

IMPLEMENTING ENTERPRISE RESOURCE PLANNING EDUCATION IN A POSTGRADUATE ACCOUNTING INFORMATION SYSTEMS COURSE

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ABSTRACT

The importance of Enterprise Resource Planning (ERP) systems education, its inclusion and evaluation in a university teaching context are the subjects of this article. As the importance of ERP systems has increased in the corporate world, so too has its importance increased in education. Many universities have recognized this need and the potential for using ERP systems software to teach business concepts. In this paper, the approach adopted is to develop a course that integrates theoretical accounting and business concepts together with a hands-on practical component. The course aims to empower postgraduate accounting students with knowledge regarding the process of adopting and exploiting ERP systems software to develop and maintain competitive advantage for organizations in a global marketplace.

JEL: I20, I29, M15, M40

KEYWORDS: Enterprise Systems, SAP, ERP, Curriculum, Business Process

INTRODUCTION

Organizations worldwide continue to invest in Enterprise Resource Planning (ERP) systems to develop and maintain competitive advantage. ERP systems provide management with a better understanding and transparency of their business operations and have become the mainstay of practically every organization (Winkelmann and Leyh 2010). Accordingly, as educators it is our responsibility to bring the issues and practices of industry into the classroom (Ayyagari 2011).

ERP systems are integrated software applications that consist of various modules such as accounting and finance, human resource management, sales and marketing, manufacturing and production that are built on a central database. The primary objective of these systems is to integrate organizational information from all functional areas thereby increasing efficiency and enhancing flexibility (Davenport 1998).

Teaching practical hands-on ERP skills is important for several reasons. First, learning ERP is identified as an important IT skill (Kim et al. 2006). Organizations need specialist users to utilize ERP systems in their daily tasks. Despite this requirement, most of the students in higher education rarely come across ERP systems (Strong et al. 2006). Second, advances in pedagogical approaches place emphasis on active learning. Teaching approaches based solely on lectures are criticized for making students passive learners (Toqeer 2013 ; Phillips and Trainor 2014). The active learning paradigm continues to gain prominence among educators and researchers as students seek opportunities to apply their knowledge to simulate realistic situations.

The demand for trained ERP planning professionals has motivated a number of universities to join alliances with ERP software vendors such as SAP (Becerra-Fernandez et al. 2000). The intent of such ERP initiatives being the education of managers to lead future organizations using skills acquired during their studies.

Exposing students to ERP education that includes a hands-on experience will equip these graduates to effectively analyze, administer and manage business processes within the organization. It is essential that students be taught about cross-functional processes that will assist them in relating to a variety of processes (for example, sales and purchases). It would be most beneficial to students if they can ‘see’ how events created in one unit initiate events for other units.

The remainder of this paper is organized as follows: section 2 reviews the literature on ERP education. Section 3 describes the data used and the methodology followed. The results and discussion are presented in section 4. Section 5 outlines the main conclusions, contributions, and implications drawn from this study.

LITERATURE REVIEW

ERP systems are integrated or packaged business software systems that are designed to streamline the flow of data in an organization with the intention of matching the physical flow of goods from raw materials to finished products. This flow of data may extend well beyond the boundaries of an organization to include the supply chain at one end, and the customer at the other (Kamhawi 2008 ; Koch and Wailgum 2008 ; Presley 2006 ; Norris et al. 2000). These systems adopt a structured approach to optimizing an organization’s internal value chain by linking various components of an enterprise through sharing of common data. For example, when a sale is recorded, this information is used to update other areas in an enterprise such as inventory, procurement, invoicing and recording of all related ledger postings (Deshmukh 2006 ; Musaji 2002 ; Norris et al. 2000). ERP systems, therefore have the following distinctive characteristics (Norris et al. 1998); i) multi-functional in scope – it tracks financial results (dollars), procurement (material), sales (people and goods) and manufacturing (people and resources); ii) integrated in nature, that is, when a piece of data is entered regarding one function, data regarding other functions is changed and, iii) modular in structure, that is, it can be used in a way that is as expansive or narrow as required.

Two main themes can be identified from the review of the extant literature in ERP education (Ayyagari 2011). The first focuses on how to integrate and teach ERP courses in a business curriculum. Studies include teaching tips, cases and frameworks as well as guidance on teaching (Pellerin and Hadaya 2008 ; Jane et al. 2004). The second focuses on the importance of teaching ERP concepts. These studies include evaluation of technical and ERP skills, and studies that report on skills required of business graduates (Boyle and Strong 2006 ; Strong et al. 2006).

Watson and Schneider (1999) identified several opportunities for incorporating ERP education into an Information Systems program. Their work emphasized experiential learning. The curriculum they proposed focused on enriching the student’s experiences by working on real ERP systems. They also discussed topics such as costs involved in implementation and critical success factors. Corbitt and Mensching (2000) responded to the AACSB graduate level standards requirement to provide an integrated cross-functional experience as part of an MBA program. A cross discipline faculty team developed a student-centered and industry driven curriculum. They also provided training to the rest of the faculty to show them what the product did and how it was being used in the courses. Subsequently recruiting by industry became more intense for students with these skills.

Becerra-Fernandez et al. (2000) demonstrated how integrating ERP may be used to enable the change in business education delivery from one that is functionally-oriented to a business-process oriented model with the ultimate goal of integration across several courses in the curriculum. They adopted an incremental approach that commenced in the undergraduate program and progressed into the graduate business program. They concluded that such an undertaking required redevelopment of course work that focused on core business processes rather than functional areas such as accounting, finance, marketing, management and information systems. Cannon et al. (2004) described an approach to business curriculum integration

that entailed the use of a fictitious model company and its implementation in an ERP system. Their approach provided students with multiple exposures to a single company and an opportunity to become familiar with its products, processes and industry. Students were able to examine the company from different functional perspectives while remaining cognizant of the organization as a whole. Their model was a result of the development efforts of a cross-functional team. Johnson et al. (2004) sought to provide students with exposure to and experience in ERP systems. They found that students entering their institution had very little context for understanding business processes or the flow of information across these processes. Textbook and theoretical knowledge proved to be frustrating to students. They developed a case study approach integrated with SAP business processes to deliver their ERP curriculum. They found that some students focused on the mechanics of the software and activities rather than understanding the underlying processes.

Davis and Comeau (2004) adopted a novel approach of combining a management learning stream with a hands-on lab component. They found the combination of hands-on lab learning on a live enterprise system and management learning to be a powerful yet challenging outcome to achieve. This difficulty was magnified by students having diverse educational, employment, and cultural backgrounds. The lab component was deemed by students to be useful although the actual learning outcomes sometimes varied from those originally anticipated. From a management learning perspective, students came to appreciate the complexities of mastering the enterprise system well enough to use it in a production environment.

Since 1972 SAP-AG has been providing business software solutions to the market, starting with SAP R/2, SAP R/3, and the evolution towards mySAP. SAP defines mySAP as a complete e-business platform that provides a range of solutions for its customers and users. mySAP is therefore the common name that SAP uses for all technologies that it produces. It is an open, flexible and comprehensive business solution that integrates both SAP and non-SAP applications. mySAP is capable of integrating internal business processes as well as providing a collaborative platform among business partners (Hernandez 2002). SAP is a 'single-vendor', packaged enterprise system, but it has the ability to integrate with non-SAP systems (Best 2005). Traditional SAP applications are categorized in three core functional areas: financial, human resources, and logistics. SAP also develops and provides special modules that complement core modules. These are targeted at vertical industries such as retail, manufacturing and government. These packages are known as SAP Solutions for Industries (SAP-AG 2009 ; Hernandez et al. 2006 ; Vogel and Kimbell 2005). The core areas include hundreds of business processes to address all the needs of modern business applications.

Many organizations have realized that SAP solutions are important to their success. SAP solutions provide an organization with competitive advantage. Several Fortune 500 companies use SAP exclusively for their core day to day operations (Gartner 2010 ; BOS 2009), which include accounting and financial applications, procurement, order processing and supplier management, inventory management and HR management and payroll functions. SAP ERP systems are fully integrated, enabling transactions to be processed organization-wide, and consequently they contribute to an overall improvement in an organization's operational efficiency (Wailgum 2008).

DATA AND METHODOLOGY

Students completed an in-class survey on their experiences in using SAP ERP over three semesters (Semester 2, 2013 to Semester 2, 2014). The instrument consisted of 4 questions (see Table 1) ranked on a 5 point Likert scale, and one open-ended question inviting additional comments. There were 147 students enrolled in the course during this period. One-hundred and thirty five (135) responses were received, representing a response rate of 91.8%. The results of the survey were used to determine the appropriateness of including SAP ERP education in the course.

Course Aims and Objectives

The course aims as stated in 2013 were:

Knowledge of accounting information systems is critical to success in the business world. Regardless of the position held i.e. accountant, manager, or auditor, students need to use accounting information systems (AIS) to achieve the results that they are responsible for. The course aims to provide an understanding of the concepts, processes and issues of accounting information systems and the way they are designed, documented and controlled. The student will learn how to use productivity tools and enterprise system software to improve their productivity on the job, and they also learn the potential value that 'big data' can create for organizations and sectors of the economy.

Upon successful completion of the course students are expected to demonstrate knowledge in the following:

Describe the basic activities performed in the major business cycles in an AIS.

Apply tools for documenting an AIS.

Understand concepts of databases and 'Big Data' and apply them to achieve AIS outcomes.

Apply data analytics tools to achieve business objectives.

Understand what data need to be collected to plan, evaluate and control business activities.

Understand how IT developments improve efficiency and effectiveness of business processes.

Understand the risk of fraud and the motives and techniques used to perpetrate fraud.

Explain internal controls and risk management.

Understand the basic steps in system development to design and improve an AIS.

The course is a 10 credit point core course in the Master of Professional Accounting and also an elective in the Master of Accounting respectively. It has an accounting prerequisite. Topics taught include accounting information systems principles, Big Data concepts, business processes, systems development and documentation, database management, accounting cycles, fraud and cybercrime, AIS controls and auditing, and AIS development and implementation. The focus of the course is on exploring and understanding how theoretical accounting and auditing principles may be implemented in practice in a real-world ERP environment.

Implementation Process

The primary objective was to introduce students to a real-world ERP environment. The academics involved in this project have extensive SAP training and experience, and therefore no additional training was required. Historically they also taught SAP related curriculum at other institutions. Practical hands-on assessment tasks were designed and developed based on the Financial (FI) module. This module deals with managing financial transactions in an enterprise. It supports reporting requirements, is flexible and functions well in any type of economic situation, be it a small organization or a larger one. Its primary purpose is to access, in real-time, the financial position of an enterprise in the market (Padhi 2010).

The institution joined the SAP Academic Alliance program and obtained the necessary licenses for 800 logins separated into two clients. Within each client, 5 logins were reserved for system administrators and

the remaining 395 were available for student use. Initially the 2nd client was used for backup purposes. The SAP GUI client was installed by the IT Services division in all student accessible computer laboratories via a remote image. The benefit of this approach was that students could walk in to any available computer lab and work on their SAP activities.

Computer workshop activities were designed based on financial transaction processing. This included customer and vendor transactions in both the accounts receivable (AR) and accounts payable (AP) business cycles. AR activities included creating new customers (customer master records), processing sales, entering customer invoices, configuring discounts (terms of payments), recording returns (credit memos) and processing payments. AP activities included similar tasks as related to vendor account processing. Reporting was based on processing general ledger (GL) transactions and producing financial statements. Students were exposed to data extraction procedures which involved identifying relevant SAP tables, using the SAP system browser to download data to a spreadsheet, and to analyze the extracted data using spreadsheet software.

Configuration tasks required students to design and create their own company, selected appropriate charts of accounts, managed G.S.T and currency settings. The intention was to provide students with an experience that encompassed all aspects of using SAP as well configuration and implementation. The justification being the learning objective: *“Understand the basic steps in system development to design and improve AIS”*.

Course assessment tasks included weekly problem solving scenarios (10%), mid-semester exam (20%), practice-based SAP project (20%) and final exam (50%). The SAP assessment was scenario based, however, the practical knowledge required to successfully complete the project required students to attempt and understand all learning activities and tasks. The project was designed with the intention of providing students with a hands-on experience in SAP that encompassed configuration, transaction processing, reporting and auditing.

It was not mandatory for students to attend weekly computer workshops as each student was provided with a copy of the SAP GUI to install on their personal computers. Tutor support was available during laboratory sessions and specific consultation times outside these sessions to assist students with operational issues. Students were encouraged to contact the SAP hosting center for technical or installation issues.

RESULTS AND DISCUSSION

Findings indicate that a significant number of students appreciated the experience, in general (see Table 1). Students enjoyed learning about SAP, especially the practical aspects. They also felt that it was appropriate to be included in the course and that it was an important aspect of their job marketability. This sentiment is further reflected in qualitative feedback received indicating that *“...the practical aspects of learning SAP are useful especially for (my) career...”*

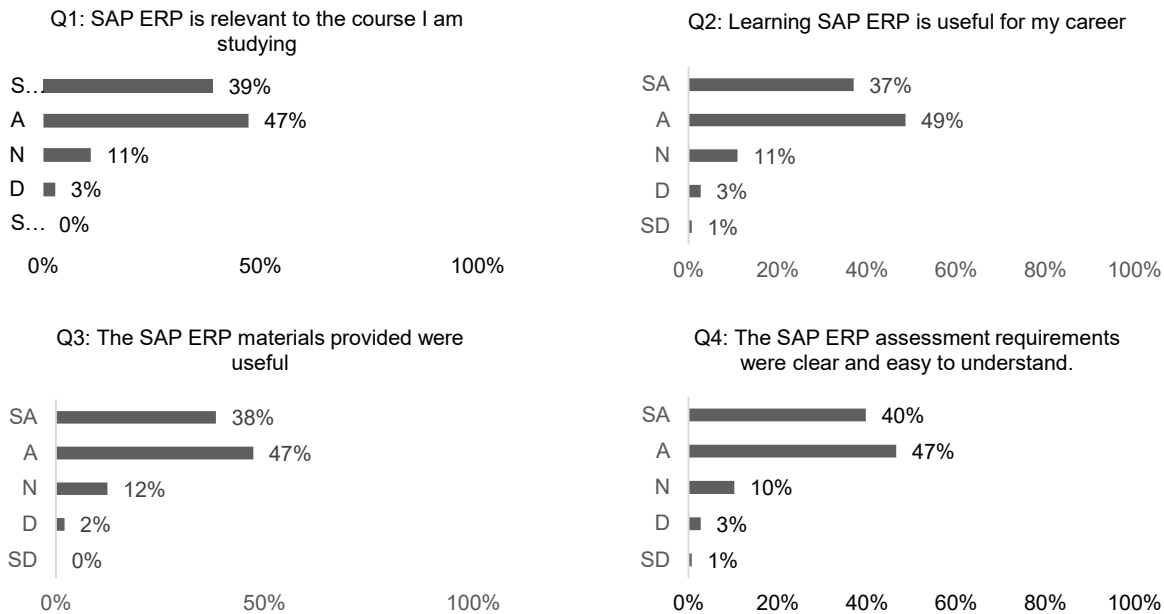
Students agreed that incorporating SAP in the course was useful and relevant to their studies (Q1, 86%, see Figure 1). A small number felt that this was not the case. This may be due to these students being employed in small firms that were using COTS or packaged accounting solutions such as MYOB and QuickBooks. These students were presumably unable to appreciate the value-add provided by including ERP education in the course.

Table 1: Descriptive Analysis

	Q1	Q2	Q3	Q4
Mean	4.2260	4.1849	4.2192	4.2192
Standard Error	0.0621	0.0652	0.0611	0.0656
Median	4	4	4	4
Mode	4	4	4	4
Standard Deviation	0.7499	0.7879	0.7381	0.7921
Sample Variance	0.5624	0.6207	0.5447	0.6275
Kurtosis	0.4599	1.5916	0.1708	1.6698
Skewness	-0.7955	-1.0274	-0.6865	-1.0883
Range	3	4	3	4
Minimum	2	1	2	1
Maximum	5	5	5	5
Sum	617	611	616	616
Count	135	135	135	135
Confidence Level (95.0%)	0.1226	0.1289	0.1207	0.1296
Key: Q1	Learning SAP ERP is relevant to the course I am studying			
Q2	Learning SAP ERP is useful for my career			
Q3	The SAP ERP materials provided were useful			
Q4	The SAP ERP assessment requirements were clear and easy to understand.			

This table provides a summary of the main features of the sample collected. It provides measures of central tendency and measures of variability to describe the dataset. Data indicates that students enjoyed learning about SAP, it was appropriate to be included in the course, and it was an important aspect of their job marketability.

Figure 1: Responses for Individual Questions



This figure shows the combined responses for each individual question. Responses were ranked on a 5 point Likert scale. Responses are predominantly in the upper quartile indicating that students appreciated the SAP experience.

Students agreed that learning SAP was useful for their careers (Q2, 86%, see Figure 1). A small number felt that this was not the case. Again, it is our opinion that as this may be due to these students being employed in small firms that were using COTS or packaged accounting. These students, most probably, felt that learning SAP had no immediate benefit for their careers. Instead they preferred learning alternative software packages such as MYOB. These sentiments were echoed during lectures, computer workshops and in the qualitative feedback received from a few students.

SAP workshop activities provided students with an opportunity to access, install and practice SAP either in the university computer laboratories or in their own time using their personal computers at no cost. This they believed to be very useful (Q3, 85%, see Figure 1) and may contribute to their future careers. A small number of students expressed some disagreement (4%). This is most likely due to unfamiliarity with the software, especially the SAP GUI (as it is different to the standard Windows environment). They spent a fair amount of time familiarizing themselves with the user interface, suggesting that the software is not intuitive. However, during the workshops it was emphasized that SAP is widely used in industry and therefore the benefits of learning a different user interface outweighed the additional time required to learn it.

The SAP assessment requirements and activities were succinct and accordingly were seen as being easy to understand and complete (Q4, 87%, see Figure 1). Students found them clear and straightforward as the tutors provided detailed explanations of the requirements during contact time and consultations. A small number of students expressed some disagreement (4%). Based on the collection of attendance data for the computer workshops, it is our opinion that students that did not attend class and/or consultation sessions may have had some difficulty interpreting the assessment requirements.

The novelty of the course is its mix of comprehensive theoretical accounting and business concepts combined with a hands-on lab component. The hands-on lab component was considered to be useful by students and they appreciated the complexities of using an ERP system well enough to use it in a real-world environment. They also gained some insights related to designing, developing and managing information systems using a variety of acquisition strategies. The mix of theory and practice on a live ERP system is potentially a very powerful technique in delivering enterprise system education to business students, but it was a challenge to balance the two components and to relate the practical aspects with the theoretical concepts. This difficulty was magnified by the students diverse educational, employment, and cultural backgrounds (Davis and Comeau 2004).

Integrating ERP education into business classes is ambitious. Many faculty members that teach traditional business disciplines such as accounting and finance do not typically have the necessary information systems training or background. Students majoring in accounting and/or finance may not be inclined in general towards hands-on assignments. However, both these groups must accept that careers in these disciplines are intertwined with information systems (Jane et al. 2004). Consequently, several administrative and technical challenges were observed throughout the implementation and operational period of the implementation.

The first challenge related to the time and effort required to plan, design and develop the required SAP teaching materials and assessments. It is operationally complex to introduce an ERP system in a business course. To bring current business IT tools such as ERP systems into the curriculum required significant modification for teaching purposes. The curriculum had to be appropriate to business students that had very little or no prior knowledge of ERP systems in particular, and large IT systems in general. Computer workshop activities and assessment items were self-paced practical tasks that required clear and detailed instructions. Several interactive demonstrations and videos from the SAP Learning Hub and YouTube were made available to students. Additionally, tutor guided sessions and demonstrations were conducted during computer workshops.

Computer literacy of students' was a significant challenge. Despite the fact that the teaching staff assumed that all students had basic computer literacy skills, several students had difficulty in performing basic computer tasks such as logging in to activate their SAP user IDs and changing their password, creating an appropriate file/folder structure to save their files for future use, and navigating the SAP GUI. Extensive support was provided to students during computer workshops and face to face consultations. Students that did not attend these sessions experienced difficulty and in several instances required additional support

from teaching staff and SAP hosting center consultants. Furthermore, while students claimed that repeating the exercises helped them to understand the connection between the operations they performed and the related business processes learnt in class, many students still seemed to focus on completion of the exercises without understanding how these individual steps contributed to a bigger picture.

Teaching staff had to deal with administrative issues such as generating username/passwords and frequent password reset requests from students. They also dealt with technical issues relating to students attempting to install the SAP GUI client on their personal computers. For a large cohort this was time consuming. Lastly, a small number of technical issues were experienced by the IT Services division as the SAP GUI client was packaged as part of the standard student desktop that was remotely deployed to laboratory computers. This required additional configuration and was resolved after several service calls to the SAP Hosting center staff.

Several factors are critical to the success of such a project (Watson and Schneider 1999):

Resources – the faculty/department should expect to spend considerable time and resources to plan and acquire access to an ERP platform.

Management support - high-ranking managers/ administrators are committed to this initiative. Top management support will ensure access to resources (financial, technical facilities and human resources).

Faculty team – are responsible for learning the system and embedding it within the curriculum.

A training program - ensures the teaching team receives the necessary information and knowledge about the ERP product and training in and how to effectively develop assessment tasks including marking and integrating ERP into the curriculum. The teaching team must establish clear learning outcomes for students. Students play a vital role in the curriculum development efforts.

Monitoring effectiveness of curriculum – students play an important role in determining effectiveness. Conducting student surveys and interviews can provide these insights and should lead to relevant modifications thereby assisting the curriculum development efforts.

CONCLUDING COMMENTS

The primary goal of this study was to introduce postgraduate AIS students to a real-world ERP environment. The approach adopted was to develop a course that integrated theoretical accounting and business concepts together with a hands-on practical component. Students completed an in-class survey on their experiences to determine the appropriateness of including SAP ERP education in the course. Findings indicated that a significant number of students appreciated the SAP experience. They enjoyed learning about SAP, indicating that it was an appropriate inclusion in the course and that it was an important aspect of their job marketability.

This paper makes an important contribution by providing information regarding student experiences with using ERP in an AIS course. We conclude that learning hands-on ERP skills is important and very relevant for a student's career. Student experiences show that this approach provides them with a practical real-world view of information flows within an organization. The course integrated theoretical accounting and business concepts with a hands-on practical ERP component. Students had the opportunity to examine an organization from different functional aspects, while remaining aware of the organization as a whole. We believe that this integrated approach provided students with a better context for understanding business processes.

Limitations of the study include; i) the technical background of students, and ii) study of a single SAP module, i.e. the financial (FI) module. Whilst several students initially experienced some technical difficulties due to their non-IT background, many of them familiarized themselves with the concepts and subsequently appreciated the experience. They felt that the inclusion of SAP ERP content in the course was very relevant to both their studies and future careers. The study was restricted to implementing a single SAP module in the course, i.e. the FI module. In order to expand the SAP experience, best practice dictates incorporating other modules to demonstrate integration of organizational business processes. This would require cross curriculum integration with other courses.

In the future it is planned that the breadth of coverage will be expanded to use include other SAP modules and integrate ERP education across multiple courses in the curriculum.

REFERENCES

Ayyagari, R. (2011) Hands-on ERP Learning: Using OpenERP®, an Alternative to SAP®. *Journal of Information Systems Education*, 22 (2), 123.

Becerra-Fernandez, I., Murphy, K. E. & Simon, S. J. (2000) Enterprise resource planning: integrating ERP in the business school curriculum. *Commun. ACM*, 43 (4), 39-41.

Best, P. J. (2005) Audit Trail Analysis For Fraud Control With SAP R/3. *Oceania Computer Audit, Control and Security Conference (CACS) 2005 Conference*. Perth, Australia.

BOS (2009) Benefits of Using SAP for Your Business, http://www.bos.com.np/index.php?option=com_content&view=article&id=61:benefits-of-using-sap-for-your-business&catid=34:articles&Itemid=72. Accessed: 08/11/2010

Boyle, T. A. & Strong, S. E. (2006) Skill requirements of ERP graduates. *Journal of Information Systems Education*, 17 (4), 403.

Cannon, D. M., Klein, H. A., Koste, L. L. & Magal, S. R. (2004) Curriculum integration using enterprise resource planning: An integrative case approach. *Journal of Education for Business*, 80 (2), 93-101.

Corbitt, G. & Mensching, J. (2000) Integrating SAP R/3 into a College of Business curriculum: Lessons learned. *Information Technology and Management*, 1 (4), 247-258.

Davenport, T. H. (1998) Putting the enterprise into the enterprise system. *Harvard business review*, (76), 121-131.

Davis, C. H. & Comeau, J. (2004) Enterprise integration in business education: Design and outcomes of a capstone ERP-based undergraduate e-business management course. *Journal of Information Systems Education*, 15 (3), 287-300.

Deshmukh, A. (2006) *Digital Accounting: The Effects of the Internet and ERP on Accounting*. IGI Global.

Gartner (2010) Gartner Says Worldwide Business Intelligence, Analytics and Performance Management Software Market Grew 4 Percent in 2009, *Gartner, Inc*, <http://www.gartner.com/it/page.jsp?id=1357514>. Accessed: 27/10/2010

- Hernandez, J. A. (2002) *Roadmap to mySAP.com*. Premier Press.
- Hernandez, J. A., Keogh, J. & Martinez, F. (2006) *SAP R/3 Handbook*. 3rd ed., McGraw Hill/Osborne.
- Jane, F., Ulric Jr, J., Catherine, U. & George, H. (2004) Twelve tips for successfully integrating enterprise systems across the curriculum. *Journal of Information Systems Education*, 15, 3.
- Johnson, T., Lorents, A. C., Morgan, J. & Ozmun, J. (2004) A customized ERP/SAP model for business curriculum integration. *Journal of Information Systems Education*, 15 (3), 245-254.
- Kamhawi, E. M. (2008) Enterprise resource-planning systems adoption in Bahrain: motives, benefits, and barriers. *Journal of Enterprise Information Management*, Emerald Group Publishing, 21 (3), 310-334.
- Kim, Y., Hsu, J. & Stern, M. (2006) An update on the IS/IT skills gap. *Journal of Information Systems Education*, 17 (4), 395.
- Koch, C. & Wailgum, T. (2008) ERP Definition and Solutions, *CXO Media*, http://www.cio.com/article/40323/ERP_Definition_and_Solutions. Accessed: 29/10/2010
- Musaji, Y. F. (2002) *Integrated Auditing of ERP Systems*. John Wiley & Sons.
- Norris, G., Hurley, J. R., Hartley, K. M., Dunleavy, J. R. & Balls, J. D. (2000) *E-Business and ERP: Transforming the Enterprise*. John Wiley & Sons.
- Norris, G., Wright, I., Hurley, J. R., Dunleavy, J. & Gibson, A. (1998) *SAP: An Executive's Comprehensive Guide*. Wiley.
- Padhi, S., N (2010) *SAP ERP Financials and FICO Handbook*. Sudbury, Jones and Bartlett.
- Pellerin, R. & Hadaya, P. (2008) Proposing a new framework and an innovative approach to teaching reengineering and ERP implementation concepts. *Journal of Information Systems Education*, 19 (1), 65.
- Phillips, C. R. & Trainor, J. E. (2014) *MILLENNIAL STUDENTS AND THE FLIPPED CLASSROOM*. 1 ed. San Diego, American Society of Business and Behavioral Sciences.
- Presley, A. (2006) ERP investment analysis using the strategic alignment model. *Management Research News*, 29 (5), 273-284.
- SAP-AG (2009) *SAP Library*. SAP AG.
- Strong, D., Fedorowicz, J., Sager, J., Stewart, G. & Watson, E. E. (2006) Teaching with enterprise systems. *Communications of the Association for Information Systems*, 17 (1), 33.
- Toqeer, R. (2013) *Flipped classroom concept application to Management and Leadership course for maximizing the learning opportunities*. 4 ed. London, The Academy of Business and Retail Management (ABRM).
- Vogel, A. & Kimbell, I. (2005) *ERP for Dummies*. John Wiley & Sons

Wailgum, T. (2008) Why ERP Systems Are More Important Than Ever, *CXO Media*, http://www.cio.com/article/177300/Why_ERP_Systems_Are_More_Important_Than_Ever?page=2&taxonomyId=3000. Accessed: 09/11/2010

Watson, E. E. & Schneider, H. (1999) Using ERP systems in education. *Communications of the AIS*, 1 (2es), 3.

Winkelmann, A. & Leyh, C. (2010) Teaching ERP systems: A multi-perspective view on the ERP system market. *Journal of Information Systems Education*, 21 (2), 233.

BIOGRAPHY

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