

CERTIFICATION IN ENTERPRISE SOFTWARE: AN SAP R/3 UNIVERSITY ALLIANCE PROGRAM EXPERIMENT

Roger L. Hayen, Central Michigan University, roger.hayen@cmich.edu
James J. Cappel, Central Michigan University, james.cappel@cmich.edu

ABSTRACT

A new initiative of SAP AG is to provide SAP R/3 certification to college students prior to graduation. This article describes the initial implementation of a SAP R/3 Process Integration Certification Academy at a large, public university, and it reports the evaluation results of this effort. A survey conducted of the Academy's participants revealed a number of positive outcomes including that students indicated a high level of satisfaction with the Academy and that they anticipated the certification would benefit them in their careers. These results are important to other educational institutions considering offering similar vendor certification programs.

Keywords: enterprise software, enterprise resource planning, ERP, certification, process integration, university alliance

INTRODUCTION

SAP R/3 is a type of enterprise software (ES) or enterprise resource planning (ERP) software that integrates transaction-oriented, core business processes. SAP R/3 is the most widely used ES. SAP had revenue of \$5.05 billion in 1999, or 48% of the ES market whose other vendors include PeopleSoft, Oracle, J. D. Edwards, and Baan (Gilbert, 2000). SAP AG created a university alliance program (UAP) that provides R/3 software to universities for use in their for-credit educational programs. The UAP now has more than 100 member institutions in North America. For a number of years, SAP AG has run professional training programs to certify consultants and other system implementers in the R/3 System software. These certifications serve as one dimension of verifying the qualifications of prospective team members for the implementation and on-going maintenance of an R/3 System. In the past, SAP certification academies have focused on the needs of SAP's own consultants and their implementation partners. A recent initiative of the UAP is to provide SAP R/3 certification to college students. This program aims at increasing the supply of SAP R/3 certified professionals while allowing college students to enter the job market already SAP certified. Gaining certification in this widely-used software would appear to be very beneficial to students entering the job market.

In 2000, SAP America began a pilot SAP R/3 Process Integration Certification Academy at five UAP member institutions. The purpose of this effort was to evaluate the efficacy of providing an introductory level SAP certification program designed for upper-level college students. The pilot program consisted of three undergraduate and two graduate academies. The authors' university was selected for one of the three undergraduate academies. The others were at California State University–Chico and the University of South Dakota. The graduate academies were held at Louisiana State University and UCLA.

The instructor for the four-week Academy held at our university was an SAP consultant employed and provided by SAP AG. Students worked toward the goal of successfully completing an SAP certification exam held at the end of the fourth week. The cost for an individual to attend a comparable training experience like this provided by SAP would have been \$10,800. This fee was waived for students participating in this special pilot program.

Since this Academy was a new effort, the authors' institution, as well as SAP, wanted to evaluate its effectiveness. The current study reports participants' perceptions of this Academy at the authors' institution. These results should assist other institutions in making decisions about their participation in SAP or other ERP software vendor certification programs. SAP conducted their own separate evaluation of this pilot program, including the quality of instruction and the course materials provided by SAP. These evaluations are confidential to SAP and not reported here.

PARTICIPANTS

Twenty-two students were selected for the Academy based on several requirements. First, participants had to be juniors or seniors within a degree program. Second, students had to have completed at least two regular, for-credit "SAP courses" from our university's College of Business Administration curriculum, i.e., courses that included a significant SAP R/3 component and experiential learning exercises. The students were enrolled in courses with SAP content that followed an integrated curriculum framework for enterprise software (Hayen et al. 1999). Third, the students were required to commit to the entire four-week intensive program, which ran from 8:00 am to 5:00 pm Monday through Friday with some evening and weekend work necessary to complete course assignments and a major project. The Academy was held during the first four weeks of the first summer session to avoid conflicts with the regular courses of the students.

Students were chosen from various majors within the College of Business and the Department of Computer Science. The participants by major are shown in Figure 1. The selection process gave

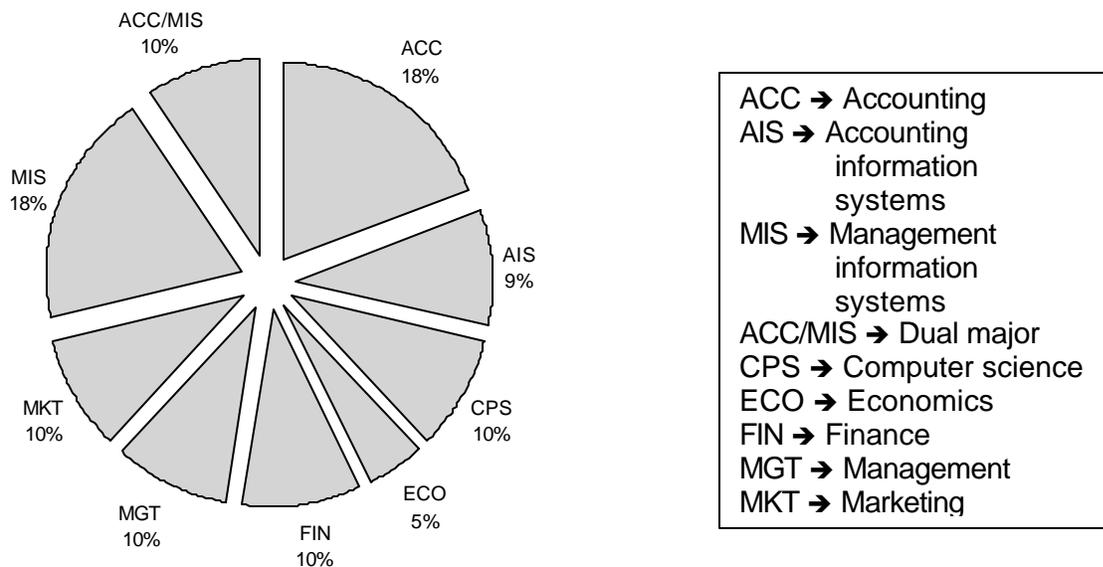


Figure 1. Participants by Major

preference to students who were near graduation. As a result, all participants were seniors at the time of selection. Two-thirds of the participants were less than 25 years of age, 19% were 25-35, and 14% were over 35. Male participants outnumbered females 62% to 38%.

ACADEMY ORGANIZATION

This Academy focused on selected business processes involved with supply chain management (SCM), following the customer order to cash cycle of a business (Hayen, 2000). That is, the Academy concentrated on key activities and interrelationships among Sales, Purchasing, Production, Warehouse, and Accounting. It also encompassed SAP configuration and used an integrated group project. The arrangement of activities by week was: week 1, introduction to integrated business processes; week 2, configuration of integrated business processes; week 3, the case project including presentation; and week 4, additional advanced integrated process concepts, an examination review, and the certification exam.

The initial focus on processing business transactions enabled students to become familiar with the fundamental interactions of the various SCM processes. This included a detailed examination of transactions, business processes, and the documents for the processing a sales order, a customer invoice, a customer master record, and the other documents. Once students understood the integrated business processes, they learned how to do the SAP configuration to support this processing. Configuration involves determining how to meet the requirements of a business using the standard building blocks or “best business practices” embedded in the ES. It includes: (1) defining the organization structure, (2) establishing basic settings, and (3) entering master data. The students’ first configuration activities were to establish the organizational structure by creating a company code and other organizational units. Next, a chart of accounts was copied for this company from a pre-defined chart provided with the basic SAP R/3 System. Master data was created for customers, vendors, and production, including a bill of materials (BOM). After this, the students were prepared for their group process integration project.

For the integration project, students were provided with a case about a company that produced a typical industrial pump. The students were organized into four teams, and each team was assigned specific responsibilities related to: (1) production and accounting, (2) inventory/warehouse management, (3) production, or (4) sales and distribution. When completed, the work of the teams was integrated into one overall, seamless system. An enterprise and accounting organization structure was created for companies (identified by a company code), plants, storage locations (within a warehouse), controlling areas, business areas, purchasing organization, and sales organization. Each team was responsible for configuring and testing their part of the integrated processes. Configuration included the creation of master data for customers, vendors, and products. At the end of the third week, the final test of the integration was a presentation that demonstrated carrying out one cycle for the integrated supply chain that processed a customer order through the entire system from the initial order to the collection of cash for the order. This processing included obtaining raw materials, using the BOM, and running a production cycle to produce the product.

On the last day, the participants took the SAP process integration certification exam. Twenty of 21 students sitting for the exam passed it. One of the initial participants had to drop out for personal reasons, so 21 of the original 22 students completed the entire four-week Academy.

ACADEMY EVALUATION

A survey was conducted to evaluate the efficacy of providing this certification opportunity to students. Twenty-one students completed the survey, i.e., all students enrolled in the Academy during its third week. The survey contained 18 items. The first thirteen were answered using a seven-point scale, where 7 indicated "extremely satisfied" or "strongly agree," 4 "don't know/no opinion" and 1 "extremely dissatisfied" or "strongly disagree." The survey also contained four demographic questions and an item that asked participants to indicate the perceived value of the Academy in dollar terms. The survey's items can be grouped into four general categories:

Item	Category
1 - 3, 11	Overall indications of satisfaction
4 - 9	Anticipated impact of academy on career
10, 12, 13, 17	Delivery considerations of future certification academies
14 - 16, 18	Demographic data

To minimize response bias, some questions were negatively stated. For example, question 9 was worded, "Participation in this Academy is likely to have little or no impact on my career and/or future employment." Question 10 said, "The Academy took more time and effort that its expected worth to me." For analysis purposes, these questions were reverse-coded to facilitate an easier comparison to the other responses. These items are stated in reverse-coded form in Figure 2, which shows a list of the first thirteen questions.

Figure 3 presents the average responses for questions 1 through 13. Overall, these responses indicate the participants were very satisfied with the Academy, and they anticipated the Academy would have a positive impact on their careers. They also thought the Academy improved their understanding of integrated business processes. As indicated in Figure 3, questions 6 and 12 did not receive as positive a response as the other items. Question 6 asked the perceived importance of the Academy to the participants' current employer (or the student's prospective employer if the student had accepted a position, but did not start work until after the Academy). Less than half of the participants (47%) said they thought the Academy was important to their employer. One reason for this may be that this was the first time the Academy was offered so employers had no prior experience with students completing it. This perception might change with repeated offerings of the Academy. Question 12 asked participants whether they would have preferred to take the Academy as a "for-credit" course that would count towards their degree. Less than half (48%) preferred the "for credit" approach. Since opinion was divided on this issue, it appears to require additional study.

Table 1 presents the results to four satisfaction and global outcomes. All participants reported they were satisfied with the Academy in learning about integrated business processes. In addition, 95% of the respondents were satisfied with the content of the Academy and agreed that it improved their understanding of the issues involved in integrated business processing. Finally, 86% were satisfied with their commitment of the time and effort needed for the Academy.

Table 2 summarizes participants' perceptions about the potential impact of the Academy on their careers. All participants agreed the Academy was useful in fulfilling their career objectives.

Item	Question
1	Which of the following best describes your overall level of satisfaction with this Academy in learning about the SAP R/3 System and integrated business processes?
2	Which of the following best describes your overall level of satisfaction with the content of the Academy in learning the concepts and issues involved in integrated business processes?
3	Which of the following best describes your overall level of satisfaction with your commitment to the time and effort you have made to participate in this Academy?
4	Participating in this Academy is useful in fulfilling my career objectives.
5	Participating in this Academy enhances my employment opportunities.
6	Participation in this Academy is important to my current employer (including your prospective employer if you have accepted a position, but start work after the completion of this Academy).
7	I consider my participation in this Academy to be important in obtaining my next position with my current employer or for a different job with another employer (including your first job after completion of your degree).
8	Participation in this Academy is likely to increase my earnings during the next five years.
9	Participation in this Academy is likely to have an impact on my career and/or future employment.
10	The Academy did not take more time and effort than its expected worth to me.
11	My understanding of the relevant issues about the SAP R/3 System and integrated business processes were improved by participation in this Academy.
12	The Academy would better support my educational objectives if it was provided as a for-credit course with those credits hours used to satisfy my degree requirements.
13	In the future, I would be interested in taking another Academy, similar to this one, that would build upon the knowledge gained in this Academy.

Figure 2. Academy Assessment Questions

About 95% believed the Academy would enhance their employment opportunities. However, only about half (47%) felt the Academy was important to their current (or prospective) employer. About 76% agreed that the Academy would be important in obtaining their next position. Most respondents (91%) agreed that the Academy was likely to increase their earnings within the next five years. Slightly more (95%) thought the Academy would have an impact on their career and/or future employment.

Finally, question 17 asked participants how much they would be willing to pay to attend this Academy if they were charged for it. The average amount of those responding (n=17) was \$1,208, with a range from \$150 to \$5,000 and a standard deviation of \$1,392. It is unclear whether the four non-respondents were not willing to pay for the Academy or whether they were unwilling to indicate a specific amount. These results gave us guidance about how much to charge the following year. Our fee for the subsequent Academy was \$1,500. We are currently in the selection process; twenty-nine students have applied for 22 positions.

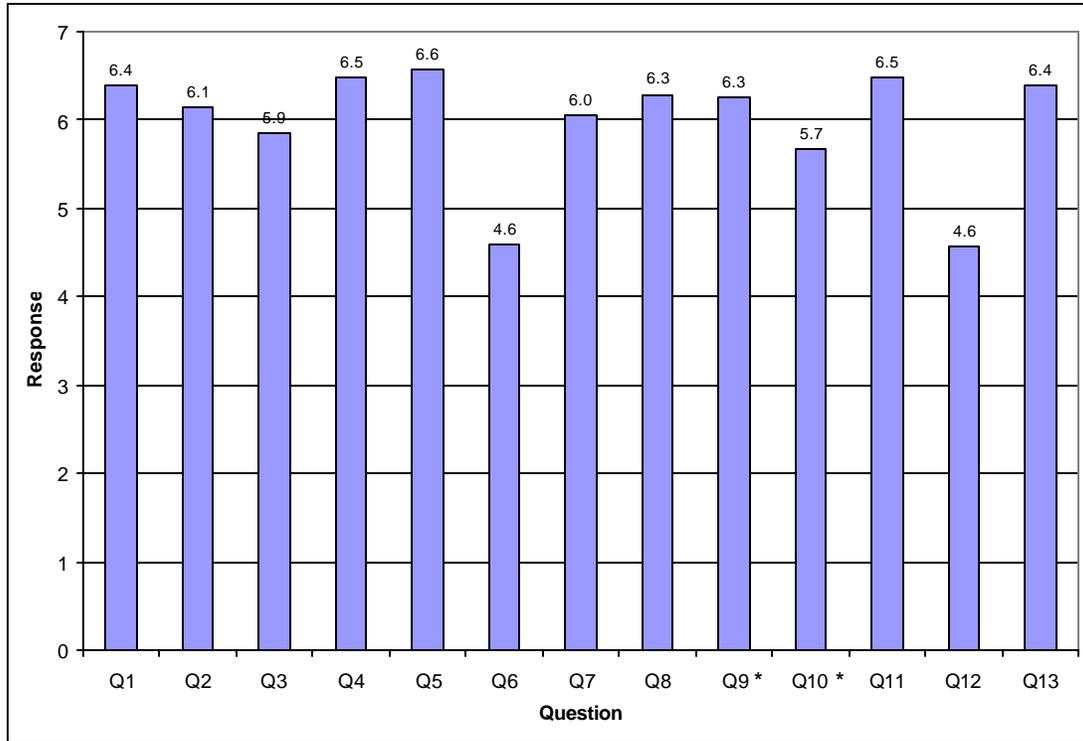


Figure 3. Mean Responses for Survey Items

Table 1. Satisfaction and Global Outcome Measures

Item (survey questions number)	Mean	StdDev	% Satisfied, % Agree	% Dissatisfied, % Disagree
Satisfaction with Academy in learning about integrated business processes (1)	6.38	0.67	100%	0%
Satisfaction with content of Academy (2)	6.14	0.91	95%	5%
Satisfaction with time and effort for Academy (3)	5.90	1.20	86%	10%
Improvement of understanding of issues about integrated business processes (11)	6.48	1.36	95%	5%

Additional feedback was elicited from participants in an open-ended question. These comments provided some corroborating evidence of participants' satisfaction with the Academy. For example, one participant stated, "This Academy provided me with valuable knowledge I would not have received otherwise. I feel that I have more skills to offer my employer and will have more opportunities." Several students also commented on the intensity of the Academy. One student said, "The Academy was very beneficial. Sure, it seemed long and tiresome at times, but it was a very worthwhile experience." Another participant said that the Academy helped in

“gaining an advanced understanding of SAP and the culture around it” and that included “experience with [a] real life application of SAP through use of [the] case study.”

Table 2. Impact of the Academy on Career

Item (survey questions number)	Mean	StdDev	% Satisfied, % Agree	% Dissatisfied, % Disagree
Useful in fulfilling my career objectives (4)	6.48	0.68	100%	0%
Enhances my employment opportunities (5)	6.57	0.81	95%	0%
Important to my current employer (6)	4.58	1.74	47%	16%
Important in obtaining my next position (7)	6.05	1.28	76%	0%
Likely to increase my earnings in the next five years (8)	6.29	1.01	91%	0%
Likely to have an impact on my career and/or future employment (9)	6.25	0.97	95%	0%

SUMMARY AND CONCLUSION

Based on these results, the SAP Process Integration Certification Academy appears to be a promising method for obtaining SAP certification for students in robust ERP software. Other UAP institutions, as well as institutions in similar programs with other ES, should consider the role of this kind of Academy at those institutions. Participation in the Academy is perceived to assist students in gaining employment and is expected to have a positive impact on their careers. While students were generally satisfied with the current four-week, concentrated format, they appear open to other delivery formats. Given the early stage of providing certification to college graduates in an ES prior to graduation, MIS researchers are encouraged to investigate the effects of these efforts as they are tried at other institutions and with other ES packages.

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