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Introduction

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History never looks like history when you are living through it.

—John W. Gardner

In the current environment of tight budgets and high customer expectations, higher education institutions are pressed more than ever to improve the ways they do business. Institutions have expended significant time and resources on process improvement in order to realize cost savings, to improve services to their clients, to reduce business risk, and to attain greater accountability. It would be rare to find an institution that has not engaged in some business process improvement project.

Many institutions pursued formalized improvement methodologies such as benchmarking, total quality management (TQM) and business process reengineering (BPR). Others took a less structured approach. Some focused significant efforts on redoing their processes in advance of implementing new technology. Others found opportunities to change processes while implementing new technologies. Still others deliberately avoided any aggressive process or organizational change until they had completely revitalized their information systems. While each approach has its own unique pros and cons, they are all valid.

This chapter traces the history of process improvement in higher education. It considers how improvements in technology and process have converged and where institutions are today in their approach to improving process performance. Finally, it indicates the questions about process performance that guide this ECAR research study.

Process Improvement—A Look Back

In 1990, Michael Hammer challenged enterprises of all kinds to “use the power of modern information technology to radically redesign business processes to achieve dramatic improvements in their performance.” Hammer’s work ignited a period of intense reengineering, and it did not take long for the reengineering phenomenon to sweep higher education.

Business process improvement was not new to higher education. Before BPR there were TQM and just-in-time (JIT). These methodologies, tools, and/or philosophies guided institutional attempts to improve work processes. We would note, however, that faculty are innately skeptical of business sector tools and methodologies. Accordingly, many higher education institutions followed what we would call “applied common sense.” They simply tried to do what seemed would work best to make things better.
Reengineering changed several important aspects of process improvement efforts:

- It introduced the concept of the end-to-end business process, which drove institutions to work to improve processes across departments and not only within a single department;
- It increased expectations for improvement. BPR challenged institutions to move beyond incremental improvement and to seek more substantial gains in productivity, efficiency, and cost-effectiveness; and
- It set the stage for ERP. While BPR drove institutions to first redesign processes before automating them, it also illuminated the many deficiencies in the legacy systems of most institutions.

### Process Improvement and ERP

Reengineering initiatives for most institutions began in the early 1990s, peaked in the mid-1990s, and then were subsumed under larger ERP implementation projects in the late-1990s and thereafter.

Process redesign quickly exposed a need for a much greater technology capability. This coincided with a general aging of the industry's legacy finance, human resources, and student information systems. As a result, the industry's attention shifted to the implementation of new administrative systems, and the goal of process improvement was incorporated within ERP projects.

According to Joel Hartman, vice provost for information technologies and resources, University of Central Florida (UCF), “UCF previously used homegrown legacy systems based on COBOL and VSAM. It was clear in 1995 that a dynamic and growing institution would have difficulty surviving in such an environment: our programmers couldn’t keep up with changing business requirements. In 1996 UCF began a comprehensive process of implementing a major vendor’s ERP system, including a portal. The goal was to install a foundation based on a modern ERP environment, but changing the business processes is the real story.”

Institutions adopted a variety of approaches to integrating process redesign and ERP. Some institutions engaged in lengthy efforts to redesign processes before implementing a new ERP. These institutions were motivated by a desire to challenge their institutions to think differently about how to do business before configuring new software. They sought to avoid paving the cow paths. The trap that some fell into was spending too much time redesigning processes in detail before they understood the capabilities of the software purchased. This often created a perceived need to customize software.

Others chose to redesign and implement simultaneously. These institutions challenged their project teams to think of ways to improve processes and leverage the existing capabilities of the software they were implementing. In many cases, the institutions were counting on the best practices already built into their ERP software. Many institutions succeeded in improving processes in this way. However, some who took this approach found that their projects were getting bogged down as they attempted to build consensus for new process designs when they needed to be moving quickly to keep the ERP implementation on track. This inevitably led to missed deadlines and cost overruns.

Ahmed El-Haggan, vice president of information technology, CIO, and professor of computer science, Coppin State University, supports this approach. “CSU had good processes and policies in place, but our ERP implementation was an opportunity to reinvent and reexamine our processes. From the beginning we made a decision not to modify the ERP system unless it was federally or state mandated, statutory, or a system-wide policy. Otherwise we would adapt ourselves to the system.”
Most attempted to install their ERP systems first and then go back and redesign processes when necessary. They, too, were counting on leveraging the best practices that would come “built into the software.” They were sensitive also to their organization’s ability to absorb change. These institutions believed that if they focused first on getting the technology installed and then redesigned, they could keep their expensive ERP projects on track.

This proved to be a successful approach for many. The new technology did bring improved business processes through its ability to automate previously manual transactions. After implementation, additional redesign work was performed when the staff was more familiar with the capabilities of the software and the time pressures of implementation were past. At the College of Saint Benedict/Saint John’s University, they attempted to install their ERP systems first and then tried to redesign processes when necessary. Jim Koenig, director of IT services, noted that the institutions tried to do business process redesign as a part of ERP implementation, but found it was too distracting. In addition, most participants were reluctant to commit time to the redesign until they were fully aware of the capabilities and idiosyncrasies of the technology—something that would not be known until many weeks of training and testing were completed.

A few lucky institutions were so young that no legacy systems existed before their ERP implementation. One such institution is California State University (CSU), San Marcos. Wayne A. Veres, dean, instructional and information technology services and CIO of CSU, San Marcos notes that “before we implemented Banner we had nothing—not even a mainframe environment or data centers where users picked up reports. Today we have centralized IT support and decentralized technology experts for the business areas. Users learned upfront how to use sophisticated query tools in Oracle databases to produce their own reports.”

Some institutions discovered that one of the greatest features of ERP—flexibility—was also a curse. The software proved to be flexible enough to support a bad process design as well as good one. Project teams were often tempted to use the software to replicate existing processes (even in cases where a more efficient method could be supported without customization). Or, institutions lost their focus, energy, and funding, which are necessary if an institution wants to go back after the implementation to continue to improve business processes.

Not every institution pursued an ERP implementation as part of their process improvement strategy. Some were able to continue to use their legacy systems. As Richard Spencer, executive director for IT strategy, The University of British Columbia, notes, “Our in-house development team maintains our state-of-the-art system. Our current capabilities might not have been feasible with a vendor ERP system.” Others like the University of California, San Diego, spent their efforts improving services, rather than implementing an ERP system. They invested significantly in Web-based services and in Blink, the university’s portal.

These institutions were some of the pioneers in offering self-service capabilities to students, faculty, and staff. They streamlined processes significantly at the point of interaction with the customer. Some were less successful improving the performance of back-office processing until they upgraded their legacy systems.

**Evolution of Process Improvement Efforts**

We describe the history of process improvement in four stages. Each phase is different as summarized in Table 2-1.
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<thead>
<tr>
<th>Phase</th>
<th>Characteristics</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1. Localized process improvement</td>
<td>Focus on processes within a functional department</td>
<td>Focus on incremental improvements</td>
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<td></td>
<td>Change processes by simplifying work steps and rationalize policies;</td>
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<td></td>
<td>improve form design, altering office layouts</td>
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<td></td>
<td>Improve hand offs to other offices</td>
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<td></td>
<td>Historical roles and responsibilities are usually retained</td>
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<td>2. Reengineering</td>
<td>Focus on processes from end to end</td>
<td>Some designs are left on paper due to a lack of technology solutions</td>
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<td></td>
<td>Change processes by eliminating work steps and alter policies</td>
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<td></td>
<td>Seek to eliminate hand offs between offices</td>
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<td></td>
<td>Historical roles and responsibilities change significantly</td>
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<td>3. System-enabled process improvement</td>
<td>ERP or new system is catalyst for process change</td>
<td>Results can vary depending upon approach</td>
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<td>Redefine end-to-end process using the automation and workflow capabilities of</td>
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<td></td>
<td>the software</td>
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<td></td>
<td>Sometimes accompanied by a rethinking of policy and organizational roles and</td>
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<td></td>
<td>responsibilities</td>
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<td></td>
<td>Begin to decentralize work to the end customer</td>
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<td>4. Post-system implementation process improvement</td>
<td>Emphasis on using the Web to promote self-service</td>
<td>Many opportunities are available to harvest additional benefits from</td>
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<td></td>
<td>Shift entire responsibility for processing out of some central departments</td>
<td>existing technology</td>
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<td></td>
<td>Focus on using technology to automatically trigger services</td>
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<td></td>
<td>Need to rethink policies and division of responsibilities between offices</td>
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Many institutions began their process improvement initiatives in the finance area. This area is often under the direct control of the chief business officer, who at many institutions is a primary champion of process improvement. Especially noteworthy were efforts to model process improvement efforts on methodologies first used by corporations. Iowa State University (ISU) provides a good example. Warren Madden, vice president of business and finance, led ISU’s evolution from TQM to the Integrated Projects Program, an initiative using a formal methodology to evaluate, select, and implement enhanced business processes, focusing primarily on processes that cross departmental lines. As time passed and process improvement methods became more accepted and familiar, institutions turned their attention to additional process areas, creating a cascading effect throughout the institution. Mark Cain, CIO, Cincinnati State Technical and Community College, notes, “IT has a lot of little pieces that you put together like a mosaic. If you do it right, it becomes a nice picture. If you do it wrong, it is a mess or there are some shards lying on the floor. So when I am planning—as for example Web-based student services—there are services and processes that leap logically to mind if you extrapolate from where you are to where you want to go.” Maury Hope, director of administrative technology services, ISU, notes that their original goal was to create a Web-based transaction workflow that could be used across multiple departments. The purchase requisition was the first successful implementation. This verified the concept and set the stage for the controller’s office to lead an initiative to improve the process for travel reimbursement. This success is now driving additional process improvement projects involving better workflow across other departments.

Many institutions focused on student services because of its strategic importance. Others looked at select human resource processes such as hiring or payroll. Because of the complexity and the broad set of influential stakeholders, administrative support processes for research and teaching were less frequently the focus of broad reengineering efforts.

Once ERP became the dominant force in process improvement, the scope of the technology implementation often dictated the scope of process improvement efforts. Understandably, most institutions began to focus all of their process improvement efforts on those business activities directly impacted by the software modules being implemented. This was necessary to complete the implementation of the ERP system. It also reflected the reality that ERP implementation tended to consume most of the resources and management attention that otherwise would have been available to improve non-ERP business processes.

Over time, institutions changed the focus of their process improvement efforts as well as their approach. Wayne A. Veres of CSU, San Marcos, articulates one transition. “For us, our Banner implementation in many ways is done. We’d like to move beyond and do other things to enhance our institution, as for example, implementing more sophisticated customer service models.”

The University of Minnesota, with its ERP systems stable and fully implemented, is turning its attention to promoting greater administrative efficiency and effectiveness by standardizing institutional processes and technologies across all of its campuses, reducing redundant systems and processes, and optimizing organizational structure and alignment. The financial advantage of uniform systems, processes, and tools is perceived to be the removal of the premium paid for unnecessary duplication and complication.

Now business process improvement has the potential to truly transform the organization. According to the Gartner Group (2005),
“Business process improvement has been a focus for the IS organization for 20 years. However, it is no longer about making individual processes within a business unit or geography faster,” states Mark McDonald, group vice president, Gartner Executive Programs. “The latest wave of business process change, business process fusion, provides the opportunity to reengineer processes end-to-end from the customer perspective and integrate previously autonomous business processes, information, and application software across business units and geographies.”

The University of Minnesota has moved to transform the institution by focusing on its service culture. As the university is working to transform processes, equal attention is being paid to its service culture. The university’s culture, its attributes, behavior, and expectations are being redefined and inserted into job descriptions. It is aligning training, work plans, performance evaluations, rewards, and compensation with its cultural expectations and instituting continuous performance reviews of all service and support units. A redefined culture is key to business process improvements.

As institutions move to business process improvement, they will reap the benefits. For example, Kathleen O’Kane, associate director of undergraduate admissions and student systems manager, UCLA, notes: “We moved to provide, as much as possible, students’ information at that same junction. It resolved several issues, provided better information for the students, and addressed an institutional goal to provide the appropriate information to help students move through our institution in a more expedient manner.” Elazar Harel, assistant vice chancellor for administrative computing and telecommunications University of California, San Diego (UCSD) notes that while UCSD’s student enrollment and research activities have grown substantially, the number of administrators has not. Automation and process streamlining are the main strategies that allow the growth to continue without increasing staff.

**Why Study Process Performance?**

The state of process performance is worthy of analysis for several reasons. First, it is becoming a higher priority for institutions. For example, the META Group (2005) observes that “Smart organizations increasingly are turning to technology and business process innovation to gain competitive advantage. Gartner’s Mark McDonald, further notes, “Business expectations are forcing CIOs to transform the IS organization and 2005 is the year where CIOs must deliver more value and become a contributor rather than a commodity. They must do this without large up-front investments and CIOs are turning to business process and business intelligence to meet this challenge.”

Recent research supports this view:

- Gartner Executive Programs’ 2005 survey of 1,300 CIOs noted that business process innovation ranked number one of respondents’ top-10 business priorities;
- A 2004 survey by the META Group (2005) noted that 79 percent of those surveyed indicated they would be targeting business process capabilities as a focal point for improvement over the next two years; and
- The same survey showed that the majority of CIOs concur that over the next two years, the aspect of their role that is anticipated to grow is that of change agent.

“CIOs believe that business process improvement and strategic use of business intelligence will be most significant in delivering IT’s contribution to business growth in 2005–2008. Pressure for greater profitability, faster innovation and growth requires enterprises to be more agile. That means
doing things better, not cheaper and faster. These pressures force a move towards business process improvement and integration.” (Gartner, 2005).

As a result, “information utilization, and not its production, will become a new focus and core competency of the newly innovated IT function. Acting as business owners, IT professionals will ensure their tools are used to drive growth through innovation, transforming the IT leader function.” (Strativity Group, 2004) “Given the IT organization’s end-to-end view of business processes, it is no surprise that CIOs are gaining responsibility for supporting business transformation,” said C. D. Hobbs, (2004) now president and chief operating officer of META Group. “Effective business transformation depends on an executive’s ability to impact work routines by changing business processes that define how work is done. The CIO has unique knowledge and insight valuable for business process management, reengineering, and/or reconfiguration—all with the potential to alter culture in positive manner while responding to market imperatives...CIOs must master and be prepared to deliver the transformational capability of the IT organization (ITO) across the enterprise to sustain the improved credibility of the ITO gained in the first few years of this century.”

Indeed, Gartner predicts that by 2009 the management of business processes will supersede management of technology as the leading value contribution for more than 50 percent of blue-chip IT departments (2005).

Where does higher education fit into this scenario? Why is it worthy of study? First, the higher education sector has invested considerably in pursuit of process improvement. While no comprehensive data are available, anecdotal evidence suggests that campuses have spent tens of millions of dollars collectively in pursuit of process improvement. Our study finds that two-thirds (65.7 percent) of the survey respondents agreed or strongly agreed that their institution’s strategic plan called for high performance in their administrative processes. Fifty-four percent agreed or strongly agreed that their institution effectively used technology toward that end. But planning was not matched by performance. Only 40.6 percent agreed or strongly agreed that business process improvement occurred frequently at their institution and barely one-third (33.4 percent) indicated that it occurred throughout the institution. It appears that business process improvement is often a series of localized events as opposed to wholesale improvement. We want to understand why. It seems that higher education is satisficing as opposed to optimizing. Our respondents as a whole do not suggest either a “state of excellence” or even a “quest for excellence” in many process areas.

Second, process performance is vitally important. The pressures that drove early process improvement efforts are still here today. In fact, most institutions face even greater pressure to meet high customer service expectations, to redirect resources from administrative to academic purposes, and to increase productivity in response to reduced budgets.

And third, significant investments have been made in technology to support improved business processes. Yet, no one is certain whether these investments have paid off. Did technology play an integral role in improving process performance? Did higher education pave the cow paths? Or, was IT not a factor at all?

Higher education has reached a crossroads in its administrative processes and technology. Institutions are wrestling with several interlocking issues. Among them are:

- Have all the gains been wrung out of administrative processes, or are there higher
levels of process performance that can and should be attained?

◆ Should investments continue to be made in administrative technologies to create process improvements?
◆ Which technology or technologies have the greatest impact on process performance?
◆ Are there additional gains to be had from existing technology, and how can they be harvested?

**ECAR Research Questions**

With these questions as context, ECAR designed this study of the state of business process performance in higher education. Specifically, we were interested in three broad areas. First, we wanted to understand the status of higher education’s major administrative processes. Second, we wanted to ascertain what role technology has played in producing high performing processes. Third, we sought to examine what separates institutions that achieve higher levels of business process performance from those that do not.

Our more detailed research questions included:

◆ Which administrative processes have attained the highest levels of process performance and which the lowest? What is the state of the industry as a whole?
◆ Are there business processes for which average performance is an appropriate objective?
◆ What difference do technologies make? Specifically, what role did the ERP system play in driving the institution to higher levels of process performance? What role does the Web play in process performance? What about reporting technologies?
◆ Are institutions still pursuing process performance improvement? Where? Why?
◆ What differentiates institutions that achieve high levels of process performance from those that do not?
◆ How important is leadership, institutional culture, and performance incentives?
◆ What are barriers to process improvement?

The next chapter defines the processes that were analyzed and describes in detail the methodology used to guide the research.

**Notes**

2. Ibid., p. 52, Kvavik, R. B., et al., found that only 13 percent of 535 institutions chose to reengineer in advance of or during implementation.
3. Ibid., pp. 38–41. (For a perspective on why institutions chose to remain with legacy systems)