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Executive Summary

Science and technology revolutionize our lives, but memory, tradition, and myth frame our response.

—Arthur M. Schlesinger, Jr.

For regular readers of and contributors to the EDUCAUSE Current Issues Survey, ECAR's choice to study IT funding should come as no surprise. For each of the last two years, survey respondents have identified IT funding as their top issue of concern.¹ That funding is and has been of such concern should also be no surprise. Multiple years of economic downturns, shrinking state allocations, endowment challenges, and rising health-care and energy costs have significantly squeezed all institutional budgets. In that regard, the IT budget is not unique.

What has made the IT funding experience somewhat different is that this period of declining funding comes on the heels of significant spending growth. The mid- to late 1990s saw unprecedented levels of technology spending. Institutions implemented new high-speed networks and deployed new enterprise computing applications. These investments occurred in the context of a national economic boom many believed to be technology fueled. Higher education, like many other industries, began to invest heavily in the promise of technology as a transformative force.

When the dot-com bubble burst, technology began to fall out of favor. As the pendulum swung to the opposite extreme,

many within and outside higher education began to question technology's value. Many institutions began to reevaluate whether prior investments in enterprise resource planning (ERP) systems and instructional technology were realizing their promised benefits.

Today, most institutions have adopted a more balanced and realistic view of technology's potential. It has become an essential part of the higher education experience. Some institutions pursue and realize competitive advantage from technology. Others pursue more modest goals.

Changes in the economy and views of technology have led many institutions to reexamine how much they can and should spend on technology. Institutions have a heightened interest in choosing new technology investments wisely, and they try to maximize the benefits from already implemented technologies.

With this context in mind, ECAR undertook a comprehensive study of IT funding that looks at the topic broadly. We examined how funding levels are changing and why. We assessed the state of the practice in IT investment decision making, IT budgeting, and the use of student fees and chargebacks. We also analyzed how institutions have responded to the need to cut their IT budgets.

Our research reveals several interesting axioms about IT funding and success:

- ◆ Institutions that align IT spending with institutional priorities through objective and consistent resource allocation processes attain more value from technology.
- ◆ Financial flexibility to reallocate resources is critical to maintaining reliable IT operations and fostering technology innovation.
- ◆ Institutions with sufficient resources to fund innovation are more likely to meet their strategic technology objectives.
- ◆ Having a flexible IT budget is more important for achieving successful outcomes than having a large budget.

Methodology

ECAR pursued a multifaceted research approach to this study, including

- ◆ a literature review to identify issues and establish the research questions;
- ◆ a quantitative survey of EDUCAUSE members;
- ◆ a quantitative survey of NACUBO members to ascertain the chief business officer's view of IT funding;
- ◆ qualitative interviews with 13 individuals from 11 different institutions, including CIOs, CBOs, and financial managers of IT organizations; and
- ◆ three in-depth case studies including one multi-institutional case.

Key Findings

We learned much about the state of the practice in IT funding. We evaluated the broad trends in IT funding and the significant cost drivers. We were also able to look strategically at IT funding. The analysis provides an interesting and in some cases alarming look at how well positioned institutions are to maintain the technology they already have and to invest in what they will likely need. Finally, the research offers insight into what factors set

apart institutions with the most effective IT funding practices.

Public or Private Matters

While few institutions feel overly secure about their IT funding, significant differences exist between the public and private institutions surveyed. Among respondents, this proved more important in understanding IT budget changes than Carnegie class, institution size, or degree of decentralization of authority.

From fiscal 2001 to 2003, nearly half of respondents (44 percent) reported that their budgets were flat or declined. Over that same period, private institution respondents' IT budgets grew on average by 5.25 percent, while budgets at public institutions experienced only 1.85 percent growth.

Public and private institutions also differed in their assessment of funding adequacy. We asked respondents if their current funding levels sufficed to meet their strategic technology objectives and if projected funding would keep pace with technological change. Respondents from public institutions were less confident than those from private institutions, reporting that, on average, their funding levels were insufficient to meet their strategic objectives for administrative computing, academic and research computing, and instructional technology (see Table 1-1).

Respondents are also concerned about projected funding levels. When we asked whether projected funding levels would suffice to keep pace with technology advancements, the mean response from all institutions hovered around neutral for all technology categories. Public and private institutions differed significantly in their assessments of future funding. As Table 1-2 shows, public institutions on average believed their projected levels of IT funding wouldn't suffice to keep pace with technol-

Table 1-1. Funding Levels for Strategic Technology Objectives

	Private (N = 179)		Public (N = 286)		Total (N = 464)	
	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)

Table 1-2. 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)

ogy advancements in any area except data communications.

Possibly we're observing a temporary setback in public institutions' ability to fund technology, resulting from the broader macroeconomic forces that have pinched state budgets in recent years. However, if this foretells a more permanent decline in state support for higher education, it creates a much more serious challenge for public

institutions. In that case, unless they can develop alternative revenue sources to compensate for the loss of state funding, public institutions will be significantly less able to fund technology than private institutions. This could lead to a future in which public institutions no longer match private institutions' technology capabilities in such critical areas as instruction and networks.

Loss of Flexibility

Financial flexibility turns out to be one of the most important IT funding practices. It plays a key role in an institution's ability to support IT operations reliably, achieve strategic technology objectives, and foster innovation. However, few institutions have flexible IT budgets.

IT budgets have become consumed by fixed costs. For most organizations, these include contractual commitments to vendors and full-time personnel costs not easily cut or reallocated within a fiscal year. Most survey respondents indicated that between 70 percent and 90 percent of their IT budgets was allocated to fixed costs.² The mean of all respondents was 73 percent. The significant expansion of technology's campus presence in the late 20th century requires a substantial investment to renew and replace today. ERP systems, networks, and the proliferation of desktop computers all bring with them an annual cost to maintain. In fact, survey respondents spend on average nearly 23 percent of their IT budgets on contractual maintenance payments to vendors.

Interestingly, smaller institutions appear to have more-flexible budgets than larger institutions. Survey respondents from smaller institutions reported that a smaller percentage of their budgets is fixed, compared with institutions having larger enrollments. This result contradicts our original hypothesis. One possible explanation is that smaller institutions with smaller IT organizations tend to rely on contractors to augment their staff. This creates a more variable cost structure for them.

Why is flexibility important? We see several reasons. First, it lets institutions respond to unanticipated events. Recent years' IT security issues offer a good example. Second, IT organizations with high fixed costs have less ability to invest in researching and experimenting with new technology. They are not well positioned to identify new ways to

use technology to support their users. Third, institutions with IT budgets that are largely committed at the outset of the fiscal year are less likely to take risks. They have no financial cushion to fall back on if projects don't turn out as planned. They have less capacity to try new things. As a result, they tend to realize less value from technology.

Deferred Maintenance: An Emerging Threat

Many recall the significant deferred maintenance problem that higher education encountered with its physical plant. Institutions significantly expanded their campuses using one-time investments but lacked the ability to grow their operating budgets to provide the required maintenance for new and existing buildings. We're starting to see warning signs of a similar problem in technology.

Institutions have invested significant one-time resources to expand the technology infrastructure on their campuses, but few have built mechanisms into their operating budget to set aside funds to maintain that technology. In fact, more than half (54 percent) of institutions surveyed must request the funding to maintain already implemented technology each year. Only 7 percent automatically set aside maintenance funds as they expand their technology.

And the possible maintenance problem appears to be getting worse, not better. Sixty-four percent of institutions surveyed reported that their base IT budget does not sufficiently increase to cover the costs of maintaining a new technology once it is implemented. Further, 40 percent of respondents are funding upgrades to their existing technology from their existing budgets. If this continues, some institutions won't be able to keep pace with the required maintenance of existing hardware and software. In fact, 14 percent of respondents reported they aren't keeping pace with all vendor-mandated upgrades. Even more

likely, the cost of maintaining existing technology will crowd out institutions' ability to invest in new technology to meet new needs.

Cost Containment: No Easy Answer

While most institutions are under pressure to contain IT costs, no single dominant method accomplishes this. Two-thirds of respondents reported facing pressure to reduce their IT costs. Most were doing so as part of institution-wide budget cuts. Many were also pursuing cost savings to reinvest in new technology to meet new needs.

The most common cost-reduction strategies we found included across-the-board budget cuts (41.1 percent of respondents) and collaborative purchases (38.6 percent). A significant number (34.4 percent), in an attempt to generate greater economies and lower costs, also limit how many technologies they support.

Two strategies that have become prevalent in the corporate sector, outsourcing and near-shore or offshore software development, have yet to take hold in higher education. In fact, most survey respondents were skeptical of the ability of either strategy to generate cost savings:

- ◆ Just 17 percent of respondents agree that outsourcing can provide IT services at a lower cost.
- ◆ Only 13 percent believe using external software development firms is critical to cost containment.

In fairness, it's probably too soon to evaluate either strategy's potential for higher education. Although outsourcing has been around for quite some time, providers now offer additional remote services, such as applications on demand and shared help desks, that help organizations lower costs. Offshore development has just recently become a serious option. Both strategies are also politically challenging for higher education to embrace

(especially offshore development), which may slow adoption rates.

We did find that more than a third of institutions surveyed were considering some form of shared technology implementation with another campus. Although this is also difficult to implement, institutions may be more likely to partner with each other than with a corporate provider to lower their costs.

The CIO–CBO Relationship

At the outset of our research, we expected to find significant differences of opinion between CIOs and CBOs. We hypothesized that ERP investments' high costs and elusive benefits might have soured CBOs' views on technology. We expected to find them skeptical of technology's value and critical of CIOs' ability to predict costs.

Instead, we found that CIOs and CBOs agree on many issues. They hold similar views of the value and importance of technology. They are equally confident in their institution's ability to project the cost and benefits of individual technology investments.

The most significant gap in their two views concerns the adequacy of technology funding (see Table 1-3). The table compares the mean responses from CIO respondents to those of the CBO respondents. It also illustrates the mean respondents from CIO and CBO pairs. The paired responses are those of CIO and CBO respondents from the same institution. CBOs were more confident than CIOs that their institutions were providing sufficient funding to meet strategic technology objectives. We found even greater differences concerning the adequacy of funding to maintain technology once implemented.

Conclusion

IT organizations have entered a period of extensive financial constraints. Even as the national economy recovers, it will be quite some time before higher education budgets

Table 1-3. Paired and Overall Respondents' Assessment of Funding Adequacy

Status of IT Funding	Overall Responses		Paired Responses (N = 57)	
	CIO Mean (N = 477)	CBO Mean (N = 375)	CIO Mean	CBO Mean
Adequate funding to maintain critical IT operations	4.51	4.02	4.89	4.61
Adequate funding to implement IT strategy	3.79	4.38	4.14	4.61
Budget increases sufficiently to maintain new technology	3.17	4.02	3.34	4.33

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

recuperate. Public institutions face an even greater challenge as they try to replace the loss of revenue from state allocations. Even if funding were to regain its prior levels, many higher education executives, still weary from the large technology projects of the 1990s, won't likely rush to commission another round of large investments.

Still, the demand for technology will continue. Instructional technology is still in its infancy. Future generations of course management systems and other courseware will provide new potential for teaching and learning. Ubiquitous wireless Internet access is becoming a minimal expectation on many campuses. In many academic disciplines, IT increasingly drives research. So, doing more with less has become more than a pithy phrase for technology organizations—it is reality.

The imperative for today's CIO is effective IT cost management. IT organizations will likely need to self-fund new technology initiatives from existing budgets and must find ways to reduce budget resources devoted to maintaining past and present technologies to avoid being shut out of the future.

Reducing the number of supported technologies and more proactively managing total institutional technology spending are good

places to start. But institutions will need to do more. CIOs must be willing to experiment with strategies like shared services and targeted outsourcing. They must seek opportunities to turn fixed costs into variable costs through more-flexible staffing models. Corporate strategies such as using external development firms bear watching as well. Presidents and CBOs must help their CIOs clear the political and cultural hurdles that can obstruct any of these strategies.

Institutions must also commit to funding their technology renewal and replacement needs. IT decision making must examine more carefully the recurring costs of proposed technology investments. Otherwise, the technology capabilities that institutions have invested in will begin to degrade.

Endnotes

1. D. Spicer, P. DeBlois, and the EDUCAUSE Current Issues Committee, "EDUCAUSE Current Issues Survey," *EDUCAUSE Quarterly*, Vol. 27, No. 2, 2004.
2. The actual wording of the question was, What percentage of your IT budget do you view as a fixed cost (that is, committed to full-time-employee compensation, multiyear contractual commitments, or other expenses that would be difficult to discontinue in less than one year)?