Starledger: A Business Activity Model Using SAP R/3 As A Classroom Tool To Measure Learning Outcomes

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ABSTRACT

Integrating enterprise system applications within the accounting curriculum has been a major challenge for over eight years. Enterprise systems education is surprisingly well documented within the literature of enterprise system education. Not surprisingly, most of these papers provide a descriptive study of individual experiences of an institution or an academic unit. This paper focuses on the use of a practice case set within the accounting curriculum of a four year liberal arts based accounting program. The results of the integration of this practice case show the ability of enterprise software to bring textbook concepts to life and a high satisfaction level among the students using this package.

Keywords: ERP, Pedagogy, SAP, Business Process Model, Practice Case Set, Accounting

INTRODUCTION

ERP systems are generic, enterprise-wide software packages that provide comprehensive functionality and business process integration across the firm (Davenport, 1993). These enterprise-wide software systems offer significant potential benefits, as suggested by the growing scholarly literature that seeks to conceptualize and measure types of organizational outcomes, business impacts, and return on investment among ERP adopter firms (e.g. Hawking and Stein, 2004; Hitt et al., 2002; Hunton et al., 2003; Spathis and Constantinides, 2003). However, the scholarly and trade literature contains numerous accounts of the difficulties that firms face in justifying their decisions to implement integrated systems, in dealing with unanticipated side effects, and in learning to use these systems well enough to produce business value (Gattiker and Googhue, 2002; Granlund and Malmi, 2002; Hanseth et al., 2001; Kumar et al., 2003; and Oliver and Romm, 2002). The organizational learning curve is steep, and little is known about individual users’ learning processes throughout the enterprise system adoption cycle. Unlike general computer skills, enterprise system user and management skills are not widely diffused in the working population. Firms express a great deal of frustration about the costs and modalities of learning to use ERP systems. Formal and informal training and learning process are constantly identified as critical success factors in mastery of ERP systems (Amoako-Gyampah, 2004; Esteves and Pastor, 2001; Umble et al., 2003).

Enterprise systems, the leader being SAP, form the core of the application infrastructure of most large companies. Teaching the concepts underlying an Enterprise System is an important but difficult task. Many students have very little business operating IT experience to which they can relate these concepts (Pierre-Majorique Léger, 2006). The most obvious learning need in the adoption of an ERP system is for end users to acquire operational capability with the software (Davis and Comeau, 2004).

Enterprise Resource systems are built around a business process model, which is a collection of activities that are designed to produce a certain output for a customer or user. Given the need of accounting practitioners to integrate international financial reporting standards, a curriculum enhanced with enterprise systems will help enable that. Stewart and Rosemann (2001) discuss an increased international collaboration at universities in order to
deliver enterprise systems education. Tracy et al report an SAP funded initiative set up for the student marketplace. This initiative attempts to inculcate within student learners a sense of the business value chain and how ERP technologies can enable it.

The importance of ERP education has been recognized by many researchers including Watson and Schneider (1999). By incorporating ERP education into a curriculum, this allows students to interact first hand with an application that is used by companies all over the world. The ERP vendors argue that their products incorporate “world’s best practice” for many of the business processes they support, making them an ideal teaching tool (Hawking, 2004; Watson and Schneider, 1999) while at the same time increasing the employment prospects of graduates (Hawking, McCarthy & Stein, 2004). The integration of ERP into a curriculum provides the challenge of finding academic staff with ERP related skills. SAP, the leading ERP vendor, has established the largest ERP university alliance with more than 400 universities worldwide accessing their ERP system, SAP R/3.

Any ERP based exercise is inherently cross-functional, but in-depth ERP-based case studies are needed to fully realize the cross-functional integration potential of ERP (Johnson, Lorents, Morgan & Ozmun, 2004). The choice and implementation of a specific case is related to three broad questions: is it relevant to the topic; is it substantive and complex enough to reflect a real situation; and is it stimulating enough to invoke discussion and subsequent learning (Hackney, McMaster and Harris, 2003).

This paper is organized as follows. We will first discuss the curricular framework around which this project is built. We then describe the course knowledge and skill requirement as well as the process and infrastructure needed to successfully implement this simulation. Finally, we explore the learning outcomes and student reactions to this project and offer suggestions to those who might consider integration of a simulation such as this into their courses.

UNDERGRADUATE CURRICULUM INNOVATIONS

Pedagogical revisions to the undergraduate curriculum in Accounting at the Haub School of Business encompass two broad categories. First, a newly created three-course sequence encompassing Intermediate and Advanced Accounting has been prepared. These courses are newly titled as FAIS I, II, and III. The three-course sequence focus is a single continuous learning experience, traversing sophomore to junior year. Each course will progressively build upon and expand the knowledge base acquired in the prior course. This knowledge base will include topical content in Accounting and application ability within SAP R/3. Second, another group of courses taught in the sophomore year incorporates subject matter inherent to cost and managerial accounting. These courses are titled MAIS I and II. The SAP exposure afforded students within these course sequences will provide hands on experiences in a team-oriented format within a business case context. It is envisioned that a single business case will be used throughout these five courses.

COLLABORATIVE LEARNING MODEL (STAR SCHOLARS)

A unique feature of the course pedagogy is the utilization of STAR Scholars to assist in development and delivery of various SAP scenarios. These scholars are chosen through a highly selective process and specially trained to deal with these application scenarios. To date, there are nine active STAR Scholars, comprised mostly of junior and senior Accounting majors. These students are compensated for the work done in class and are provided with enrichment activities, such as field visits and special speakers, helping them to understand the essentiality of implementation of state of the art software. They often participate in research-based projects designed and developed by faculty. In addition, STAR Scholars involve themselves in a series of special activities under the direction of a faculty mentor. Developing scenarios of various computer applications involving Enterprise Resource Planning software and SAP are included. In addition, seminars with entrepreneurs and technology leaders to provide opportunities to interact on a personal and informal level are held with business leaders. Sponsored participation in special events with alumni working in technology and consulting fields is also a component. These students assist in classroom delivery and continue to service the course by maintaining a help desk for students.
PHASES OF THE CURRICULUM ROLLOUT

The courses are three-credit courses required for all accounting majors, typically in the sophomore and junior years. SJU requires all students to have laptops. A typical class consists of 24 students and is taught over a fourteen-week semester. The university is a member of the SAP Alliance. As a member of the University Alliance, SJU is given access to SAP R/3 in real time (24/7) through the University of Wisconsin at Milwaukee. A major objective of the university alliance is the ongoing development of academic scripts to be used to teach accounting within the SAP R/3 system. These scripts are available by accessing SAP and its innovation watch. The practice set that we used was developed at Cal State Chico by Dr. James Mensching. Dr. Mensching is a leading developer in accounting information systems material. This material is readily transferable to the classroom and is an excellent platform from which to use SAP R/3.

In our most recent case study on Cottonwood Distribution, Inc., the students review general accounting principles and procedures. In the first part of the assignment, they create general journal entries for a series of transactions. The second part of the assignment continues the review of accounting procedures with additional journal entries and the adjusting journal entries for month end close. Lastly, the students explore how their journal entries might be created in an automated system by entering their “manual” journal entries in the system. Then they generate an account balance ledger report to see the effect of their work (Appendix A). If students are unfamiliar or forget how to navigate through SAP, they could watch a remedial video that was given to all students on a CD-ROM. After students have completed the journal entries, they are taken through a series of steps to look at the balance sheet and profit and loss statement. These case studies are of significant importance since it integrates and reinforces accounting concepts, SAP, and has the look and feel of a student working in the real world. SAP reports generated by the practice set are provided in Appendix B.

ASSESSMENT OF LEARNING

When students first enter the classroom and hear that they will be involved with SAP and enterprise resource planning, they usually wonder, “What is this SAP system and how will this ever help me in the future as an accountant?” When students are approached with something new, especially technology, there is usually a feeling of uncertainty and worry.

Integrating SAP ERP into the curriculum gives the students a change of scenery in the classroom. The enthusiasm of learning SAP can be displayed through the results of a survey for STARLedger, which was given to students at the end of the semester. This survey captures the students’ view on the STARLedger case study and its relationship to accounting and enterprise systems.

The survey results show us that about 79% of the students thought that the STARLedger case study was challenging. Although challenging, it was delivered in a way that supplemented the students’ understanding of enterprise system concepts and financial accounting systems, with 55% and 27% of the class agreeing and strongly agreeing, respectively. Over 70% of the students feel that because of the competency exam, they have a better understanding of the relationship between enterprise resource systems and financial accounting. Aside from the competency exam, students were also given SAP homework assignments, which 82% of the students agreed that it helped them to make evaluations and judgments about business process functions and activities. SAP homework assignments involved students doing different things within SAP and then answering a few questions about what they encountered and learned. It is also important to note that 91% of the students agree that the STARLedger case study is a useful project and should be continued in the Financial Accounting Systems Class. When students were asked which module they enjoyed most, the highest percentage of 43% said Strategic Enterprise Management. We feel that most students enjoyed this best because it allows for more freedom and exploring on their own, rather than following direct steps. Lastly, the module that students least enjoyed was Purchasing. On the contrary to Strategic Enterprise Management, the Purchasing module is very mechanical and does not allow for any freedom for the students. This makes it for a much less entertaining area of SAP to complete.

At the end of the survey, students were allowed to enter their own comments about the class. One student commented, “I thought Module 5, the data warehouse, was by far the most interesting out of the group. I really
thought it was the most useful because we weren’t just going through and clicking what the packet says to. In Module 5, we were told what to go into, and from there we were able to be creative and give our input on how the company looks from our perspective.” Another student says, “The supplemental videos are very helpful for Modules 3 through 5, especially 5 because I was not experienced with the business warehouse.” Someone else states, “It was helpful in not only performing the motions, but understanding the reasoning behind them.” “Keep the SAP program around. It is interesting and it’s nice to not always have homework that is from the textbook.”

Lastly, a student remarked, “I think SAP is one of the best things to happen to the Accounting Program at Saint Joseph’s University. Not many students can leave college with a comprehensive overview of such difficult and important R/3 accounting software.”

We can see that the survey results and comments previously mentioned affirm the students’ outlook of SAP and enterprise resource systems, validating that they are an integral part to the accounting curriculum along with an invaluable learning experience, which they can use to their advantage after graduation.

AUTHOR INFORMATION

Joseph M. Ragan, Professor Ragan is Professor and Chair of the Department of Accounting at Saint Joseph’s University. He is also the founder of the Philadelphia Consulting Group and has served as a systems consultant to a number of Fortune 500 companies. His research is at the intersection of financial accounting and information systems. His interests include examining the business value of information technology. He currently serves on the board of educational advisors of SAP Americas.

Zachary B. Leahan, Zach is a recently graduated accounting major from Saint Joseph’s University. He has been working with SAP as a STAR Scholar at Saint Joseph’s University since his freshman year. He has completed two summer internships with SAP Americas in Newtown Square, PA. He accepted a full time position as a Systems & Process Assurance Associate with PricewaterhouseCoopers in Philadelphia.

Robert G. Malonoski, Robert recently graduated from Saint Joseph's University where he was an accounting & finance major. While at Saint Joseph's, he had the opportunity to perform in-class implementation of SAP and research on accounting information systems as a STAR Scholar. Additionally, he completed two summer internships with a local accounting firm. He will be starting his career as an Associate in the Assurance line of service for PricewaterhouseCoopers in Philadelphia.

Christopher J. Savino, Chris is a senior accounting and finance student at Saint Joseph's University. He currently serves as the managing partner of the STAR Scholars program at Saint Joseph’s University. Following both his sophomore and junior years, he interned with PricewaterhouseCoopers, in Jersey City, NJ and Philadelphia, PA, respectively. He is seeking a full-time position in PricewaterhouseCoopers’ Systems & Process Assurance practice in Philadelphia, PA following graduation in May 2010.

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Appendix A

Balance Sheet Accounts

![Screenshot 1](image1.png)

### Screenshot 1
Income Statement Accounts & Trial Balance

![Screenshot 2](image2.png)
### Cottonwood Distribution, Inc.
#### Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Assets:</strong></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>257,745.00</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>44,800.00</td>
</tr>
<tr>
<td>Allowance for doubtful accounts</td>
<td>3,118.00</td>
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<tr>
<td>Resale Merchandise Inventory</td>
<td>110,677.00</td>
</tr>
<tr>
<td>Event Merchandise Inventory</td>
<td>145,425.00</td>
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<tr>
<td>Office Supplies</td>
<td>450.00</td>
</tr>
<tr>
<td>Prepaid Insurance</td>
<td>4,400.00</td>
</tr>
<tr>
<td>Prepaid Rent</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Prepaid Advertising</td>
<td>13,200.00</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>583,579.00</td>
</tr>
<tr>
<td><strong>Non-Current Assets:</strong></td>
<td></td>
</tr>
<tr>
<td>Warehouse and Office Equipment</td>
<td>162,000.00</td>
</tr>
<tr>
<td>Accumulated depreciation - Equipment</td>
<td>22,500.00</td>
</tr>
<tr>
<td><strong>Total Non-Current Assets</strong></td>
<td>139,500.00</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>723,079.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liabilities &amp; Stockholders' Equity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Liabilities:</strong></td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>76,112.00</td>
</tr>
<tr>
<td>Accrued Sales Tax Payable</td>
<td>4,178.00</td>
</tr>
<tr>
<td>Accrued Wages Payable</td>
<td>21,600.00</td>
</tr>
<tr>
<td>Current Maturities of LT Debt</td>
<td>11,206.00</td>
</tr>
<tr>
<td>Other Accrued Expenses Payable</td>
<td>2,663.00</td>
</tr>
<tr>
<td><strong>Total Current Liabilities</strong></td>
<td>115,759.00</td>
</tr>
<tr>
<td><strong>Long-Term Liabilities:</strong></td>
<td></td>
</tr>
<tr>
<td>Notes Payables</td>
<td>59,334.00</td>
</tr>
<tr>
<td><strong>Total Long-Term Liabilities</strong></td>
<td>59,334.00</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>175,093.00</td>
</tr>
<tr>
<td><strong>Stockholders' Equity:</strong></td>
<td></td>
</tr>
<tr>
<td>Common Stock - (no par)</td>
<td>200,000.00</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>347,986.00</td>
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<tr>
<td><strong>Total Stockholders' Equity</strong></td>
<td>547,986.00</td>
</tr>
<tr>
<td><strong>Total Liabilities &amp; Stockholders' Equity</strong></td>
<td>723,079.00</td>
</tr>
</tbody>
</table>

Table 1
<table>
<thead>
<tr>
<th>Resale Merchandise Sales</th>
<th>Amount</th>
<th>Percentage of Total Net Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Merchandise Sales</td>
<td>119,100.00</td>
<td></td>
</tr>
<tr>
<td>Net Revenue</td>
<td>287,060.00</td>
<td>100%</td>
</tr>
<tr>
<td>Cost of Goods Sold - Resale Merchandise</td>
<td>75,144.00</td>
<td>26%</td>
</tr>
<tr>
<td>Cost of Goods Sold - Event Merchandise</td>
<td>104,697.00</td>
<td>36%</td>
</tr>
<tr>
<td>Purchase Discount</td>
<td>(1,840.00)</td>
<td>-1%</td>
</tr>
<tr>
<td>Net Cost of Goods Sold</td>
<td>178,001.00</td>
<td>62%</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>$109,059.00</td>
<td>38%</td>
</tr>
<tr>
<td>Operating Expenses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>900.00</td>
<td>0.31%</td>
</tr>
<tr>
<td>Insurance Expense</td>
<td>400.00</td>
<td>0.14%</td>
</tr>
<tr>
<td>Office Supplies Expense</td>
<td>514.00</td>
<td>0.18%</td>
</tr>
<tr>
<td>Salaries/Wages Expense</td>
<td>42,600.00</td>
<td>14.84%</td>
</tr>
<tr>
<td>Shipping Expenses</td>
<td>2,899.00</td>
<td>1.01%</td>
</tr>
<tr>
<td>Utilities Expense</td>
<td>2,663.00</td>
<td>0.93%</td>
</tr>
<tr>
<td>Bad Debt Expense</td>
<td>1,297.00</td>
<td>0.45%</td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>51,273.00</td>
<td>18%</td>
</tr>
<tr>
<td>Net Income</td>
<td>$57,786.00</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 2
Appendix C

STARLedger Survey Report

Chart 1. The STARLedger case material was challenging.

Chart 2. The use of this case material supplemented my understanding of enterprise system concepts and financial accounting systems.
Chart 3.

Because of the competency exam I better understand the relationship between enterprise resource systems and financial accounting.

Chart 4.

The case material increased my knowledge related to the enterprise systems terms and definitions.

Chart 5.

The SAP homework assignments helped me to make evaluations and judgements about business process functions and activities.
Overall, I think the STARledger case study is a useful project and should be continued in the Financial Accounting Systems Class.

Chart 6.

The amount of work done on the case material was justified based on the learning derived.

Chart 7.

Which module did you enjoy the most?

Chart 8.
Chart 9.

Which module did you enjoy the least?

- Strategic Enterprise Management
- Sales
- Purchasing
- Financial Statement Analysis
- Financial Accounting Review Practice Set

Chart 10.

What was the total time (in hours) that you personally spent on all of the SAP case material?

- 13 or more
- 10 to 12
- 7 to 9
- 4 to 6
- 0 to 3
Are there any additional comments you would like to submit that this survey did not cover?

"I thought Module 5, the data warehouse, was by far the most interesting out of the group. I really thought it was most useful because we weren't just going through and clicking what the packet says to. In module 5, we were told what to go into, and from there we were able to be creative and give our input on how the company looks from our perspective."

"The supplemental videos are very helpful for modules 3 through 5, especially 5 because I was not experienced with the business warehouse."

"It was helpful in not only performing the motions, but understanding the reasoning behind them."

"Keep the SAP program around; it is interesting and it is nice to not always have homework that is book problems."

"I think that SAP is one of the best things to happen to the Accounting Program at Saint Joseph's University. Not many students can leave college with a comprehensive overview of such difficult and important R/3 accounting software."

Figure 1.