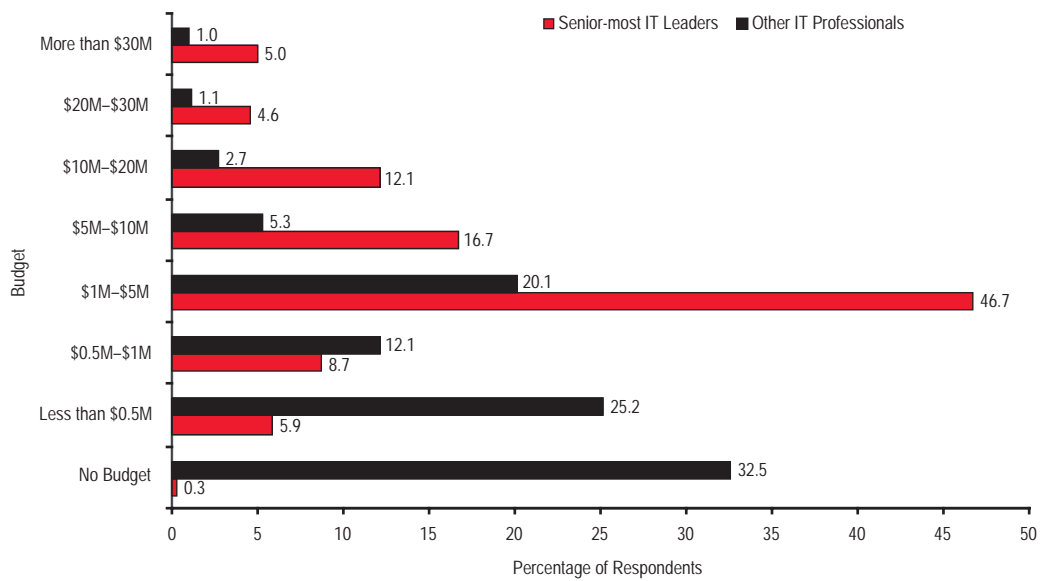


Figure 3-6. Budget Responsibility, by Role

Endnotes

1. The MLQ short form (MLQ-6S) was developed by Bernard Bass and Bruce Avolio and is available through the Center for Leadership Studies at Binghamton University and several other sources.
2. Adapted from A. C. Rusaw, *Leading Public Organizations: An Interactive Approach*, Harcourt College Publishers, 2001.
3. Gartner, Inc., published in conjunction with Korn/Ferry international as an *EXP Premier Report*, October, 2001.
4. L. C. Ware, "The Survey: What You Had to Say," *CIO Magazine*, 1 Apr. 2003.
5. L. C. Ware, "What Do You Think of Your CIO?" *CIO Research Reports*, 15 Sept. 2003, <<http://www2.cio.com/research/surveyreport.cfm?id=63>>.
6. J. I. Penrod, M. G. Dolence, and J. V. Douglas, *The Chief Information Officer in Higher Education*, CAUSE Professional Paper Series, #4, 1990.
7. D. Latimer, "National Survey of Chief Information Officers in US Higher Education," <www.ciosinacademia.org>.
8. IBM Consulting Group, "The Role of the CIO in a Transforming World," working paper, fall 1994.
9. All participants won EDUCAUSE awards or served on the EDUCAUSE Board of Directors, or both.
10. See <<http://www.carnegiefoundation.org/Classification/CIHE2000/defNotes/Definitions.htm>>.