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Assessing Learning Outcome of an openSAP Course
Incorporated into an On-Campus Management Information Systems Class

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ABSTRACT

We incorporated an openSAP course into a management information systems class. Students learned the latest development of SAP CRM solutions along with the SAP ERP business processes integration that they learned in the classroom. 47.4% of the students obtained Record of Achievement, which is higher than the average success rate.

KEYWORDS: SAP ERP, openSAP, MOOC, Assessment, Success rate

INTRODUCTION

In recent years, SAP SE has developed HANA platform, in-memory database, real-time analytics and extended applications to the cloud, name just a few. Since 2013, the company has designed and developed massive open online courses (MOOC) – openSAP courses, which are offered on a timely basis to introduce new SAP products. The openSAP courses follow about the same format: video lectures, ungraded self-tests, presentation slides, course transcripts, graded weekly assignments and final exams. openSAP issues two types of certificates – *Record of Achievement* and *Confirmation of Participation*. When students completed an openSAP course with at least 50% of the overall maximum score from homework assignments and final examination, they are qualified for a graded *Record of Achievement* certificate. Students can get *Confirmation of Participation*, if they work through more than 50% of the learning material (open.sap.com).

To keep up with the current innovation and evolution of SAP solutions, the authors have taken a number of openSAP courses and obtained *Record of Achievement* certificates from these online course they took. We felt some of the openSAP courses could be fit into the business curriculum as supplement materials to keep our students' SAP knowledge and skills level up to date. Furthermore, the students will get experience in taking massive open online courses (MOOCs) and get professional certificates. The proliferation of MOOCs is a result of rapid advancement of information communication technologies (ICTs) and social networks. Cabrera et al. (2017) argue that today's society considers knowledge as a key element of all areas of individuals' activity. Therefore, free universal access to education and lifelong learning have drawn more and more attention and generated increasing debate on MOOCs.

In the past decades, many university business programs started integrating SAP ERP applications into their curriculums. For over a decade, SAP university alliance program (UAP) has offered workshops to train the trainers (i.e. the faculty). The course materials include

textbooks, videos demos, PowerPoint presentations, testbanks, most importantly, hands-on case studies and exercises, which demonstrate the communication of business processes across multiple functions and the financial impact of the business processes. The case studies or exercises are well designed and clearly instructed. A student takes three courses, which dedicate at least 30% of class time to SAP, can receive an acknowledgement certificate. Knowing business processes integration with SAP ERP often leads to high paying job opportunities to our graduating seniors. This paper discusses learning outcomes assesses of an openSAP course that is incorporated as part of a management information systems (MIS) course and the findings. It is challenging but a good opportunity to keep business students' knowledge up to date and meet job market demand.

LITERATURE REVIEW

There are quite a few research efforts to integrate SAP ERP into business curriculums, but very few discussion on openSAP courses. No effort has been reported in the literature to make openSAP part of the business curriculum, although business faculty consider any professional certificates are helpful for students to get rewarding jobs (Rob, 2014).

One of the goals of business schools is to prepare students for their careers. Hepner (2013) states there are a couple of main reasons to drive business organizations increased investment in ERP systems. First of all, there is a need to integrate information across various functional areas of an organization into one system. There is also a need to comply the 2002 Sarbanes Oxley Act demanding greater control and traceability of all transactions that impact financial statements. Research has shown that adoption of ERP improves an organization's performance (Madapusi and D'Souza, 2012).

As more companies implementing ERP systems, more business courses use SAP ERP software to help students understand business process integration and prepare skilled workforce for organizations. "Using SAP, students can see the impact of an action or a decision within one business function as it affects other functions (Iriberri et al, 2015)." Iriberri et al. (2015) conducted pre- and post-tests to evaluate the students' perceptions regarding the usefulness, ease of use, and the benefits derived from the SAP exercises. The data was collected in 2013-2014 semesters from several upper division undergraduate Management Information Systems classes. The analysis of the 230 valid paired samples indicate that respondents have positive perceptions on the usefulness, ease of use, intention to use the ERP system and the training materials. There are significant differences between pre- and post-tests results regarding: SAP ERP is functional; SAP ERP is useful and easy to use; interaction with SAP ERP is clear and understandable; and SAP ERP tutorials are helpful for understanding how to work with SAP ERP. Faulty feel that integrating SAP software into more than one business courses engages students in the applications and reinforce knowledge gained in previous courses (Khoury et al., 2012). Furthermore, prolonged exposure usually leads to longer retention and improved understanding of the software. Providing students opportunities to work with the SAP ERP software packages enables students to gain valuable skills and allows universities to promote themselves as innovators and leaders in higher education. Thus, universities are able to show prospective students that they care about preparing students for rewarding and challenging careers.

"The openSAP University is a co-innovative initiative founded in 2013 by SAP SE in partnership with the Hasso-Plattner-Institute (HPI) located in Potsdam, Germany (Renz et al., 2016). openSAP uses the Massive Open Online Courses (MOOC) format to introduce new SAP

products to tens of thousands of SAP users and people who are interested in learning SAP software applications. Renz et al. (2016) point out in average there are only 15-30% of the people, who enrolled in openSAP courses, completed the courses with Record of Achievement and Confirmation of Participation. The reason for the low success rate is because there are "no shows", "drop-ins", "drop-outs" and "lurker / observers". openSAP courses can be classified as xMOOCs. xMOOC is a popular type of MOOC. It divides course content into step-by-step, small learning unites and pre-records video lectures. xMOOCs have limited assessment capabilities due to primarily employ automatically graded multiple choice weekly assignment and final exam for assessment, even though some of the xMOOcs include peer assessment approaches (Ebben and Murphy, 2014; Cabrera et al., 2015).

RESEARCH METHOD

The authors decided to incorporate an openSAP course – Design the Future of Your CRM into a junior level MIS class. The MIS class covers some basic production and operations management (POM) concepts of productivity, design of goods and services, process strategies and quality management. The class also dedicates 30% of class time to SAP ERP exercises. The openSAP course that we were interested introduced the new development in SAP customer relationship management (CRM) solutions. CRM is the most effective and efficient approach in maintaining and creating relationships with customers. In particular, the timing of this openSAP course was good and it was appropriate for a MIS course, which contains management, marketing, and accounting and MIS students. The openSAP course lasted 4 weeks. Most importantly, in this f2f (face-to-face) MIS class, the students are required to complete SAP ERP hands-on exercises, including an order fulfilment business processes integration case study. The online openSAP course aims to extend and update students' knowledge towards SAP software solutions that connect functionalities inter companies, cloud computing, in-memory data platform, real-time analytics, and multichannel fulfilment.

In fall of 2016 semester when the openSAP course was available, the primary author introduced openSAP in general and the above mentioned online course to the selected class. The students learned how to set up openSAP accounts, enroll in class, watch videos, download slides and transcripts, take self-tests, etc. The instructor emphasized the importance to meet deadlines of weekly assignments and final exam. Students learned how to convert UTC time to local time. During the first week of this openSAP course, the instructor explained the concepts of SAP HANA and omni-channel fulfilment to make it easier for the students to comprehend the online course content. After openSAP issued certificates for the Design the Future of Your CRM course, we conducted a survey to get students' feedback. Because the purpose of this experiment was to let our students get experience with MOOC, we were very cautious not to expose any questions and answers of the weekly assignments and final exam to "help" them get better scores.

RESULTS AND DISCUSSIONS

Among the 38 students in the experimental MIS class, 18 (or 47.4%) students received *Record of Achievement* and 37 (or 97.4%) students received *Confirmation of Participation*. The success rate of our students is higher than the average 15 – 30% success rate upon openSAP courses (Renz et al., 2016). The *Record of Achievement* is signed by Dr. Bernd Welz, Executive Vice President for SAP Scale, Enablement &Transformation as well as the two instructors of this online course, while the *Confirmation of Participation* does not have any signature. Noticeably, there is a QR code, or quick response code, on the *Record of Achievement*, but not on the

Confirmation of Participation. Presumably, the *Record of Achievement* is much more valuable than the *Confirmation of Participation*.

Self-regulation is supposed to be a success factor of achieving high scores in the openSAP course because many students did not get *Record of Achievement* due to missing weekly assignment and/or final exam. We assumed the students with higher GPA would apply better self-regulated strategies to the online course. However, the correlation of coefficient is only 0.43, which indicates not a strong positive relationship between the students' openSAP course score and their GPA. We looked into the number of students obtained the *Record of Achievement* by discipline:

Management	8/15 = 0.5333
Marketing	3/7 = 0.4286
Human Resources	4/7 = 0.5714
MIS	1/3 = 0.3333
Accounting	2/5 = 0.4
Hospitality	0/1 = 0

The higher success rate of management students could be that two management graduating seniors got high paying jobs with a SAP consulting firm upon their graduation. The low success rate of accounting students may be because the openSAP course does not discuss the financial impact of omni-channel customer experience.

The results of the end of openSAP course survey that we conducted indicate the students' self-assessment of their xMOOC learning outcomes. The survey questionnaire asked five questions:

1. It is hard to complete weekly assignments and final exam before the deadlines
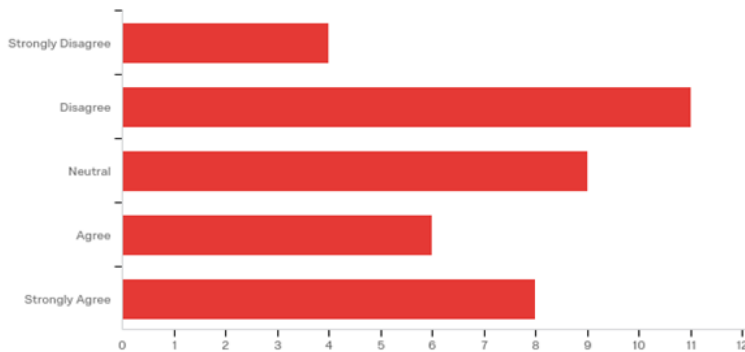
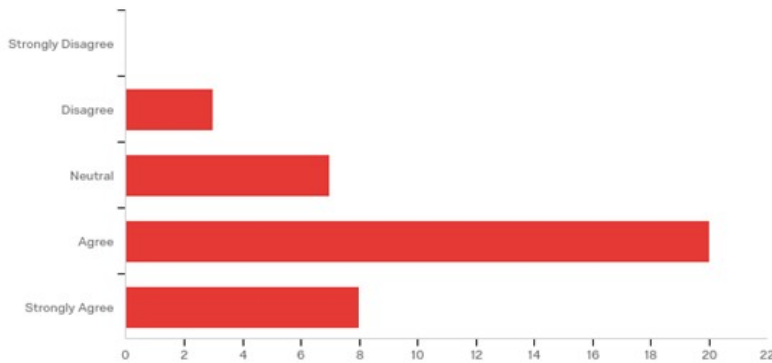| #	Answer	%	Count
1	Strongly Disagree	10.53%	4
2	Disagree	28.95%	11
3	Neutral	23.68%	9
4	Agree	15.79%	6
5	Strongly Agree	21.05%	8
	Total	100%	38

About the same number of students (around 37-40%) agree or disagree that it is difficult to meet the weekly assignments and final exam deadlines, although most of the students did not get the Record of Achievement due to missing weekly assignments or final exam.

2. I have learned that SAP provides cloud-based, hybrid and on-premise application solutions.
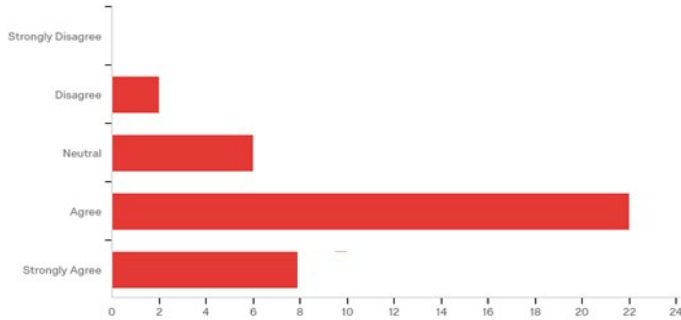
#	Answer	%	Count
1	Strongly Disagree	0.00%	0
2	Disagree	5.26%	2
3	Neutral	15.79%	6
4	Agree	57.89%	22
5	Strongly Agree	21.05%	8
	Total	100%	38

3. I have learned that SAP CRM solutions integrate marketing, sales, commerce and customer service processes.

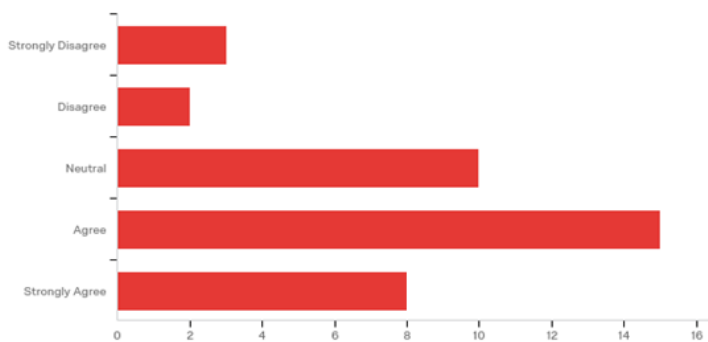| #	Answer	%	Count
1	Strongly Disagree	0.00%	0
2	Disagree	7.89%	3
3	Neutral	18.42%	7
4	Agree	52.63%	20
5	Strongly Agree	21.05%	8
	Total	100%	38

Responses to questions 2 and 3 show that the students in the junior level MIS class more or less have all learned something from the openSAP course. It seems easier to learn the three versions of SAP CRM solutions than understand how the CRM solutions integrate business processes.

4. openSAP certificates demonstrate my ability of learning and adapting to changes in rapidly changing business environments.
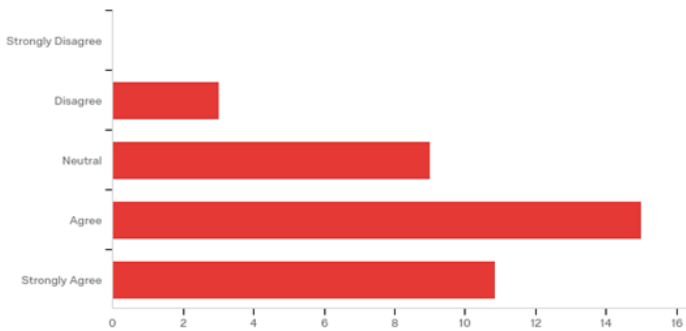
#	Answer	%	Count
1	Strongly Disagree	0.00%	0
2	Disagree	7.89%	3
3	Neutral	23.68%	9
4	Agree	39.47%	15
5	Strongly Agree	28.95%	11
	Total	100%	38

5. I would like to take another openSAP course and get more certificates (Does not mean in this class this semester).

#	Answer	%	Count
1	Strongly Disagree	7.89%	3
2	Disagree	5.26%	2
3	Neutral	26.32%	10
4	Agree	39.47%	15
5	Strongly Agree	21.05%	8
	Total	100%	38

From responses to questions 4 and 5, we learned that although most of the students agreed that openSAP certificates demonstrate their ability of learning and adapting to changes in rapidly changing business environments, not as many students are interested in taking another openSAP course. Maybe this is because there is no proven record showing the value of openSAP certificates.

CONCLUSION

openSAP courses are learning opportunities to gain knowledge about new SAP products for undergraduate business students, but to incorporate xMOOCs into business curriculum can be challenge, in part because traditional business students are used to f2f (face-to-face) in class learning environment. The experiment of incorporating an openSAP course – Design the Future of Your CRM proves that the business students can keep up with the most current innovation and evolution in the business world through MOOCs. For traditional business students to take MOOCs, it demands additional time and effort outside of the classrooms. The authors got some valuable experience in this experiment, but more research is needed in terms of how to appropriately help students understand the online course materials; how to assess students' learning outcomes beyond automatically graded assignments and final exam, etc.

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