

ASSESSMENT OF STUDENT SATISFACTION WITH SAP R/3 COMPONENT COURSES

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ABSTRACT

University alliance programs provide educational institutions with enterprise software that can be used in the delivery of courses. Central Michigan University is one of the early participants in an alliance with SAP AG. This provides the SAP R/3 software for use in courses. More than a dozen business courses are offered that integrate enterprise resource planning (ERP) concepts into the business curriculum. These courses provide students a better understanding of how technology-enabled companies operate in the real world while enhancing their knowledge, skills, and abilities in the integration of business functions. This research describes the SAP R/3 component course participation by the students from different majors and it reports the evaluation results of this effort. A survey conducted of the participants in these courses revealed a number of positive outcomes including a high level of satisfaction with SAP R/3 component courses and that students anticipated that participating in SAP R/3 courses would benefit them in their careers.

Keywords: Enterprise software, SAP R/3 System, curriculum framework, course satisfaction, curriculum design

INTRODUCTION

SAP R/3 is 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 that links an entire organization together with one comprehensive system. ERP encompasses a completely integrated collection of software programs, which covers all of the major functions of an enterprise [2]. SAP AG competes with other ES vendors including PeopleSoft, Oracle, J.D. Edwards, and Baan. The widespread use of SAP's ES has increased the need for students with knowledge of ERP software. In an effort to meet this need, SAP initiated the University Alliance Program (UAP) in North America in 1997 [6]. This program focuses on the integration of SAP R/3 software within college and university degree programs. The primary purpose of the alliance is to make students more knowledgeable and marketable while concurrently providing faculty members with the opportunity to employ cutting-edge information technology [3]. There are many ways a university can benefit from an educational alliance with SAP AG [5]. Universities can: access advanced software technology; enhance marketability of its students; attract leading educators; pursue research opportunities; broaden outreach; and stay in touch with industry and product trends.

The College of Business Administration (CBA) at Central Michigan University offers more than a dozen business courses that integrate ERP concepts and specific SAP R/3 learning into its business curriculum. The goal is to use SAP technology as a "tool" to help teach business concepts. The graduates from various majors in the CBA who have taken courses supported by SAP have found success in the job market [1]. However, it was not clear whether the students

were satisfied with the SAP R/3 coursework and what impact these courses had on their career. This study was undertaken specifically to address to this issue.

A FRAMEWORK FOR THE INTEGRATION OF ENTERPRISE SOFTWARE

Components of ES can be used to develop the framework for a model curriculum in the information systems (IS). Such a framework considers degree programs in IS and related business fields that prepare students for an entry-level career in working with enterprise software [4]. This framework specifically considers the SAP R/3 software because of its widespread acceptance by business and industry. However, the framework can also be applied to other ES such as Peoplesoft, Baan, Oracle, and J.D. Edwards. The framework provides a vehicle for examining the integration of the SAP R/3 System in the business curriculum. An SAP R/3 component course is one in which at least 20 percent of the course content incorporates the SAP R/3 System in teaching the concepts of the course. SAP R/3 component courses available in the curriculum of this study are listed in Table 1. These courses fall into the model framework with three primary categories of All Students, IS Program, and Functional Areas [4]. Each of these framework categories, with example courses, is summarized as follows:

All Students. Comprised of general courses in information systems. It provides an overview of ERP with SAP R/3 as example software. This includes the courses BIS 247S and BIS 647S.

Table 1: SAP R/3 Component Course Names

ACC 370S	Accounting Systems and Controls
MGT 320S	Human Resource Management
MGT 333S	Purchasing Management
MKT 431S	Logistics Operations
FIN 482S	Working Capital Management
BIS 247S	SAP R/3 Fundamentals
BIS 357S	ABAP Programming Fundamentals
BIS 497C	SAP Configuration
BIS 630S	System Analysis & Design – Accelerated SAP
MBA 619S	Accounting Information for Managers
MGT 597S	ERP: Business Process Integration Supported by SAP R/3
MGT 633S	Human Resource Management
BIS 647S	SAP Enterprise Software Management
MBA 797S	Enterprise Resource Planning: Integrated Business Processes
BIS 657S	ABAP Programming for Managerial Systems
BIS 697C	SAP R/3 Configuration and Implementation

IS Program. Comprised of specialized information technology and application design courses for both a major and minor in IS and related functional areas. Courses in this category are taken by both IS majors and students in functional areas who desire an IS specialist competency or minor. They include courses such as BIS357S and BIS657S. It is also comprised of specialized application development, deployment, and project management courses for majors in IS. This includes courses such as BIS 697C. Prerequisites are an important feature of the IS major courses, which allows the complexity and depth of knowledge to increase with additional courses.

Functional Areas. Comprised of courses that integrate IS applications with functional area concepts. They include ACC 370S, MGT 320S, and MKT 431S. SAP ES is about 20 percent of the course content with the functional area knowledge comprising the remaining content.

Generally the students follow the above framework by taking initial classes in the All Students category and then proceeding further, depending on their interest. Sometimes students might deviate from the above framework by taking initial classes in the Functional Areas category and then taking courses in the All Students category.

PARTICIPANTS

The survey was completed by 108 students for this assessment of satisfaction with the SAP R/3 component courses. These students were enrolled in the courses only during the semester of the survey. For these participants, they could have also been enrolled in a component course in prior semesters. As a result, this survey measures participant perceptions both in the semester of the survey and in all prior semesters. The courses surveyed included those from all three categories of the framework.

The survey included a range of different student majors, since the CBA offers component course that transcend the framework categories, as shown previously in Table 1. The participants by major are shown in Figure 1 and includes sophomore, junior, senior and graduate level student. The percentages shown in Figure 1 are based on the number of participants completing the questionnaire. Of the 108 participants, 15% have dual majors. The MIS major represented the greatest number of participants, followed by Accounting (ACC) and Information Systems (IS) major. Fifteen participants were master (graduate) students majoring in IS, while the others were bachelor students with different majors.

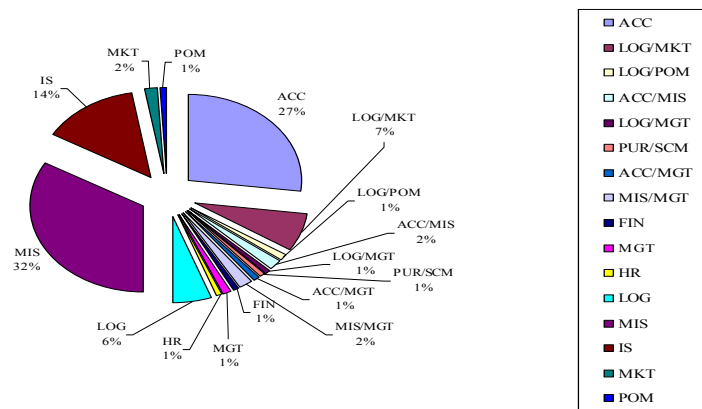


Figure 1. Participants by Major

Some participants were enrolled in more than one course. The total numbers of courses taken by the respondents were 157 with an average of 1.45 courses per student. As a result, some of the reported the percentages total more than 100%. Nearly 50% of the participants have taken the BIS 247S course, followed by ACC 370S and MKT 431S. Of those taking BIS 247S, 65% were MIS majors. BIS 647S was taken by less than one-fourth of the participants with nearly all of them being IS majors. A student would take either BIS247S (undergraduate) or BIS647S

(graduate), but not both. ACC 370S and MKT 431S represents almost one-fourth of the participants from the functional areas majors, that is those who are not MIS or IS majors. Overall, the BIS 247S undergraduate course represents almost one-third; MIS/IS graduate courses represents one-third, and Other (Functional Areas) courses represents one-third. The reason behind the lower numbers for student participation in some functional area courses may stem from the situation where that course was not offered during the semester of the study, and those students had not enrolled in another component course during this time. Some SAP R/3 component courses are offered each semester, whereas others are offered only once each academic year. Therefore, representation of a course could be less if it was not offered during the semester of this the survey.

The sample consisted of 57% male and 43% female students. Of 62 male respondents, 52 were in the age group less than 25, 10 were in the age group 25-35 and none were in the age group over 35. There were 36 females in the age group less than 25, 7 in the age group 25-35 and 3 in the age group over 35. The majority of the students (75%) belong to senior class standing followed by graduate and junior.

SAP R/3 COMPONENT COURSE EVALUATION

A survey was conducted to assess the value of providing SAP R/3 component courses to students. Participants were asked to respond to questions using a 7-point Likert scale, where 7 indicates “extremely satisfied” or “strongly agree,” 4 “don’t know/no opinion” and 1 “extremely dissatisfied” or “strongly disagree.” The survey also contained demographic questions and one question asked participants to indicate the perceived value of the additional course technology fee. The additional course technology fee is an extra fee that is charged by the institution for the component courses. The last two items were open-ended questions, which focuses on important benefits of component courses and any additional thoughts or comments that students might have. The survey’s questions can be grouped into the three general categories of (1) level of satisfaction and perceived value of SAP R/3, (2) anticipated impact of SAP R/3 component courses on one’s career, and (3) demographic data.

To minimize response bias, questions 9 and 10 were negatively stated. 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 Table 2, which shows a list of the first eleven questions.

Figure 2 highlights the average responses for questions 1 through 11. Overall, these responses indicate the participants were satisfied with their SAP R/3 component course participation. Several questions (1-3) addressed student’s satisfaction with the component course participation. As shown for question 1 in Figure 2, students reported above average level of overall satisfaction with the component courses, as indicated by a mean of 5.1 on the seven-point scale. Participants also had mean satisfaction ratings of 5.2 for the content of the courses in learning the concepts and issues involved in integrated business processes (question 2). As indicated in Figure 2, questions 5 and 11 indicate respondents generally agreed that participating in one or more SAP component courses enhanced their employment opportunities. Question 11 suggests most participants (85%) increased their understanding of integrated business processes. As illustrated

in Figure 2, questions 3, 6, 7, 9 and 10 did not receive as positive a response as the other items. However, overall satisfaction still resulted.

Table 2: SAP R/3 Component Course Assessment Questions

Item	Questions
1	Which of the following best describes your overall level of satisfaction with the SAP related courses you have taken 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 these courses in learning the concepts and issues involved in integrated business processes?
3	Which of the following best describes your overall level of satisfaction with extent of SAP R/3 coverage in the courses you have taken?
4	Participating in one or more SAP related courses is useful in fulfilling my career objectives .
5	Participating in one or more SAP related courses enhances my employment opportunities .
6	Participating in one or more SAP related courses is important to my current or initial employer including my most likely employer after the completion of these courses.
7	Participating in one or more SAP related courses is considered to be important in obtaining my next advanced position with my current employer or for a different job with another employer (This would be my second job after completion of my degree).
8	Participating in one or more SAP related courses is likely to increase my earnings during the next five years.
9	Participating in one or more SAP related courses is likely to have an impact on my career and/or future employment . *
10	These SAP related courses did not take more time and effort , because of the SAP R/3 component, 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 these SAP related courses.

* Indicates a reverse-coded question

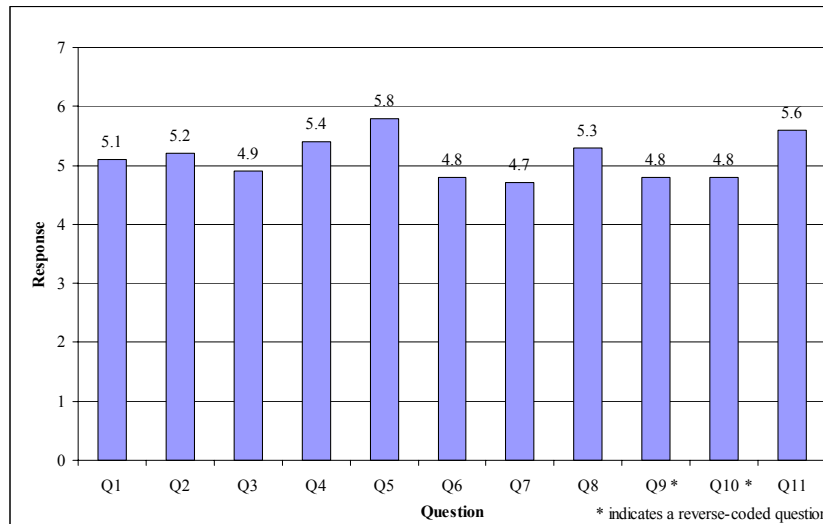


Figure 2: Mean Responses for Survey Items

Table 3 presents the results for the satisfaction and global outcomes. All participants reported they were satisfied with the SAP related courses in learning about the SAP R/3 System and integrated business processes. In addition, 82% of the respondents were satisfied with the content of the SAP courses and agreed that it improved their understanding of the issues involved in integrated business processing. Finally, 77% were satisfied with the extent of SAP R/3 coverage in the courses they have taken.

Table 3: Satisfaction and Global Outcome Measures

Item (Survey question number)	Mean	StdDev	%Satisfied, % Agree	% Dissatisfied, % Disagree
Satisfaction with the SAP R/3 related courses in learning about integrated business processes (1)	5.10	1.33	81%	19%
Satisfaction with the content of these courses (2)	5.20	1.25	82%	12%
Satisfaction with extent of SAP R/3 coverage (3)	4.97	1.26	77%	20%
SAP R/3 related courses did not take more time and effort (10)	4.77	1.59	60%	25%
Improvement of understanding of issues about integrated business processes (11)	5.60	1.37	85%	10%

Table 4 summarizes respondent's perception about the potential impact of the SAP R/3 course participation on their present or future careers. As shown in this table, 72% of the respondents believed that participation in one or more component courses would be useful in fulfilling their career objectives. About 82% believed that participating in one or more component courses would enhance their employment opportunities. Nearly half of the participants (45%) felt that the component courses were important to their current (or prospective) employer and important in obtaining their next position. About 67% agreed that participating in one or more component courses was likely to increase their earnings within the next five years. About 57% of the participants agreed that participating in one or more component courses would have an impact on their career and/or future employment.

Table 4: Impact of the SAP R/3 Course Participation on Career

Item (Survey question number)	Mean	StdDev	%Satisfied, % Agree	% Dissatisfied, % Disagree
Useful in fulfilling my career objectives (4)	5.36	1.42	72%	10%
Enhances my employment opportunities (5)	5.78	1.26	82%	4%
Important to my current or initial employer (6)	4.82	1.37	45%	11%
Important in obtaining my next position (7)	4.65	1.36	45%	13%
Likely to increase my earnings in the next five years (8)	5.28	1.39	67%	9%
Likely to have an impact on my career and/or future employment (9)	4.75	1.69	57%	23%

Finally, question 17 asked participants their view of the appropriate amount for a technology fee to support these three-credit hour courses, with all courses having this same number of credit hours. The course technology fee for each component course was \$150 for all the component courses taken by the respondents. Almost two-thirds of the students suggested that the course technology fee should be in the range \$50 to \$100 when they were asked to set this technology fee. This is an indicator that students perceive the current fee to be somewhat greater than the benefit they receive.

Additional feedback was elicited from participants in an open-ended question. These comments indicate participants' satisfaction with component courses. For example, one participant stated, "The courses help me to understand the purpose of the SAP R/3 system and being able to apply it to my career. Having the experience of working with an R/3 system, this could help me in future jobs and in my career." Another student commented, "Learning to use the software gives us a

competitive advantage in our job search.” Several students also pointed out that pursuing their degree at a university where SAP R/3 is offered has an advantage over other students where SAP R/3 is not offered. One student commented, “The most important benefits of these courses is getting the hands on experience and actually seeing what it is rather than just reading it out of a book.” Another said, “At my job, I have been working with SAP a little. After this ABAP course, I will be more involved in SAP as a result.” Another participant said “Many companies are moving toward using SAP and this is important to me because it will give me an upper hand when getting a job by knowing SAP.”

SUMMARY AND CONCLUSION

Based on these results, the study found significant evidence to indicate that the participants were satisfied with the SAP R/3 component courses. These courses do not take more of a student’s time than the expected worth of them to the student. Participation in the component courses is perceived to assist students in gaining employment and is expected to have a positive impact on their careers. Further studies across several semesters might reveal greater course enrollment in the other functional areas with different business majors. The reason behind the lower number of participants from the functional areas component courses appears to be influenced by the component course offering during the single semester time period of this study. Overall, the satisfaction of the participants indicates that other institutions should be encouraged to participate in the UAL of SAP AG. There are many ways a university can benefit from such an educational alliance, which appears to be most beneficial to their students by providing them with career advantages.

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