Key Findings

Information Technology Funding in Higher Education

Philip J. Goldstein and Judith Borreson Caruso

Funding information technology (IT) in higher education is one of the top issues facing chief information officers (CIOs), chief business officers (CBOs), and other institutional executives. In today's challenging environment, reducing IT costs and obtaining adequate IT funding are major concerns. In the wake of economic downturns, shrinking state allocations, endowment challenges, and rising health care and energy costs, colleges and universities have had to examine all aspects of institutional funding, including those associated with IT.

Information Technology Funding in Higher Education, a research study from the EDUCAUSE Center for Applied Research (ECAR), examines higher education IT funding, investment, and costs. This study assesses the state of the practice in IT investment decision making, evolving IT funding levels, IT budgeting, and the use of various funding mechanisms such as student fees and chargebacks. In addition, it analyzes how institutions have responded to the rising pressures on IT budgets.

Methodology and Study Participants

Information Technology Funding in Higher Education includes five data collection and analytical initiatives:

- A literature review to identify issues and establish the research questions
- A quantitative survey of EDUCAUSE members in North America, with 482 respondents
- A quantitative survey of members of the National Association of College and University Business Officers (NACUBO), with 386 respondents
- Qualitative interviews with 13 individuals from 11 different institutions, including CIOs, CBOs, and financial managers of IT organizations
- Three in-depth case studies, including one multi-institutional case

Institutional size is a more important distinction in the study's analysis than either Carnegie class or size of IT budget. Institution size (measured by FTE enrollment) and institutional control (public versus private) are the most meaningful categorizations of respondents.

IT Funding: Institutional Control Makes a Difference

When asked about IT funding growth, respondents report a 5 percent rate of growth from FY2001 to FY2003. While 25 percent of the respondents saw their budgets increase by more than 10 percent during that period, another 44 percent report that their budgets were flat or declined. Public institutions report a significantly slower rate of growth in their IT budgets (1.85 percent) than do private colleges and universities (5.25 percent).

When asked about the IT budget share of the institutional budget, 65 percent of respondents report that central IT budgets maintained their share of the institutional budget from FY2001 to FY2003. Public institutions, however, agree to a greater extent than do those from private institutions that central IT budgets declined in proportion to the institutional budgets.

Not surprisingly, public and private institutions also differ in their assessment of the adequacy of IT funding levels (see Table 1). When asked about the adequacy of the funding required to meet strategic technology objectives, public institutions on average report that their funding levels are not sufficient to meet their strategic objectives for administrative computing, academic/research computing, or instructional technology. When asked about the adequacy of current IT funding, respondents overall are most comfortable that their current funding for administrative computing and data communications is sufficient to meet strategic objectives.

Table 1. Funding Levels for Strategic Technology Objectives

	Private (N = 179)		Public (N = 286)		Total (N = 465)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Administrative computing	4.31	1.462	3.99	1.498	4.11	1.491
Academic/research computing	3.98	1.229	3.76	1.254	3.84	1.248
Data communications	4.43	1.260	4.35	1.378	4.38	1.333
Instructional technology	3.96	1.271	3.82	1.372	3.87	1.334

Q: *Are funding levels sufficient to meet strategic technology objectives? (1=very strongly disagree, 4=neutral, 7=very strongly agree)*

Respondents are less confident about future funding. Overall, they continue to agree, however, that administrative computing and data communications will be funded sufficiently to keep pace with investment. Again, there are significant differences between the assessments of public and private institutions, as indicated in Table 2.

Table 2. Projected IT Funding for Technological Advancements

	Private (N = 181)		Public (N = 286)		Total (N = 467)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Administrative computing	4.30	1.334	3.86	1.397	4.03	1.389
Academic/research computing	4.03	1.176	3.63	1.280	3.78	1.255
Data communications	4.33	1.220	4.11	1.337	4.19	1.296
Instructional technology	4.03	1.233	3.77	1.359	3.87	1.316

Q: *Projected IT funding is sufficient to keep pace with technological advancements. (1=very strongly disagree, 4=neutral, 7=very strongly agree)*

Effective Practices for IT Funding

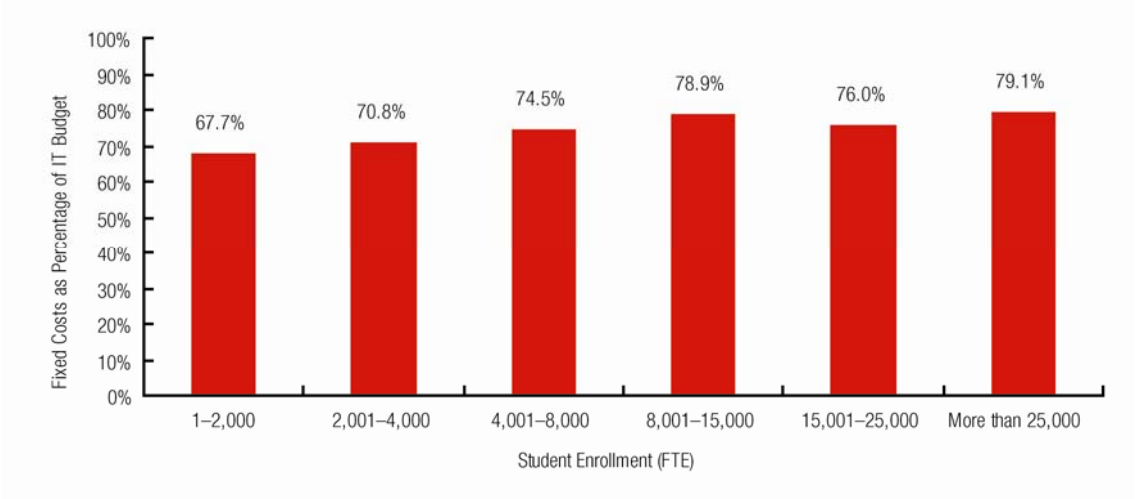
When asked if their institution has achieved substantial value from its IT investments, respondents note two factors that most significantly help them achieve this value. These factors are (1) having a budget process that aligns IT priorities with institutional priorities, and (2) viewing technology as a source of competitive advantage.

Overall, respondents indicate that 75 percent of IT spending at their institution comes from the central IT budget, though this portion varies by Carnegie class. Doctoral extensive institutions report the smallest portion (57 percent) of their IT budget coming from the central IT budget.

When asked about sources of funds, appropriations from the institutional budget are the primary sources (83.8 percent). More than 28 percent of the institutions report that student technology fees are an important source of funds for IT.

Funding flexibility plays a key role in an institution's ability to maintain reliable technology operations. Respondents indicate that the greater their budget flexibility, the greater their confidence in their ability to maintain reliable IT operations. Respondents also identify a strong relationship between having adequate funding to maintain technology and having sufficient funding to innovate. As seen in Figure 1, associate and smaller institutions report the greatest flexibility in budgeting, and doctoral institutions report the least. It is possible that the smaller institutions use consultants and contractors as needed to augment their resources. In addition, they may dedicate a greater portion of their budgets to equipment purchases. Both of these expenditures are variable in nature. Respondents with more flexible budgets also report that they are better positioned to respond to new user needs and to fund innovation.

Figure 1. Fixed Costs, by FTE Enrollment (N = 460)



The sources of maintenance funding noted most often by respondents include a separate annual budget request (54 percent), followed by funding included in the project budget (23 percent).

Without significant growth in IT budgets, the challenge of funding maintenance will create future IT budgets that are even less flexible. Already, 64 percent of the respondents report that their budget does not increase sufficiently to cover the costs of maintaining new technology.

IT Investment Decision Making

ECAR studied how IT investments are made to determine what factors play a significant role in the decision making at the institutions. More than half of the respondents (59 percent) report that their senior IT leader approved all or all significant IT expenditures. IT leaders at larger and presumably more decentralized institutions have less influence over some decisions than their peers at smaller institutions. This is particularly true in the areas of desktop computing, instructional technologies, academic/research technologies, and Web support services.

IT investment decisions based on a tailored process for evaluating IT investments are reported by 15 percent of the respondents. The majority of the institutions (63 percent), however, use the same process for IT decisions as they do for other major funding decisions. Fully 97 percent of the institutions prepare a business case for their IT investment requests. Overall, respondents think their business cases perform effectively in identifying how to capture benefits, in predicting benefits, and in presenting one-time costs.

When asked about the criteria for IT investment decision making, more than 67 percent of the respondents report that the primary criterion is cost. This is followed closely by fit with institutional strategy (65.6 percent) and potential to improve productivity (64.1 percent). IT projects identified in the institution's strategic plans are the easiest to fund, and IT projects are easier to fund if a business case is prepared to support them.

IT Cost Containment: No Easy Answer

Two-thirds of the survey respondents report that they face increasing pressure to reduce IT costs, with the pressure greater at public institutions (70 percent) than private ones (56 percent). The primary factors driving the need to cut IT costs are institution-wide cuts (76.8 percent) and cuts in state allocations (49.8 percent).

Table 3 identifies strategies used by respondents for containing costs, including implementing across-the-board cuts (41.1 percent), using consortia or shared purchases (38.6 percent), and minimizing supported technologies (34.4 percent). Cost-management strategies vary by institution size, with smaller institutions more likely to use outsourcing than larger ones. Larger institutions are more likely to pursue the elimination of duplicate IT organizations.

Table 3. Cost-Containment Strategies Considered and Implemented (N = 482)

Cost Containment Strategy	Institutions Considering	Planning to Implement	Gap
External software development	28.4%	3.7%	24.7%
Consortia or shared purchases	56.2%	38.6%	17.6%
Shared technology implementation	37.1%	20.1%	17.0%
Minimize supported technologies	47.7%	34.4%	13.3%
Salary freezes	23.9%	11.2%	12.7%
Use open source	33.0%	21.6%	11.4%
Cuts in service levels	28.4%	18.0%	10.4%
Outsourcing	20.1%	12.7%	7.4%
Layoffs	15.8%	9.1%	6.7%
Across-the-board cuts	46.5%	41.1%	5.4%
Limit duplicate IT organizations	24.9%	19.7%	5.2%
Cut renewal and replacement	31.5%	27.2%	4.3%
Cut benefits	7.3%	3.3%	4.0%
Other	8.5%	5.0%	3.5%

Respondents are generally not confident that outsourcing and external development firms have the potential to reduce IT costs. Fewer than 18 percent of the respondents agree that outsourcing can reduce IT costs, and fewer than 13 percent think that external development firms will achieve future cost savings.

When asked about new sources of revenue, 64.3 percent of the respondents cite pursuing external grants. Increased fundraising (41.7 percent) and higher student fees (35.1 percent) are also cited by many respondents.

Comparison of CBO and CIO Responses

CBOs report that they see technology as a source of competitive advantage for their institution (74 percent). CBOs also identify their institution as an early adopter of technology (52 percent) and say that their institution's identity is tied to technology (44 percent).

When asked about the adequacy of their IT funding, 67.8 percent of CBOs report that the funding is sufficient to maintain IT operations reliably, and 51.1 percent believe the funding is sufficient to meet strategic IT objectives. The business officers at institutions with moderate-sized enrollments are the most confident with the levels of funding.

When pairing CBOs and CIOs from the same institution (63 pairings), CIOs are significantly more concerned that their budget is not increasing adequately to maintain new technologies being implemented (see Table 4). Business officers, on the other hand, generally think that the base IT budget increases sufficiently to maintain new technology. This difference in perception in the life-cycle funding adequacy for technology is one area where CIOs will have to work with their CBO counterparts to establish the cost of technology renewal and replacement.

Table 4.CIO–CBO Pairs Assessment of Funding Adequacy

Statement		Mean	Standard Deviation	Standard Error Mean
The central IT budget contains adequate funding to implement the institution's strategy for technology. (N = 57)	CIO	4.14	1.329	0.176
	CBO	4.61	1.532	0.203
The central IT budget contains adequate funds to maintain critical IT operations reliably. (N = 57)	CIO	4.89	1.205	0.160
	CBO	4.61	1.532	0.203
The base IT operating budget always increases sufficiently to maintain new technology. (N = 58)	CIO	3.34	1.332	0.175
	CBO	4.33	1.515	0.199

1=very strongly disagree, 4=neutral, 7=very strongly agree

CBOs report that their institution is actively managing all IT spending, even if it does not reside in a single budget. CIOs, on average, disagree with this statement.

Future of IT Funding

The next few years will witness rising IT investment requirements, especially for instructional technologies, IT security, and application system maintenance. In the near term, however, IT budgets will be flat. It is imperative that institutions find ways to do more with less. In order to meet these challenges, institutions need to create a more flexible and agile environment as it relates to IT funding and investment.

Institutions should create a culture of agility in workforce and resource utilization, IT architecture, and processes. The IT workforce needs to respond quickly to changing institutional needs. Strategies such as outsourcing, shared services, and collaborative software development need to be explored and implemented when feasible.

The IT architecture will need to be flexible and able to quickly adjust to changing conditions and challenges. Strategies such as using an application service provider for applications systems, implementing a complete integration strategy, applying open source systems and components, moving to a plug-and-play infrastructure with modular design, and establishing standards for integration and shared services should be investigated to increase IT infrastructure agility.

This ECAR study also advises that process improvement in both business and IT processes is needed to respond to ever-changing conditions. IT budget policies must enable campus leaders to quickly respond to opportunities or challenges that present themselves. IT decision-making processes should be refined by adopting standard investment-review processes, incorporating objective evaluation criteria and empowering IT advisory groups to establish investment priorities.

Focused IT projects that can be quickly implemented will enable IT organizations to respond rapidly to changing conditions. These projects can improve institutional cost management and containment and provide institutional differentiation.

As new needs arise, institutions should consider the broadest range of sourcing options, including collaboration with other institutions, ERP or other vendor software, outsourcing, and open source technologies. Both one-time and ongoing support costs and benefits should be considered.

Finally, institutions need to commit to a culture of assessment and a view toward total cost of ownership. To preserve future flexibility and agility, institutions must always evaluate the cost of maintaining a technology once it is implemented. Only through continual evaluation and improvement can institutional IT needs be met without additional funds.

IT organizations will not be able to achieve more flexible, stable funding by seeking additional budget dollars alone, and flexibility and agility will not come entirely from cost cuts. The CIO must lead efforts to rethink personnel strategies, sourcing strategies, process improvements, and project prioritization in order to ensure that the climate encourages IT innovation and provides maximum IT value to the institution.

Philip J. Goldstein (pgoldstein@educause.edu) is a Research Fellow with the EDUCAUSE Center for Applied Research. Judith Borreson Caruso (judy.caruso@doit.wisc.edu) is a Research Fellow with the EDUCAUSE Center for Applied Research and Director of Policy, Security, and Planning at the University of Wisconsin–Madison.

A copy of the full study referenced above will be available via subscription or purchase through the EDUCAUSE Center for Applied Research (www.educause.edu/ecar/).

