IT Portfolio Management for Colleges and Universities
Balancing Risk/Return for Strategic Results

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Colleges and universities invest millions of dollars each year in information technologies in support of teaching and learning, research, and the business of the institution. These investments have transformed the breadth and depth of technology’s impact on the academy. The typical information technology (IT) organization juggles a diverse portfolio of investments in infrastructure, applications, and information. It simultaneously manages numerous projects that might collectively represent tens of millions of dollars of investment capital and provides basic infrastructure and supports the pursuit of the institution’s strategic goals.

But how do institutions decide which IT projects to fund? Has higher education optimized its portfolio of IT investments? Do institutions choose among alternative projects through disciplined processes and objective criteria, or are they captive to their own internal politics and the tendency to fund the “squeaky wheel”?

What happens after an IT project is approved? Do institutions continue to assess the costs and benefits of their investments throughout the product’s life cycle? Do institutions intervene to improve the performance of IT investments that are not delivering on their promise, or are expensive IT investments allowed to languish without intervention?

At the Kellogg School Mark Jeffery recently surveyed executives from world-class enterprises to define the best practices for IT portfolio management (ITPM). In aggregate, the 130 respondents are responsible for more than $30 billion in IT spending. More than 90 percent of respondents identified their role as chief information officer (CIO) or chief technology officer (CTO), and 78 percent had 15 or more years of technology management experience. The results of the survey revealed that while executives have a high awareness of ITPM, only a minority of firms (17 percent) are practicing ITPM at the highest level of maturity. On average, these firms have better return on assets, and the executives report significant benefits from ITPM; such as better strategic alignment, better return on investment (ROI), and improved communication with other business executives.1

The recent Information Technology Funding in Higher Education study from the EDUCAUSE Center for Applied Research (ECAR) reveals similar mixed results.2 It includes summaries of the responses from 482 chief information officers and 386 chief business officers in higher education who participated in surveys and individual interviews. As Figure 1 illustrates, 22 percent of institutions ECAR surveyed do not have a formal process to consider IT projects for funding. Further, only 15 percent have created a review process tailored to IT decisions. The majority of institutions are either evaluating IT funding requests the same way they look at any other investment or are using a very ad hoc process.
The ECAR study further revealed that nearly all institutions are developing business cases to support their IT investment requests. But, as Figure 2 indicates, far fewer have defined processes and criteria to evaluate each funding proposal. Of the survey respondents, only about two-thirds apply standard decision criteria to IT decisions, and about 40 percent engage user advisory groups to prioritize IT projects.

Most institutions also lack rigorous processes to measure the results they achieve from their past IT investments. Although many have good data on the use of technology, measures of the impact of technology investments have proven elusive. There are some exceptions. Institutions are beginning to measure the impact on process efficiency, cost,
and productivity of their enterprise resource planning (ERP) investments, even though few have adopted a systematic approach to maximizing those benefits. But how is value determined for the network or the course management system?

The stakes for effective IT decision making and benefits realization have never been greater. Discretionary institutional resources are scarce, while the need for technology is growing. IT organizations and technology investments are being held to increasingly higher standards of accountability. Many people outside the IT organization believe that technology investments never realize their promise, yet few would deny that the future will require institutions to increase their investments in infrastructure, research, and instructional technologies. Now is the perfect time for universities to assess not only the current state of their IT investments but also what they should do next, technologically speaking. To avoid the pitfalls of the past era—and to continue to move forward—higher education needs to adopt a rigorous methodology for aligning business goals and strategy with IT investments. One strategy to achieve this can be found in the research of how corporations have adopted ITPM.

**Highlights of Information Technology Portfolio Management**

Information technology portfolio management is a strategy that empowers organizations to systematically unlock the value from IT investments that they have already made. ITPM is a project evaluation and prioritization process that drives organizations to take a balanced approach to evaluating individual projects and to optimize the mix of projects it undertakes. ITPM looks at IT investments in a similar way that an investor views stock investments (see Figure 3). Just as an investor raises the overall return of her portfolio of investments by diversifying risk, a CIO can raise the overall value of his organization’s IT projects. In the same way that a corporation maximizes performance by investing in those business units with the highest rates of return and closing units with subpar performance, so too can an institution increase the overall performance of its IT investments. ITPM introduces more than just the concepts of portfolios to IT decision making; it implies two other important concepts. First, it establishes that risk must become a more rigorously considered part of IT decision making. Second, it challenges an organization to monitor the value of an IT investment over its life cycle. Too often, organizations only look at benefits at the time of the investment decision. ITPM challenges organizations to make this a more continuous process. These concepts empower companies to create an IT portfolio that maximizes the value companies are receiving from their IT investments, while balancing risk and return in a manner that is strategically beneficial for that particular company.

The importance of finding that balance cannot be underestimated, but in today’s economic environment, it is often overlooked as executives focus on return on ROI. Ironically, looking at ROI alone can end up costing a company its bottom-line dollars; this approach often justifies spending rather than tracking results.
For example, let’s say a company finds it can increase ROI through new direct mail software. That’s fine—unless, of course, by focusing on only that initiative, the company misses the opportunity to realize the investment’s full value throughout its life cycle, such as its potential return to the whole enterprise, as well as how individual IT investments fit into the bigger picture. The company may instead find that the software is really eating into the company’s ROI. On the other hand, a company that dismisses an IT investment out-of-hand as too expensive—again, without analyzing that investment within the context of the company’s overall IT portfolio and strategy—may in fact miss an opportunity to generate long-term ROI, perhaps through increased customer loyalty or streamlined processes.

In higher education, a similar example might be how an institution decides whether to implement an e-portfolio for the School of Education. If the school feels it will increase student success, is that enough? Are there other projects that won’t be done if IT resources are devoted to this effort? Would the overall benefit to the institution be higher if multiple colleges participated in the investment together? Many institutions are locked into decision processes that only consider investments as stand-alone evaluations of the cost of the project and the qualitative projection of benefits. For instance, if the School of Education has the money, the project will go forward. The broader strategic context and the impact on the portfolio of IT projects are not considered.

The other half of the balancing act is, of course, looking at risks in IT investments. From the Fortune 1000 survey results we discovered that for many respondents, risk is a critical consideration whenever they make any technological or management decision. Higher education considers risk, but not as extensively as corporations. ECAR’s IT funding survey confirmed that risk is a decision criterion for 45 percent of respondents.

In truth, risk for an IT project is really the potential for missing out on the full value of the project (see Figure 3.) Too often, institutions limit their discussion of risk to whether the technology will fail. They should also be focused on how likely it is that they can achieve the benefits projected for the investment. In many cases, benefits realization has little to do with technical risk and much to do with organizational factors. Once potential risks are identified, quadrant risk mapping assesses those risks by the probability of the risk event actually occurring and by the severity of consequences. This gives decision makers a framework to evaluate individual investment decisions, as well as a tool to track the performance of projects over their life cycle.
Quadrant risk mapping drives users of ITPM to monitor whether their IT investments have shifted quadrants over their life cycle. For example, has the implementation of a course management system moved from a low-probability, high-impact project that caused little concern to a high-probability, high-impact project? In effect, quadrant risk mapping becomes a monitoring tool that enables the CIO and project sponsors to identify which investments require leadership’s attention and intervention.

By helping companies find the right balance between risk and return, ITPM gives them a much more holistic approach to making decisions about what should—and what should not—go into their IT portfolios, as well as how to manage a portfolio through its life cycle. As needs, goals, and strategies change and develop, ITPM streamlines, prioritizes, and creates an important discipline for IT investment decision making that will realize the greatest return on value throughout the investment’s life cycle—yielding increased focus, efficiency, customer understanding, and more.

This approach is reflected in an ideal hierarchy for IT investments (see Figure 4). At the foundation is infrastructure IT investments—or those investments that are necessary to uphold all other IT programs and strategies. Built on top of the infrastructure are transactional IT investments—those that enable the sharing of information and data throughout the company. At the top are both informational and strategic IT investments—those programs that enable top-down as well as enterprise-wide decision making.

Finding the critical balance between risk and return is so essential that the Kellogg executive program at Northwestern University, Driving Strategic Results Through IT Portfolio Management, offers several take-away ideas on how to manage risk for ITPM and IT projects.
What It Means to Higher Education

There are three major implications to the adoption of ITPM in higher education. First, it drives institutions to set priorities among IT projects in an objective fashion. Second, it introduces a more deliberative evaluation of risk in IT decision making. Third, it provides chief information officers with a framework to rethink how they allocate resources.

Priority Setting

Most institutions evaluate individual IT projects well. Few, however, systemically evaluate their portfolio of investment opportunities. As confirmed by the ECAR IT funding research results, institutions rarely develop the criteria and decision processes to weigh one investment opportunity against another and then choose the mix that optimizes benefit at an acceptable level of risk. Applying the philosophy of ITPM drives institutions to make decisions, such as how much the institution is prepared to invest in instructional technology as compared to the campus network, and why. ITPM encourages institutions to set goals so they can value an investment opportunity. For example, should the institution place a project that maximizes stakeholder satisfaction above one that supports new revenue generation? Figure 5 highlights the approach to project prioritization that Brigham Young University (BYU) has established within its ITPM process.¹

ITPM also places an emphasis on monitoring the performance of an IT investment throughout its life cycle. The projection of benefits and risks is not a one-time exercise performed only at the time the project is proposed. Rather, it becomes an ongoing process that invites corrective action. If an institution revisits its portfolio of investments each year, it will examine these underperforming projects.
1. **Identify four to seven strategies.** BYU’s Office of Information Technology does this yearly (for example, limiting technology risk, increasing the reliability of the infrastructure).

2. **Decide on one criterion per strategy.** For example, the criterion for limiting technology risk is whether the technology has been implemented in a comparable organization.

3. **Weigh the criteria.**

4. **Keep the scoring scale simple.** BYU uses a scale of one to five. Five might mean that the technology has been used in a comparable organization and the benefits can be transferred easily; three could mean it’s hard to do because it would require changing processes.

Source: CIO Magazine

Understanding the performance of the investment presents decision makers with options. They can

- intervene and work with users to try to raise the benefits,
- alter the project approach to lower its cost and risk profile, or
- discontinue the investment.

Perhaps the greatest benefit of ITPM is that it makes decision making more effective and transparent. By establishing criteria, evaluating the potential return, and measuring the risk, institutions can make better decisions that are better understood. It neutralizes the historical practice of funding projects based on the influence of their sponsors or the volume of their complaints.

**Evaluating Risk**

The second implication of ITPM is that it makes risk a critical component of IT decisions. ITPM theory stresses that decision makers weigh the risk of each individual project and the portfolio of IT initiatives as a whole. It suggests that the CIO should strive to balance high-risk projects with a number of smaller, lower-risk projects. It clearly illustrates that high-risk projects should only be undertaken if there is a reasonable expectation of significant benefits.

Addressing project risk more directly in IT decision making will have several beneficial impacts.

- It can focus institutions on smaller, more incremental projects that come with a lower risk and reasonable offsetting benefits. Many institutions too often only pursue the big project.
- It can help institutions avoid passing up potentially beneficial projects that are not pursued due to a perception of risk. Too many projects are rejected because of risk based on rumor and anecdote rather than fact.
With a more thorough understanding of risk, institutions can deliberately plan how they will manage projected benefits and project risks. Project plans hold individuals accountable for costs and time but rarely for the realization of benefit.

Taken together, these three impacts can significantly enhance the value that higher education receives from its technology investments. A more deliberate consideration of benefits and risks would have been of great value during the ERP boom of the late 1990s. It likely would have resulted not in fewer projects being undertaken but in more deliberate strategies being developed to capture benefits or to reduce the risks inherent in an ERP investment. The good news is that ITPM suggests it is not too late. Institutions that have not benefited sufficiently from a technology investment such as an ERP or a course management system have low-performing assets in their portfolio. These institutions may still be relatively early in the life cycle of those investments and can adopt deliberate strategies to increase the benefits. For some institutions, these remedial investments may be more important and more beneficial than launching a series of new investments.

**Allocation of IT Resources**

Finally, the IT pyramid introduces a framework that can be used to understand and convey how historical and future IT investments are allocated. It can help the CIO determine the relative resource commitment being made to maintain the core infrastructure as compared to the improvement of transactional services or the investment in newer, more innovative technologies. The construct of the pyramid suggests several things that will help improve the conversation about IT investment decisions and IT value.

First, it establishes a hierarchy of purpose for IT investments and suggests that the institution not adopt a uniform expectation of benefit for each purpose. For example, the value of an investment in the network (infrastructure) cannot be measured with the same criteria as an investment in a data warehouse (informational).

Second, it suggests that every organization needs to make deliberate decisions about the mix of resources it focuses on each layer of the pyramid. An institution that pursues innovation at the expense of funding the core infrastructure will face significant risk. Likewise, an institution that does not seek more cost-effective ways to operate its infrastructure is likely to crowd out its ability to invest in the kinds of things that will drive greater levels of value for the institution. For many institutions, the ability to innovate has been all but eliminated by the need to maintain the infrastructure and legacy technologies. For these institutions, the pyramid is a way to illustrate the implications of what resources are available to invest.

Third, the pyramid is a means to focus a discussion of the state of campus technology. Many institutions have invested significantly in creating strong infrastructure and transactional layers of technology. Through improvements to the campus network, new ERP systems, and course management systems, the campus may have realized as much benefit as it can from those layers of the pyramid. For those institutions, the challenge is to think about ways to begin to invest in the upper-most layers. Their
leaders need to convey that in order to generate future benefits, the institution must begin to invest in information and strategic technology projects such as business intelligence systems.

Finally, the pyramid can be used as a tool to align IT priorities with institutional priorities. Multiple ECAR studies have identified alignment as one of the most significant drivers of success for an IT organization.\(^5\) The IT pyramid challenges decision makers to establish goals, articulate benefits, and set priorities for each level of the pyramid in concert with their institution’s strategy.

The struggle for IT funding is won or lost on the ability of the CIO to explain the need to make an IT investment. The process of planning how to allocate IT resources among the layers of the pyramid to help further the institution’s goals can yield improved communication and better alignment.

While ITPM concepts are straightforward, they are challenging to apply. In an article that appeared in \textit{CIO} magazine, Dave Clarke, vice president of enterprise technology at the American Red Cross, described the implementation of ITPM as being like Olympic mud wrestling: “It’s nasty, difficult, and high-spirited even in the nicest organizations. He went on to say, however, that “it’s well worth it in the end, for the discipline and clarity it can produce.”\(^6\)

ITPM will be no less challenging to higher education. It will drive decision makers to say no to proposed investments or to discontinue projects that are popular with some stakeholders, but it is worthwhile because it offers a reasoned approach for making and communicating those decisions.

### Key Questions to Ask

- Does my institution effectively prioritize IT investment opportunities?
- Is my existing decision process objective and transparent?
- In what ways does the institution systematically consider the risks of its IT investment options?
- How does the IT organization manage its IT investments as a portfolio of risks and benefits?
- Has the organization taken on too many high-risk, low-benefit projects, or is it too conservative, focused only on low-benefit, low-risk investments?
- Is the current set of IT investments performing well? Are there lagging investments that must be addressed before they reach the end of their life cycle?
- How are the institution’s resources invested across the IT pyramid?
- Is IT sufficiently funded to pursue strategic investments, or are resources tied up in managing the infrastructure and transactional technologies?
Does the distribution of resources align with the institution’s expectation of benefit?

Where to Learn More

Mark Jeffery and his associates have developed a dozen case studies that demonstrate the value of ITPM principles. They can be viewed at the Kellogg ITPM case Web site, and they are included in the Kellogg executive program, Driving Strategic Results Through IT Portfolio Management. Information on the executive program is available at <http://www.kellogg.northwestern.edu/drivingresults> and the case studies can be found at <http://www.kellogg.northwestern.edu/IT/research>.

ECAR’s study of IT funding and investment decision making was released in December 2004. It is available by subscription or purchase from the ECAR Web site, <http://www.educause.edu/LibraryDetailPage/666?ID=ERS0407>.

Endnotes

3. Ibid., p. 63.

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