USING SAP ERP TECHNOLOGY TO INTEGRATE THE UNDERGRADUATE BUSINESS CURRICULUM

Sassan S. Hejazi
Arcadia University
hejazi@Arcadia.edu

Annette L. Halpin
Arcadia University
halpin@Arcadia.edu

William D. Biggs
Arcadia University
biggs@Arcadia.edu

ABSTRACT

This paper describes one institution's approach to integrating its business curriculum. The paper addresses the need for integration in business programs and discusses how a total Enterprise Resource Planning (ERP) software package, in this case SAP, can accomplish that goal. Next, a description is given detailing how SAP is used in individual courses in the curriculum. Lastly, implementation challenges and future directions are presented.

INTRODUCTION

Beginning in the late 1950s, a call went out for undergraduate business programs to provide an integrative experience in the curriculum (Gordon and Howell, 1959; Pierson, 1959). Many educational institutions responded by developing and requiring of all majors the senior-level business policy course. Assuming that students had achieved some mastery of the material covered in prior courses (accounting, marketing, human resources, etc.) the policy course was intended to integrate the various business disciplines and offer students a learning experience that would move them from the abstract (theory) to the practical. Using cases and/or computer simulations as tools, the senior-level policy requirement became known as a strategic management course. In the late 1980s, work by Porter and McKibben (1988) noted the need for more curricular integration beyond one course. The major business accrediting associations such as AACSB and ACBSP devote a curriculum standard to the topic of integration, which is evidence that this topic is viewed as quite important.

Many institutions delay an 'integrating' learning experience such as policy until the senior year but some have called for greater cross-disciplinary learning earlier in a program of study (Kuehn & Stair, 1981; Kuvishnikov, 2002). Exposing students to cross-disciplinary learning experiences prior to their senior year will encourage an understanding of and appreciation for the business environment as both dynamic and multi-faceted. Our institution's efforts to improve student understanding of the complexity of the firm has been facilitated by participating in SAP's Educational Alliance Program. This total enterprise software package provides a meaningful tool for instructors to integrate the business curriculum both horizontally and vertically.

ABOUT SAP

SAP is a worldwide leader in Enterprise Resource Planning (ERP) software. Headquartered in Germany, SAP's R/3 ERP system is used by a significant number of the Global 2000 companies to better manage their information needs (http://www.SAP.com). SAP has gained popularity in the corporate community over the last twenty years by becoming the first vendor to offer larger organizations an integrated suite of products. SAP allows organizations to seamlessly integrate their operational and functional units and provides management the capability to stay up-to-date with the status of their operations. A key characteristic of SAP's R/3 software is its richness in business process modeling capabilities allowing organizations to configure a system to satisfy their unique needs without requiring extensive program modifications. The R/3 software that SAP provided our institution is not a demo version. It is a full package with all the core application modules.

THE PARTNERSHIP

In 1998 our institution, Arcadia University, was invited to submit an application to SAP to become part of its University Alliance Program. This collaborative effort provides institutions a state-of-the-art software package (R/3 ERP) to use in the education of future business leaders. Participation requires that schools purchase a file server to be dedicated to the use of SAP on campus and that business faculty and computer staff attend SAP training sessions. SAP, for its part, would supply their software package, provide any upgrades, and allow for a number of training hours at no cost to the institution.

Our proposal, one of roughly 50 accepted in the United States, differed from most others in that we viewed this opportunity in two distinct ways. First, we decided that students should gain hands-on experience with the software

program. To ensure access we installed the software in the computer labs across campus and set up individual accounts for all students in classes using the software. This allowed instructors to design specific applications for their individual courses. Second, while proposals from most institutions included plans to introduce SAP technology into only one course, our approach was broader in scope. We saw the potential to introduce the technology into a variety of courses and for SAP to be used to integrate our entire curriculum. This integration would occur both horizontally and vertically within our program. It would be horizontal because students would work with the software in a number of upper-level courses concurrently (junior and senior years). It would be vertical since they would become familiar with SAP in courses in each of the four years. The four-year plan we developed to integrate SAP technology into our courses is shown in Table 1.

TABLE 1
INTRODUCTION TO SAP

Course No.	Course Name	Year	Introduction Year	
			Plan	Actual
BA369	Mgmnt. Info. Systems	Jr/Sr	First	First
BA367	Operations Mgmnt.	Jr/Sr	First	Second
BA380	Principles of Finance	Jr/Sr	Second	Second
BA340	Principles of Mktg	Jr/Sr	Second	Third
BA362	Human Res. Mgmnt	Jr/Sr	Fourth	Third
BA201	Financial Acctg	Soph	Third	In Progress
BA202	Managerial Acctg	Soph	Third	In Progress
BA101	International Bus	Fresh	Fourth	Dropped
BA395	Policy Formulation	Senior	Fourth	Future

IMPLEMENTATION INTO COURSES

We began the implementation process in the Management Information Systems course since it was technically oriented, taught by the coordinator of our SAP program, and taken by upper-level students who could become somewhat familiar with ERP software prior to graduating. As Table 1 indicates, there were cases when the software was introduced on time while in others it was introduced earlier or later than planned. We decided not to introduce the software into the BA101–International Business course due to the realization that introducing enterprise resource planning software at the freshman level would not be a good fit. The following descriptions explain how SAP's R/3 system has been implemented in five of our course offerings. Courses using the software for the first time, such as Accounting, are not included since the content of the sessions is going through a test run.

BA369 - Management Information Systems. The objective of the MIS course is to familiarize students with

the role of information technologies in achieving the objectives of an organization. Students are first given an overview of the integrated nature of information management systems such as SAP R/3. This is reinforced by introducing cases that focus on information sharing and dependency issues/challenges at a number of leading companies. Later, students are given a tour of the system development environment within SAP, which shows how an ERP system is developed on the basis of business process requirements. This is followed by a presentation of several system administration issues including how users are setup, how organizations track who has access to what information, and how changes made to the system are monitored. The last lecture discusses Accelerated SAP (ASAP) project planning and implementation methodology and shows students Microsoft Word and Excel-based project planning checklists within the ASAP roadmap tool set.

BA367 - Operations Management. Operations Management, a required junior-level course, teaches students how to plan and organize resources in alignment

with an organization's strategic focus. SAP R/3 is introduced at four different junctures of the course. The first lecture is built around the concept of organizational information integration. Students are exposed to a quick tour of the modules within SAP and become familiar with the typical information management functions in a modern enterprise including sales, marketing, logistics, production, accounting, and finance. The second and third lectures address the ability of an ERP-enabled organization to manage their Quality Management initiatives along with Process Design and Integration concepts within the organization. The final lecture presents Supply Chain Management (SCM) and Forecasting topics as students are introduced to the information needed by the firm to communicate with its suppliers.

BA380 - Principles of Finance. Principles of Finance is a required junior-level course that teaches basic financial practices such as the time value of money, capital budgeting and the risk-return relationship at publicly-held corporations. SAP R/3 is introduced as an example of a business management system used daily by an organization's finance team. Two working lab sessions are arranged, the first of which presents an overview of the R/3 system and offers a detailed look at the general ledger chart of accounts, account balances, and basic financial reporting needs associated with the Balance Sheet and Income Statement. The second lab session continues with an exploration of the Treasury and Controller functions and includes a look at currency issues. The last session is a class lecture on the information and processes supported by a system such as R/3 in the area of capital projects.

BA340 - Principles of Marketing. Principles of Marketing is a required junior-level course that offers students an overview of marketing management in the modern organization. Two SAP R/3 lab sessions demonstrate how customer, item, and sales data are stored and accessed by marketing professionals in an effort to improve decision-making within their organizations. Students learn about the various data elements and gain an understanding of the importance of properly classifying the master data to enhance the sales and marketing reporting processes. A series of drill down sales and marketing reports allow students to display relevant information about customers such as names, addresses, and annual sales. Product, plant, and sales personnel information round out the discussion during the second lab session.

BA362 - Human Resources Administration. This junior-level course focuses on the fundamentals of human resources administration functions such as HR Planning, Recruitment, Selection, and Compensation. The course utilizes SAP R/3 in one lecture towards the end of the course as a reinforcement of the concepts discussed during the term. Students are given a demonstration of the flow of the information within the HR system of a modern organization. They are shown how HR master files are set up and how they are used to track applicants during the recruiting and selection processes. They also learn how the

system can be used for the career path management of employees.

IMPLEMENTATION CHALLENGES

In the three years since we were accepted into SAP's University Alliance Program, we have needed to address several issues in implementing this information technology into our curriculum. The challenges we faced and, in some cases, continue to face are detailed in the following paragraphs.

Financial Resources. Initially, convincing the university's administrators of the need for a substantial financial commitment to join the program posed a challenge for the business department. SAP R/3 requires a well-equipped, dedicated server to function properly. Arguing, as we did, that our plan was to expose all business students (majors and non-majors) to one of the world's leading enterprise software packages helped support our position that funding a server was a wise investment for the institution. The financial commitment at the initial stage was approximately $50,000.

Human Resources. The R/3 initiative requires an adequate level of human resources (faculty and staff) to implement successfully. Our administration agreed to provide one course release for a faculty member to be trained in using SAP and to act as the teaching coordinator to assist other faculty members in developing and introducing R/3 system modules. The commitment of faculty did not end with full-timers, however. The decision was made early on in the process that all relevant courses would have an SAP component regardless of whether they were taught by full-time or part-time faculty. This meant that all instructors would need training at some point in the future. Initially, the coordinator then later two full-time faculty members attended formal training sessions at SAP.

In addition to the commitment of the business faculty, it was recognized that capable technical people in the Information Technology Department were essential to the long-term survival of the R/3 system on our campus. The two original engineers, for instance, who attended system training at SAP's facilities, have long departed the university. This has left a gap that we continue to try to fill. Realizing how complex the R/3 system is, the CIO of the university has become involved in several system administration responsibilities to ensure that the system is maintained properly. Ongoing initiatives in that department such as the rollout of new desktop operating systems and other changes to the campus-computing environment complicate matters by reducing the reliability and accessibility of the R/3 system for business faculty and students.

Facilities. In 2000 the business department was fortunate to be moving into a new state-of-the-art building. This was at the same time that SAP R/3 was being introduced into our curriculum. The new building, equipped with well-appointed computer labs and classrooms had

made the task of scheduling classes and labs for the SAP faculty an easy one. There were initially several rooms available for SAP-related lectures and lab sessions. In time, however, as the new building has become a more integrated part of the campus, fewer classrooms and labs are available for SAP use. As the situation stands now, a number of faculty have had to use either portable laptop carts in their classrooms or take their classes to labs in other buildings. The availability of the SAP software on the campus network has been a key element of our success during this crunch. Lecture and lab scheduling continues to be problematic at times and will only get worse as we continue to expand the number of courses offering SAP R/3 instruction.

FUTURE DIRECTIONS

As we move forward with the R/3 initiative, we see the need for continued progress in three areas. First is the continued training of faculty and technical support personnel. Part-time instructors need to be introduced to the software and trained over the next two years. We are fortunate to have a number of part-timers with more than five years of employment with us. We believe we can count on them to be willing to learn this ERP system and to incorporate it into the content of their courses. At the same time, those full-time faculty members who are currently trained and conducting lab sessions/lectures will be encouraged to improve their knowledge of the R/3 system and to revise their lectures/exercises to handle more challenging topics. Regarding the training of our technical support staff, a higher than expected turnover rate among these employees will continue to challenge the faculty coordinator and CIO of the university in their efforts to keep the software properly installed and accessible. This last issue is especially critical in dealing with our second challenge, that of upgrading our software and acquiring additional lab space. Over the next year we will need to upgrade the R/3 system to the latest version. In addition, our hardware needs (lab space) continue to increase as more classes come on-line in the program. This issue will not go away so we plan to request that a computer lab be dedicated solely to SAP. The last area that we would like to address is that of the SAP curriculum. Our goal is to standardize faculty training, lecture material, and lab exercises across the relevant courses. With one common set of goals for each course, the department will be able to maintain some consistency in the program regardless of instructor. These documents will also help to measure the body of knowledge learned by students who have completed their coursework at the university. We see the need as well to have this documentation available for the administration, board of trustees, employers and other interested parties. In conclusion, we have been pleased with the progress made so far and look forward to the next phase of integrating the R/3 software into our business curriculum.

REFERENCES

Gordon, R.A. & Howell, J.E. (1959). *Higher Education for Business*. New York, NY: Columbia University Press.

Kuehn, R.R. & Stair, R.M. Jr., "Suggestions for Integration of Business Administration Core," *Developments in Business Simulation and Experiential Learning*, 1981, pp. 195-198.

Kuvshinikov, J., "VBOTZ: A Pedagogical Cross-Disciplinary, Multi-Academic Level Manufacturing Corporate Simulation," *Developments in Business Simulation and Experiential Learning*, 2002, p.102-112.

Pierson, F.C. (1959). *The Education of American Businessmen*. New York, NY: McGraw-Hill.

Porter, L. & McKibben, L. (1988). *Management Education and Development: Drift or Thrust into the 21ˢᵗ Century?* New York: McGraw Hill.