

2

Introduction

Software for enterprise resource planning, or ERP, doesn't live up to its name. Forget about planning—it doesn't do much of that—and forget about resource, a throwaway term. But remember the enterprise part. This is ERP's true ambition. It attempts to integrate all departments and functions across a company onto a single computer system that can serve all those different departments' particular needs.

—Christopher Koch

Each year, EDUCAUSE surveys its members to ascertain dominant concerns among higher education's information technology (IT) priorities.¹ Across all Carnegie classifications, and all sizes of colleges and universities, survey respondents identified administrative information systems and ERP as the issue foremost on their minds.

Financial, human resources, student, and other information systems provide the foundation on which the business of the higher education enterprise sits. Higher education's business practices and processes, and the information that guides decision making in large areas of the academy, interact with and derive from these information systems. In turn, these systems and processes interact with college and university administrative culture in ways that determine how

- ◆ institutional resources are allocated,
- ◆ faculty and staff interact with an institution's core business activities,
- ◆ student needs for information and services are addressed, and
- ◆ decision makers interact with institutional information to formulate policies and decisions and to communicate within the institution.

These systems are by definition critical to the institution's mission.

At the end of the twentieth century and into the twenty-first, higher education has invested an estimated \$5 billion in administrative and ERP systems.² The largest percentage of those dollars was spent in a concentrated period between 1995 and 2000. By any accounting method, ERP investments are among the largest single concentrated investments in dollars and human resources ever made by higher education in any area.

Perhaps because of the scale, ambition, or even the audacity of this endeavor, higher education's experience with the renewal and management of its enterprise systems has attracted substantial attention in the press. Much of this attention has focused on painful and problematic implementations. As much as any topic intersecting information technology and higher education, this re-

cent renewal of enterprise systems in higher education has suffered from a maelstrom of tall tales, changing numbers, faulty assumptions, omissions, and misstatements. This reporting in turn made ERP a topic of discussion among institutional leaders and in executive cabinet meetings throughout higher education. For better or for worse, information technology—through the experience of ERP—has come under the purview of the business officer, the president, and the board of trustees. For this reason, it is a topic worthy of research and dispassionate analysis.

Objectives

This study addresses four sets of questions:

- ◆ What is ERP and why should universities invest in it? In other words, what is the business case? What was promised institutions that installed ERP systems? Conversely, if institutions elected not to implement a packaged ERP solution, why not? What alternate approaches did they take and with what results? Are these alternate strategies intended to be short-term or long-term solutions?
- ◆ What is the current status of ERP implementation nationally? The study provides aggregate data that show the magnitude of investments: where, how, and who. How did institutions implement their ERP systems? Included here are software selection, project planning, management and budgeting, leadership and organizational structures, communications, and integration with other technologies (for example, e-commerce applications and content management systems). The study queried the impact of implementing ERP software with extensive user modifications versus minimal user modifications. Also of interest were the many changes institutions

must make to support the new technology from a process, policy, people, and organizational perspective.

- ◆ What were the benefits and costs? Do institutions feel their ERP efforts were successful? What lessons were learned?
- ◆ And finally, what comes next? What directions do the study's respondents and the vendor community see ERP taking?

This study is not intended as a history of ERP and administrative systems implementation, although it includes data that provide an interesting perspective on what happened during the past two decades. Rather, it is intended as a guide for senior administrators, be they presidents, provosts, CFOs, or CIOs, on the promise and performance of enterprise systems, with emphasis placed on decision support information—that is, when and whether to do it, and how to do it successfully.

What Is ERP?

According to Christopher Koch,³ the key word in enterprise resource planning is “enterprise.” ERP “attempts to integrate all departments and functions across a company onto a single computer system that can serve all those different departments’ particular needs.”

The term has its origins in manufacturing, where attempts to automate and integrate business processes, including manufacturing material and shipping requirements, and to coordinate them with product demand resulted in reduced inventory and increased revenue and customer satisfaction.

Gartner Inc. carried the concept over to higher education in the 1990s and described ERP systems as

- ◆ multiple in scope, tracking a range of activities that include human resources (HR) systems, student information systems, and financial systems;
- ◆ integrated, meaning when data is added

in one area, information in all areas and related functions also changes;

- ◆ modular in structure; and
- ◆ consisting of industry-specific solutions that enhance standard systems by providing best practices for key business processes, and interpreted to include business process redesign.

This study used the Gartner attributes, and institutions were identified as ERP institutions if they installed at least one vendor-supplied financial, HR, and/or student system after July 1, 1995. In the study's concluding chapter on future trends, the ERP definition and vision broaden to include other technical applications and new organizational structures to maintain and develop ERP on campus.

Methodology

The study used a multifaceted research methodology to gather both quantitative and qualitative data from nearly 500 higher education institutions. The authors believe this is the single most comprehensive gathering of information on ERP in higher education ever. The data provide a view of one segment of higher education's collective experience with ERP implementation as well as in-depth institution-specific perspectives.

Six data collection and analytical initiatives were undertaken.

(1) A literature review, which helped to define the major elements of the study and create a working set of hypotheses.

(2) Consultation with administrative information systems leaders to identify and validate the most interesting research questions and hypotheses, which would then frame the construction of a quantitative survey instrument. In particular, the EDUCAUSE Advisory Group on Administrative Information Systems and Services (AGAISS) was used for this purpose. On the basis of these discussions and the literature review, a re-

search framework was finalized in March 2002, allowing work to begin on developing the online survey.

(3) A quantitative Web-based survey designed by the research team from ECAR and Cap Gemini Ernst & Young. EDUCAUSE e-mailed invitations with the Web address of the survey and access code information to 2,980 institutions belonging to EDUCAUSE (1,473), the Council of Independent Colleges (219), and the American Association of Community Colleges (1,288). Senior college and university administrators, the majority of who were CIOs and IT leaders in various capacities, from 457 institutions in the United States and 23 institutions in Canada responded to the survey. The respondents are for the most part EDUCAUSE members. Their responses provide a detailed understanding of how higher education approached ERP system implementations. The survey appears on the ECAR Web site. Appendix 2 contains the names of institutions that responded to the survey.

(4) Case studies, which provide detailed information on specific implementation issues of interest to the industry, including both triumphs and cautionary tales. Intensive telephone interviews were undertaken with more than 40 IT and functional executives and managers at 23 institutions, selected on the basis of peer nomination. Institutions that participated in this research phase had either implemented ERP systems within the past seven years or were currently in the late planning or actual implementation stages of these projects. All subject institutions are members of EDUCAUSE. The study selected institutions that included each Carnegie class and every ERP vendor.

Also carried out were in-depth case studies involving 6 institutions, selected on the basis of peer nomination, that have undertaken enterprise system implementations of significant scope and/or success and from

whom others may learn effective practices. Additional research—most of which involved on-site visits—covered four institutions that have chosen to defer or eschew packaged ERP solutions in favor of a focus on alternative enterprise strategies. Significantly, the quantitative data from the online survey tell a gentler story about ERP implementation than do the qualitative data from the case studies.

(5) A discussion “summit” involving 25 participants from 18 comprehensive or research-intensive institutions and from the ECAR and Cap Gemini Ernst & Young team. Invited participants were senior executives known for having sponsored and led major enterprise system implementations at some of the most complex institutions in the world. Participants were asked to validate, refute, clarify, and extend preliminary descriptive statistics from the online survey. Participants were also asked to summarize key implementation lessons, describe their institutions’ visions and goals for enterprise

systems, and discuss the possible future of enterprise systems in higher education. This panel of experts was brought together in Cambridge, Mass., at Cap Gemini Ernst & Young’s Accelerated Solutions Environment.

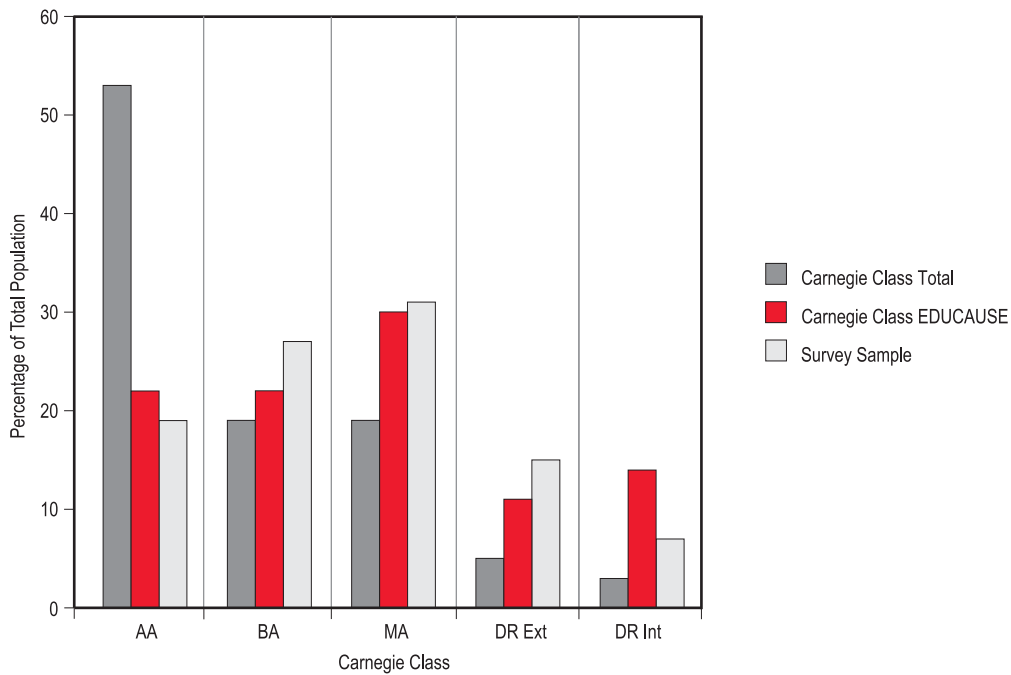
(6) Vendor and consulting firm interviews, which provided an alternative perspective on higher education’s performance in implementing ERP systems. These interviewees addressed trends in the ERP market and provided information on future directions for both vendors and their customers.

The Web-Based Survey

Figure 2-1 shows the distribution of the responding institutions by their new Carnegie class, EDUCAUSE membership, and the universe of higher education institutions (Carnegie class total).

The sample mirrors the EDUCAUSE membership much more closely than it does the national population of institutions by Carnegie class.⁴ With the survey’s endorsement by the Council of Independent

Figure 2-1.
Population of Institutions, EDUCAUSE Membership, and Survey Sample, by Carnegie Class



Colleges (CIC) and the American Association of Community Colleges (AACC), the study was able to obtain more representation from smaller liberal arts and community colleges than have earlier ECAR surveys. Note, however, that the study's sample relied on volunteers to complete the survey from the entire population of three national organizations, so the sample isn't random; this limits the statistical conclusions that are possible. Nevertheless, the 33-percent response rate from EDUCAUSE member institutions gives us confidence that the study's sample portrays a good picture of the EDUCAUSE membership.

The survey was completed largely by CIOs and other IT staff, so it reflects their experiences, observations, and opinions on ERP implementations (see Figure 2-2). Had the study surveyed chief academic officers, presidents, and CFOs, for example,

we expect that differences of opinion would have been found. We emphasize that this study is largely a CIO view of ERP implementation, moderated by observations from other institutional leaders obtained through complementary in-depth qualitative surveys and the study's advisors.

The respondents had a great deal of experience with the implementations: 78 percent indicated that they played a significant role on the project as an executive sponsor, project leader, management team member, or functional/technical specialist. Respondents were also asked whether they had been in their current position during their institution's ERP implementation. Seventy-one percent had been in their position either before planning began or after the planning began but before implementation (Figure 2-3). Only 14 percent were hired after the implementation, which may be at-

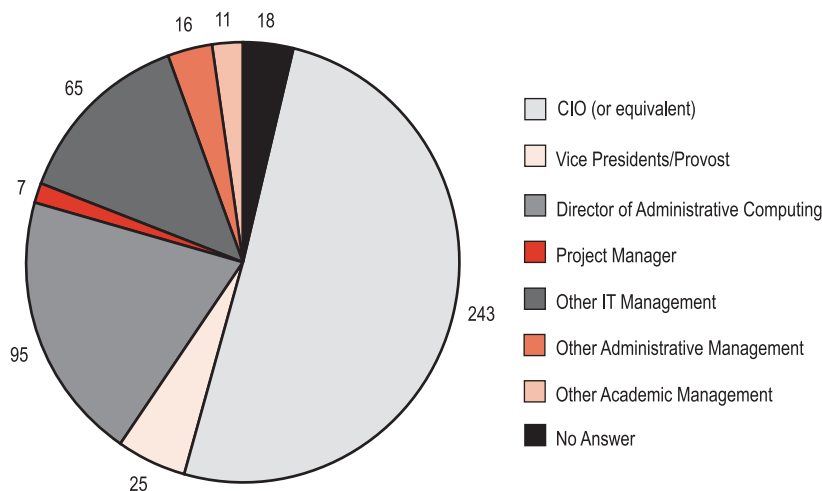


Figure 2-2. Survey Respondents by Administrative Position

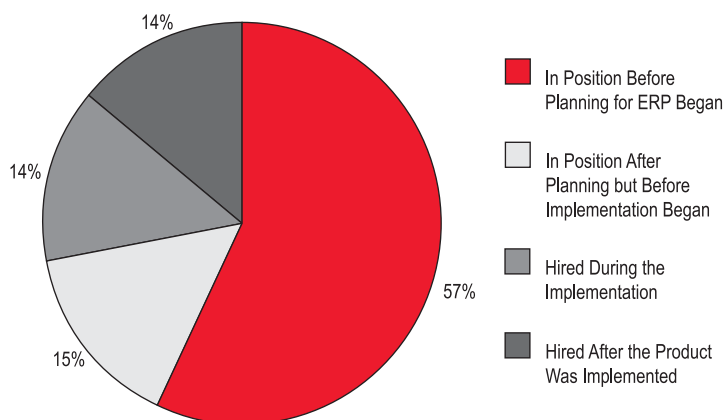


Figure 2-3. Survey Respondents by Length of Involvement with ERP Implementation

tributable to normal turnover in such a large sample. Half had served as the executive or project leader and the rest as part of a management or technical team.

Also important to note is that the various findings presented in this study may represent the average experience of these CIOs or their range of experience. As a consequence, some readers will find the information contrary to their own experience at a single or small group of institutions. Using a baseball analogy, the study would report that average hitting for the league as a whole was .250 and the average pitching earned run average (ERA) was 3.0. But these numbers might not at all reflect the hitting and pitching percentages of the league's top and bottom teams. It *would* offer an opportunity to see how those two teams performed against this sample's average. That's what the study offers the institutions that participated in the study's survey.

We recognize that local experiences will differ—sometimes significantly—from the sample's average. When possible, the study segmented the data to both identify and explain variations from a norm. Moreover, to balance the findings of the quantitative survey, the study has prudently used commentary from colleagues who responded to the study's in-depth surveys. For example, the years 1998–2000 in particular show an implementation pattern for the doctoral institutions in the study's sample that was far more troublesome than that of the sample as a whole viewed over 20 years and that of smaller institutions in the same time period.

Historical Perspective on ERP

Between 1950 and 1980, a relatively small number of niche vendors served higher education's unique administrative information systems market. They supplied many of higher education's so-called legacy systems,

built on code that is no longer commercially supported or marketed. As a result, much of the legacy entails significant software customization and modification of vendor-supplied code by colleges and universities, or information systems that have been custom developed from scratch. Many institutions became adept at developing administrative information systems, and some of these institutions are committed to maintaining and enhancing them.

As information technologies shifted from flat files or hierarchical database structures to relational databases, and from host-based systems to client-server and Web-based architectures, commercial software suppliers seized new opportunities to develop administrative information systems that could leverage the new architectures. In the early 1980s, the enterprise logic of manufacturing systems was added to this competitive and technical mix to produce the so-called ERP systems.

Enterprise System Selection

The first administrative system installation by the study's sample of institutions occurred in 1980. By 2002, 54 percent, or 258 institutions, had implemented one or more enterprise systems; 46 percent, or 222, continued with existing systems or strategically modified them.

The study grouped the sample by a modified Carnegie classification of institutions of higher education (www.carnegiefoundation.org/classifications). 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. To obtain larger numbers for statistical and descriptive purposes, the study collapsed the categories as follows:

- ◆ Doctoral/research universities (extensive, or Dr. Ext.) are institutions that typically offer a wide range of baccalaureate programs along with graduate education through the doctorate. They award 50 or more doctoral degrees per year in at least 15 disciplines.
- ◆ A second category of doctoral/research universities (intensive, or Dr. Int.) also 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 as well as graduate education through the master's degree. The study grouped both master's colleges and universities I and master's II together.
- ◆ Baccalaureate colleges (BA) are primarily undergraduate colleges with major emphasis on baccalaureate programs. The study combined the three baccalaureate college groups into a single BA group.

- ◆ Associate's colleges (AA) are institutions that offer associate's degrees and certificate programs but, with few exceptions, award no baccalaureate degrees.

Other Carnegie-classified institutions were excluded from analyses that used Carnegie class as a variable because of their small numbers in the sample. Similarly, ERP vendors that sold only a few systems to the study's sample institutions were excluded.

By percentage, BA and doctoral institutions were more likely to have implemented enterprise systems than AA and MA institutions. A total of 663 enterprise modules had been installed by the sample group: 238 financial, 202 HR, and 223 student. Half were installed prior to 1998. Sixty-eight percent of all enterprise implementations in the study's sample occurred over the period 1995–2002.

Viewing implementation dates by Carnegie class (Figure 2-4), the study finds that BA and MA institutions made more purchases early in the analysis period. The purchasing trend is similar for all groups except in the last period, which shows more of a tapering off among AA and Dr. Ext. in-

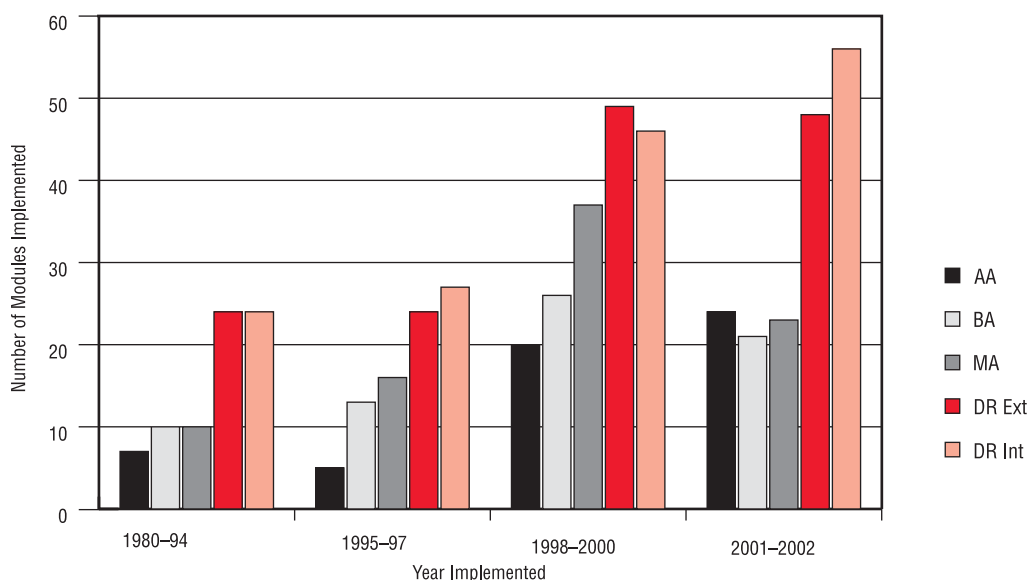


Figure 2-4.
Carnegie Class
Implementation,
by Period (n = 510)

stitutions. This slowdown may reflect budget problems for public institutions and some degree of market saturation for the Dr. Ext. category. Note also the rapid rise of PeopleSoft in the later periods (Figure 2-5).

SCT installed the most modules in the study's sample group (30 percent), followed by PeopleSoft (25 percent) and Datatel (19 percent). SCT installed the most student sys-

tems (82, or 37 percent), PeopleSoft the most HR systems (58, or 29 percent), and SCT the most financial systems (65, or 27 percent). Figure 2-6 shows the overall distribution of ERP systems by vendor.

Private institutions and institutions with fewer than the mean full-time equivalent (FTE) number of students (6,134) in the study's sample were most likely to have cho-

Figure 2-5. Vendor Implementation, by Period (n = 382)

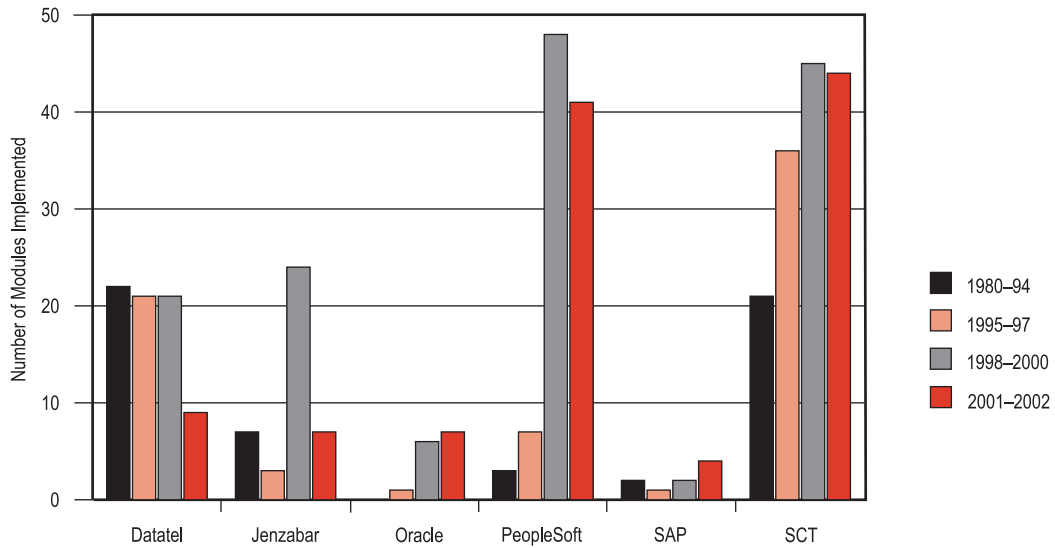
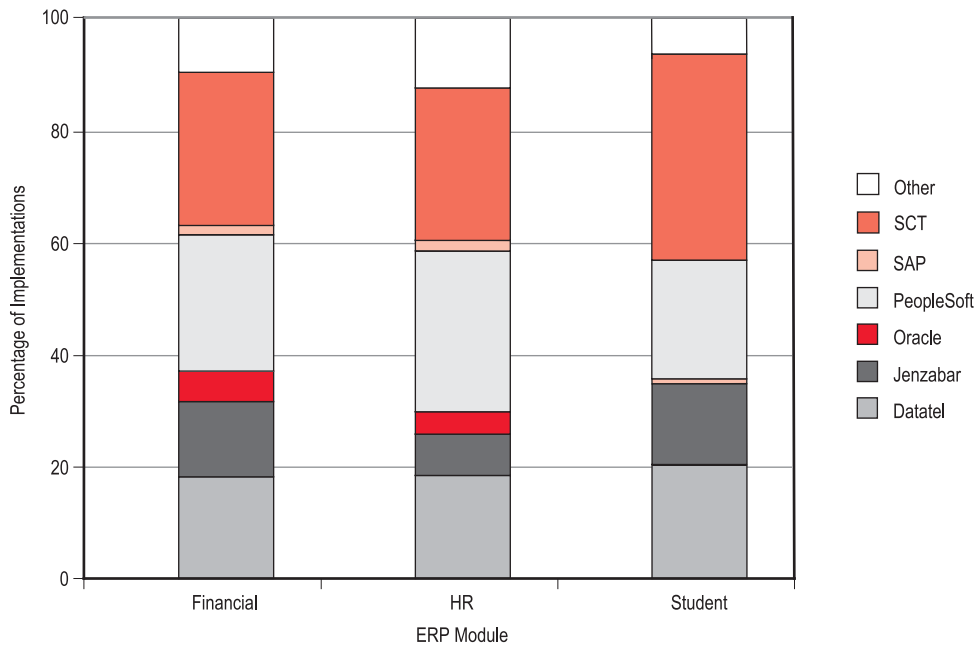


Figure 2-6. Enterprise Systems Installed, by Vendor (n = 663 Implementations)



sen Datatel and Jenzabar. Public institutions, regardless of their size in number of students, more often chose PeopleSoft. SCT was selected more evenly by public and private institutions but more often by smaller institutions. In Canada, with the exception of student systems, where SCT sold the most to the study's sample, Datatel, PeopleSoft, and SCT each shared about a third of the market for financial and HR. But the numbers for Canada are small, and these percentages should be interpreted as representing only the sample. About 10 percent of the institutions changed vendors during the course of an implementation.

Reasons given included a vendor's going out of business or not delivering promised software on time, and a system office mandating a different vendor.

From our data, we conclude that no single ERP vendor dominates the higher education market for enterprise systems. Four or five major vendors are competing, depending on the module. It appears that vendors have been quick to recognize differences among segments of higher education and to pursue competitive leadership within these market niches. Figure 2-7 shows vendor selection, public versus private institutions; Figures 2-8 through 2-10

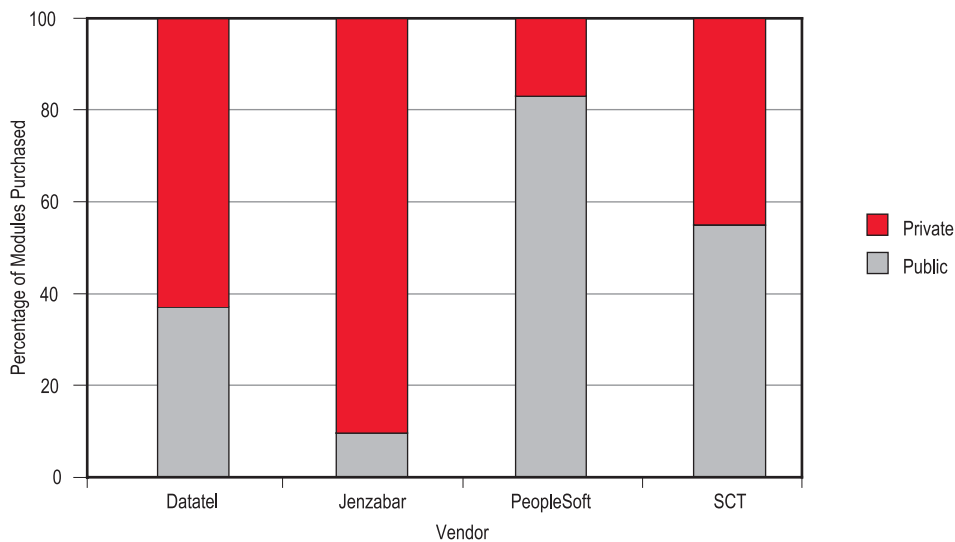


Figure 2-7. Vendor Selection, Public versus Private Institutions

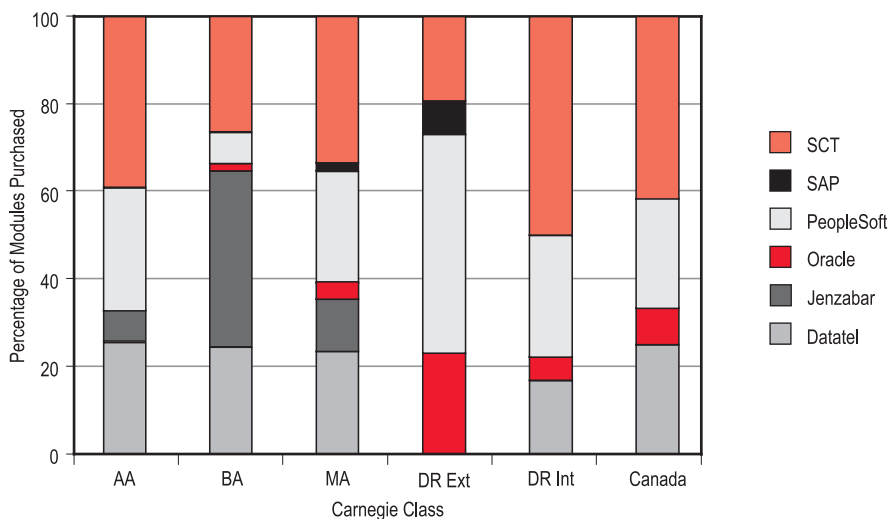


Figure 2-8. Vendors Chosen for the Financial Module, by Carnegie Class

Figure 2-9. Vendors Chosen for the HR Module, by Carnegie Class

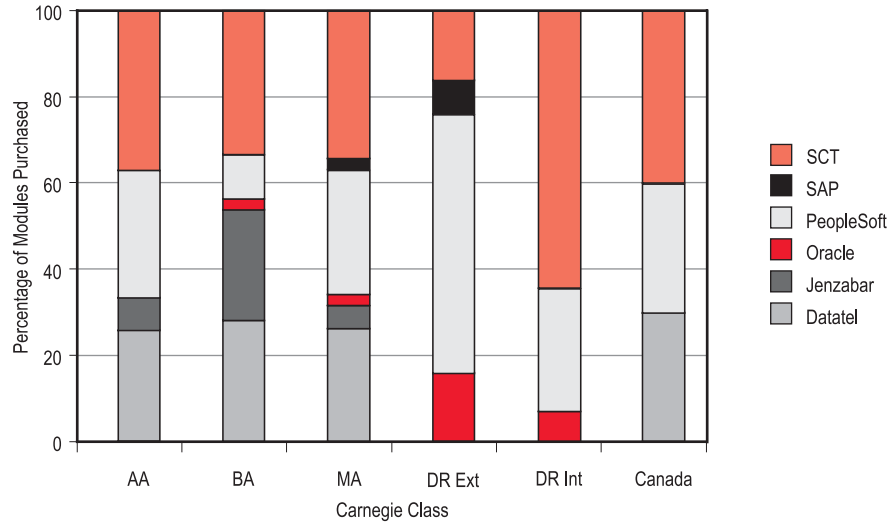
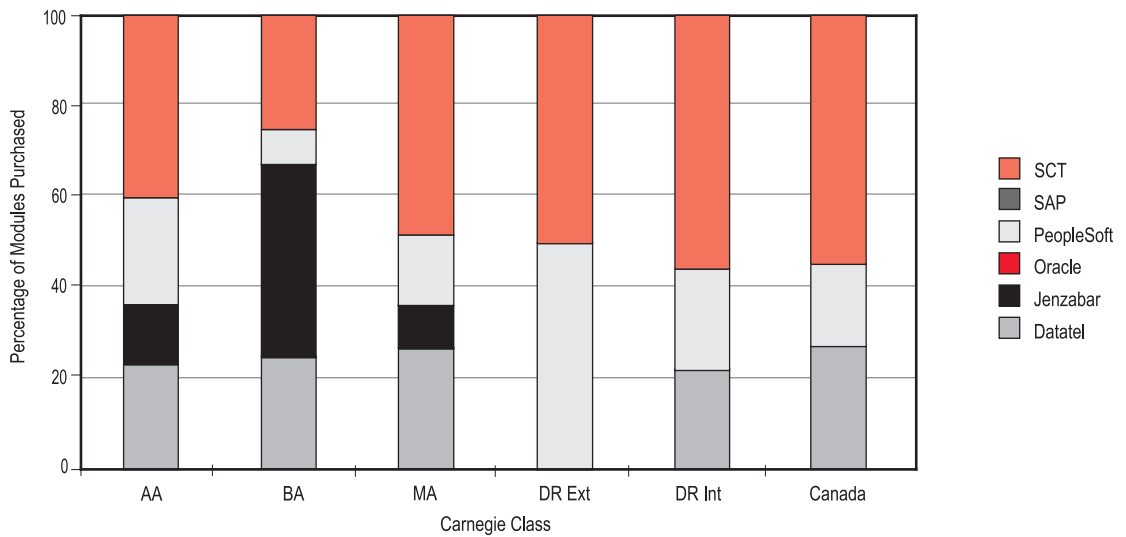


Figure 2-10. Vendors Chosen for the Student Module, by Carnegie Class



show the vendors chosen for the various modules, by Carnegie class.

Public and private institutions were equally likely to purchase ERP systems. The larger the school, the more likely it was to implement an ERP system. Small institutions were evenly divided in whether they did or did not implement an ERP system.

Table 2-1 shows the number and percentage of institutions that purchased one, two, or three systems.⁵

Thirty-three percent of the institutions installed all three modules, 36 percent installed two of three, and 31 percent installed only one module. Sixty-two percent purchased all of their modules from a single vendor, 37 percent purchased from two vendors, and one percent purchased from three vendors. Most often, the sec-

ond vendor was chosen for student systems, probably because several of the ERP vendors did not offer student systems as part of their suite until recently. When asked whether future ERP modules would be purchased from the same vendor (best of suite) or another vendor (best of breed), 80 percent indicated that they would purchase best of suite. Two institutions purchased their three ERP modules from three separate vendors. Notably, two-thirds of the sample continue to use legacy systems for one or two business areas, which may indicate a future demand for ERP system purchases.

Institutions that had not yet installed all three modules but were planning to install more explained why they had not yet done so. Their answers appear in Table 2-2

Table 2-1. Number and Percentage of Institutions that Purchased Specific Modules

Modules Purchased	Number of Institutions	Percentage of Institutions
Financial only	17	6
HR only	4	1
Student only	68	24
Financial and HR	71	25
Financial and student	28	10
HR and student	5	2
All three	96	33

Table 2-2. Reasons for Not Yet Installing All Planned Modules

Reason	Respondents	Percentage
Phased implementation plan	36	56
Waiting for product to mature in later release	11	17
Other projects need to be finished first	8	13
Seeking additional funding	7	11
Need top management approval	2	3

Respondents were asked to select all reasons that applied.

Although the number responding is small, it appears that most institutions have a deliberate and phased implementation plan; and, to a lesser degree, they're waiting for the product to mature in a later release. The longer implementation may also reflect some vendors' practice of bundling multiple systems in cases where the purchasing institution may only be looking for one system.

Why did institutions choose a particular vendor? When asked to select all reasons that apply, respondents provided the information in Table 2-3.

The top five reasons selected were the software's best fit and functionality for the institution, the architecture's best fit with the institution's strategy/goals, the vendor's reputation, the vendor's ability to provide a complete solution, and price, in that order. Surprising, perhaps, is the low weight given to outside advice. This suggests that institutions used a fairly rigorous request for pro-

posal (RFP) process that specifies functionality and system requirements, including the need for a complete solution. These factors combined represent 46 percent of the responses.

Chris Handley, executive director of systems at Stanford University, shared his insight on vendor selection. "I came to Stanford two-and-a-half years ago after they had picked best of breed rather than best of suite. My previous ERP system experiences led me to believe that 'best of suite' is the easiest thing to implement. There are not enough differences between the products to really make best of breed a wise strategy because of what I term 'version upgrade gridlock.' For example, which system do you upgrade? When you upgrade one, you create problems with the other. So you have to fix the other. Then you upgrade the other and you have to fix the first one. It's a never-ending cycle." He added, "I look for what the mission-critical applications are, and for universities that is teaching and research. I would pick the system that

Table 2-3. Reasons for Selecting a Particular Vendor

Reason	Frequency	Percentage
Features/functionality best fit requirements	193	20
Architecture's best fit with IT strategy/goals	127	13
Vendor's reputation	126	13
Vendor's ability to provide a complete solution	124	13
Price	110	12
Vendor product/vision	99	10
Advice from peers	67	7
Previous experience with vendor	41	4
Part of larger purchasing group that selected product	38	4
Advice from consultant/industry analyst	28	3

best supports those applications and go with that entire suite.”

The California State University (CSU) System shares the Stanford perspective. A software evaluation study performed by Gartner encouraged CSU to search for a software suite rather than a best-of-breed solution for their enterprise-wide administrative system needs. In choosing the suite approach, CSU understood that while every software module might not be the best match for individual needs and requirements, this choice could alleviate concern about the level of additional effort and cost needed to interface disparate systems in this multicampus system.

With the procurement process underway in 1998, new CSU Chancellor Charles Reed, who had previously operated in environments that used centralized suite software, challenged decentralized thinking. Following a chancellors’ and presidents’ retreat in mid-1998, the chancellor’s office mandated a suite approach. All campuses would migrate to this software and run it in a baseline/centralized manner rather than each campus implementing it locally.

The vendor community communicated a similar understanding of the factors behind institutional purchasing decisions, although there were some differences. Vendors most frequently felt that they were chosen because of the alignment of their company’s vision, products, people, and culture with those of the institutions they serve. Several vendors referred to this as a partnership between themselves and their customers.

This point was well articulated by Russell Griffith, president and CEO of Datatel, who said, “We need to be more than a vendor. We need to understand our customers’ businesses and be an advisor to them.” It was further reinforced by Karen Willett, director of product marketing for PeopleSoft Learning Solutions. She said, “The vendors that institutions want to work with, and that they

choose to work with, typically are the ones that they plan on having a long-term partnership with.” Bob Maginn, chairman and CEO of Jenzabar, agreed: “The need for a partnership view is essential. When you bring in a system like this, it’s like a marriage. When you go in, you have to figure out how to make it work, and then you need to keep working at it to make it successful.”

Other factors that multiple vendors felt were important included the company’s reputation, its product reliability, the technology architecture, their people, and the ease of implementing their products. The list of selection-influencing factors that the vendors discussed included

- ◆ ease of implementation;
- ◆ cost, including the combined cost of software and implementation;
- ◆ product vision;
- ◆ technology/technical innovation;
- ◆ alignment between vendor and customer, or partnerships with customers;
- ◆ people, including employees’ skills and experience;
- ◆ reliability of code and products;
- ◆ having a top-quality product; and
- ◆ company’s reputation and commitment to the industry.

In contrast to the reasons that the survey respondents cited as important to their purchasing decisions, none of the vendors specifically pointed to functionality as a key to their customers’ purchasing decisions. In fact, several vendors openly disagreed about functionality’s being a key factor in the ultimate choice of a system. For example, Judy Chappelle, PeopleSoft’s director of marketing development for higher education, said, “Notice I didn’t mention functionality. It tends to be fourth or fifth in the line of criteria when it really comes down to the final decision making, although we spend most of our time in the sales process dealing with the functionality of the software.” Russell Griffith of

Datatel said, “The product is a minimum requirement to play.”

This interesting discrepancy between vendor and institutional perspectives may be explained in several ways. One likely explanation is that survey respondents were asked to select all that apply when providing the data appearing in Table 2-3. Therefore, although functionality was a factor in the decision-making process at a large number of institutions, it may not have been, as Chappellear states, the most important factor.

Another possible explanation could arise from the composition of the respondent pool, which consisted primarily of CIOs and IT professionals. Although the factors in Table 2-3 are perceived as important to them, it may be that because ERP purchasing decisions are often complex, other senior decision makers—CFOs, presidents, and various senior executives—may have had different priorities. Then, too, vendors’ perceptions of their customers’ decision-making processes and motivators may not be correct.

It could also be possible that the factors influencing software purchase have changed over time. Functionality may have been more important earlier on as the packages were evolving; however, as the vendors learned from one another and updated their functionality accordingly, this factor could have become less important.

For the most part, institutions were satisfied with their vendor relationships. The study’s analysis shows that satisfaction with the outcome of the implementation is not correlated with the vendor chosen, nor does the addition of Carnegie class make any difference. Fully 87 percent agreed or strongly

agreed that the vendor was responsive to their needs during the sales process. However, just 65 percent agreed or strongly agreed that the vendor provided strong support after the purchase of the software.

For their part, vendors expressed some dissatisfaction with the way higher education as an industry purchases software and services. They feel that although the industry expresses an interest in partnering with their vendors, the vendors often have to bid for work through RFP processes, which disallow interaction between the vendors and the institution to jointly develop solutions. According to SAP, “The checklists of functionality and team approach seem to limit the willingness of people to think differently about their potential solution.” Oracle said, “It almost seems like there is an inability to ask for what is desired, but rather only for what is known, during the purchasing process. Today the selection and evaluation process is done by committee and consensus and is focused on features and functions, not on where the institution strategically wants to go.”

Several of the vendors hoped that in the future they would have the opportunity to work more closely and collaboratively with prospective customers during the purchasing cycle. As PeopleSoft’s Judy Chappellear explains, “I would like to see some more innovative and creative ways for the customers to evaluate software and software vendors.”

This, then, is the overview of what the study’s institutions purchased, whom they purchased from, and when the implementations occurred. The next chapter addresses why institutions purchased ERP solutions.

Endnotes

1. Paul Kobulnicky et al., "Third Annual EDUCAUSE Survey Identifies Current IT Issues," *EDUCAUSE Quarterly*, No. 2, 2002, pp. 8-21.
2. Our survey respondents report ERP expenditures of approximately \$1.6 billion. From this figure, we conservatively estimate \$5 billion for the industry as a whole.
3. Koch, op. cit.
4. The study notes that the Carnegie classification of institutions of higher education recognizes 1,669 AA institutions, whereas the AACC membership currently includes 1,171. The study's sample includes 5 percent of the Carnegie classification institutions, 7 percent of the AACC membership, and 26 percent of the AA EDUCAUSE membership. The AACC numbers are based on the definition of colleges eligible for membership in the AACC constitution—colleges that award the associate degree and are regionally accredited. The Carnegie count includes career colleges and colleges accredited by the Accrediting Council for Independent Colleges and Schools.
5. The 585 total modules purchased in Table 2-1 exceed totals listed elsewhere because Table 2-1 includes some ERP purchases made prior to 1995.