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Integrating Technology into Marketing Courses via SAP Enterprise Resource Planning (ERP) System

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Abstract: The use of simulation games have been a popular means of teaching business and marketing content for numerous years. As more and more software is being utilized to conduct business, some of those companies have developed simulation games to help teach and train students and employees on how to utilize the software. SAP is one such company that has created an ERPsim simulation game to familiarize existing and future employees with SAP's enterprise resource planning (ERP) system. The paper covers the assessment of the student's experience of playing an ERPsim game in marketing classes. Students indicated ERPsim should continue to be used in marketing classes while noting several suggestions and recommendations for making business software usage in marketing classes more relevant to the marketing discipline.

Key words: marketing; marketing technology; marketing sap; ERPsim and marketing, ERP and marketing
JEL code: M

1. Background

Since they arrived on the scene in the late 1950s, business games and the business gaming movement they fostered have diffused rapidly into corporations and business schools across the nation (Azriel et al., 2005; Curry & Moutinho, 1992; Davis & Comeau, 2004; Keys & Wolfe, 1990; Seaton & Boyd, 2008; Xu & Yang, 2010). The evaluation literature on the business gaming movement provides ample evidence of its educational efficacy (Keys & Wolfe, 1990; Xu & Yang, 2010). In contrast to traditional teaching methods such as the lectures and even case studies, business games or simulations bridge the gap between the comparatively static, controlled environment of the classroom and the dynamic, unpredictable world of real-life business decision making (Xu & Yang, 2010). Lainema and Lainema (2007), report that complex learning environments, such as simulations, provide the learner the possibility of facing a real-life problem as a professional. Furthermore, simulations enhance learning considerably through group interaction, feedback, and results that provide the opportunity for intense experimentation, as well as collective and experiential learning.

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While the utilization of business simulation games in business management education presents clear advantages for an enhanced learning experience, many factors work against the open adoption of such complex technologies in university business schools for teaching and learning purposes — even when they present the opportunity to learn business technologies that are actually used by potential employers (Davis & Comeau, 2004). Enterprise Resource Planning (ERP) systems — generic, packaged software systems that provide functionality and business process integration across a company — are relied upon by more than 90 percent of Fortune 100 companies to integrate accounting, human resources distribution, manufacturing, and other back-end processes for businesses of all sizes (Davenport, 2000). In recent years, they have also evolved to include front-end processes that involve customers — such as customer relationship management (CRM), supply chain management, and e-commerce (Gale Virtual Reference Library, 2002). However, in spite of the numerous improvements in usability in recent years, ERP systems are notoriously very challenging to learn and thus teach. SAP, one of world's leading providers of ERP software systems, may have had this issue in mind when they developed the ERP Simulation Game (ERPsim) in 2009. The simulation game consists of two components: (1) ERP processes and (2) ERPsim — a simulation program that automates and simulates business processes (SAP University Alliances, 2012). It is touted as an easy was to ease students into SAP's ERP system without having to fully understand the SAP ERP system.

Many schools have joined the SAP University Alliance thus enabling access to SAP software such that SAP ERP can be integrated into their respective school curriculum. A Southern California Public University decided to join the SAP University Alliance Fall quarter, 2010. The Marketing Department deciding to investigate the feasibility of introducing SAP into marketing courses, participated in the on-campus workshops as well as attending various SAP Academic Conferences to learn SAP. Initial attempts to learn SAP ERP, even marketing related SAP programs, ended up being extremely complicated thus frustrating and difficult making SAP introduction into marketing courses totally unrealistic. However, upon attending an ERPsim (simulation game) workshop and being exposed to the various simulation games, the simple ERPsim games was identified as an easy and realistic tool to introduce SAP ERP to marketing students. Further workshops were taken to qualify a faculty member to administer ERPsim. Starting Spring quarter, 2012, ERPsim was introduced into a couple of marketing classes. Given the stretch of introducing ERP software in a marketing class and having a positive reaction, assessments were undertaken to determine if ERPsim should be included in marketing classes and did students understand the importance of ERP in performing and evaluating marketing activities.

2. Methodology

The original motivation that started the project was to see how SAP could become part of the curriculum in a Marketing class or classes such that marketing courses could be identified as SAP certificated classes. It was decided to introduce the game in a graduate and undergraduate retailing class given the category-product-nature of the product in the simple ERPsim game. The project was then extended to the graduate MBA core marketing management class to illustrate the relationship between product type, price and marketing activities. Adding the SAP activity in the graduate MBA marketing management core class made it the third SAP certified MBA core course to be offered at a southern California university thus enabling an SAP certificate to be automatically available for all MBA students.

The simplest game ERPsim labeled as a "distribution" game is based on three different flavored bottled

waters offered in two different sizes. It basically allows for three twenty-day months to be played over a period of time that the instructor can regulate. Instruction sheets are available enabling navigation of the SAP ERP software with little or no prior knowledge. A trial round is played before starting the official game to give students exposure to the software, actually execute the SAP ERP "distribution" game tasks and give students a feel for the market so they can plan quarterly goals and objectives before playing the game. The inclusion of ERPsim was also motivated by the need to expose students to technology and how even marketers need to utilize technology if they want to have instant access to business and market data that affect marketing tasks and the related decisions.

Given technology is not always marketing discipline friendly, it was determined there was a need to assess the utilization of the ERPsim in marketing classes. An assessment tool was designed to determine if integrating SAP ERP activities in a marketing class was justified and then if utilizing the simulation game had a positive impact on learning marketing activities. To evaluate the inclusion of the simulation in the classes, a post assessment survey was administered in the graduate and undergraduate classes where the simulation was introduced. The post assessment survey was administered Spring quarter 2012 to a retail graduate and undergraduate class consisting of twelve MBA graduate students (five females and seven males) and seventeen undergraduate marketing major students (eleven females and six males). Based on the positive feedback regarding the inclusion of the simulation, ERPsim was introduced into the graduate MBA core marketing management class and further integrated into the graduate and undergraduate retailing classes during the 2012-2013 academic year. The assessment of the classes including ERPsim during the 2012-2013 academic year focused on the student's knowledge of SAP, the ability to implement and utilize technology to perform marketing tasks and the ability to develop and implement a tactical marketing plan for a convenience/commodity good. Three classes were included in the assessment, the graduate MBA marketing management core course, and the graduate and undergraduate retailing course. A total of fifty-one students were included in the assessment with fifteen being in the graduate marketing management class (six females and nine males), five students in the graduate retailing class (three females and two males) and thirty-one undergraduate retail students (twenty-two females and nine males).

3. Results

The results section will be divided into two section, Spring 2012 ERPsim Assessment and 2012-2013 ERPsim Assessment.

3.1 Spring 2012 ERPsim Assessment

The post survey indicated students were not sure what to expect when playing ERPsim; yet, were excited while playing the game. The majority of students had not been exposed to SAP. However, the graduate students were also exposed to SAP via another graduate class while they were also taking the retail class meaning the majority of the graduate students had other exposure to SAP while over 80% of the undergraduate students had no other exposure (Table 1). Due to the exposure to SAP in another class, the graduate students had more knowledge and felt navigating SAP was easier than did the undergraduate students. The undergraduate students had not played a simulation game before and were less likely to think a simulation was a good way to learn compared to the graduate students. Graduate students believed ERPsim was easier to play and liked how the game was played compared to the undergraduate students. Reasons why the undergraduate students found ERPsim hard and did not like the way ERPsim was played was due to two factors: (1) the speed of the ERPsim rounds as well as (2) the inability to see how ERPsim related to retailing. The majority of the students enjoyed the experience and

recommended ERPsim utilization in future retailing classes. The results are presented in Table 1.

Table 1 Spring 2012 ERPsim Assessment Results

Question	Variable	ALL (29)	Grad Retail (12)	Under Retail (17)
1	Not exposed to SAP	58.6%	25%	82%
2	SAP Knowledge(7 pt. scale)[a]	4.14	3.83	4.35
3	SAP Navigation (7 pt. scale)[a]	3.45	3.25	3.59
4	Not played Simulation Games	69%	41.7%	88.2%
9	Simulation as way to learn	62.1%	91.7%	41.2%
11	Recommend using again	82.8%	91.7%	76.5%
12	Hardness to play ERPsim (10 pt. scale)[a]	4.55	3.58	5.24

Note: [a]1 represents very knowledgeable, very capable, or very easy and 7 or 10 no knowledge, no clue, or very hard.

3.2 Spring 2012 ERPsim Assessment Recommendations

From an observation point of view, the simulation game was a great success in engaging the students in the class. The interacting during the game, while reviewing the results, and discussing what happened during the game was beyond expectations. The students were totally engaged with the process. Based on the Spring 2012 assessment results, it was evident the students thought that ERPsim should continue to be utilized and played in classes offered in the 2012-2013 academic year. The assessment did identify two things to change when utilizing the ERPsim game in future classes. First, the ERPsim game was played in “20 minutes rounds” which the students indicated made the game go too fast to adequately implement their desired actions. Thus, it was decided to extend the round times for each round to 30 minutes. Second, it was evident that it was not enough to just play the game with the winning team being determined by the team that maximized profits. Students needed to be held accountable for what and why they were doing what they were doing from a retailing/marketing perspective. Thus, a retailing/marketing plan with overall tactical game goals and other product objectives will be required when the ERPsim game is played again. Their final team ERPsim report assessment of the team will be based on their ability to successfully implement their plan’s strategy and objectives plus their reflections on why they were or were not able to reach their plan goals and objectives.

3.3 2012-2013 ERPsim Assessment

Given the positive feedback from the first introduction of ERPsim, ERPsim was included in marketing classes during the 2012-2013 academic year. To better assess the SAP ERP impact, the assessment instrument was changed from a post-test only to a pre-test and a post-test to enable better assessment of student learning associated with SAP ERPsim relative to marketing/retailing activities. Most of the students had not been exposed to SAP ERP, over 83% of the undergraduates and 93% of the graduate marketing management students. As with the 2012 results, the graduate students had more knowledge and were better able to navigate SAP than the undergraduate students (Table 2). However, the graduate marketing management students had less knowledge and were less able to navigate the ERPsim game compared to the 2012 graduate students as they were not concurrently taking another core course which included SAP ERP thus meaning for most students, it was their first exposure to SAP ERP. As a result, graduate student results were similar to the undergraduate student knowledge and navigation levels. The graduate retail students had stronger knowledge and navigation results indicating the integration of SAP content into several MBA classes which the students completed prior to taking the graduate retail class. Most students indicated they had not done a simulation game before, but still felt simulation exercises were a good way to learn. Many felt the ERPsim would be hard to play with the

undergraduate students believing it would be the harder to play than the graduate students. Overall, the students were not sure what to expect when playing ERPsim, yet were excited to play. Pre ERPsim 2012-2013 assessment results are presented in Table 2.

Table 2 2012-2013 Pre ERPsim Assessment Results

Quest	Variables	ALL (51)	Mkt Mgt (15)	Grad Retail (5)	Under Retail (31)
1	Not exposed to SAP	79.6%	93.3%	20%	82.8%
2	SAP Knowledge (7 pt. scale)[a]	6.04	5.93	5.00	6.28
3	SAP Navigation (7 pt. scale)[a]	5.65	4.93	4.80	6.17
4	Not played Simulation Games	87.8%	93.3%	20%	96.6%
6	Simulation as way to learn	68.1%	64.3%	60%	71.4%
7	Hardness to play ERPsim (10 pt. scale)[a]	5.34	4.54	4.50	6.06

Note: [a]1 represents very knowledgeable, very capable, or very easy and 7 or 10 no knowledge, no clue, or very hard.

After playing ERPsim, the student's gained in their knowledge as well as navigation skills in SAP (Table 3). However, most students indicated they were not comfortable or confident of their ability to navigate SAP based on ERPsim alone. The majority of the students felt ERPsim was a good way to learn and would recommend playing it again. What was interesting from this assessment was students indicated after playing the simulation, they thought it was harder to play than they through before playing the simulation. Comments from the students indicated that playing the game was viewed as harder because they had to develop a plan, could not control the market, and thus the implementation of the plan to generate the simulation results according to their plan was more difficult than expected. The undergraduate students rated the simulation harder to play than the graduate students because they felt the game/rounds went "too fast". In addition, there were several complaints about how difficult or non-user friendly the SAP system was which reinforced observed problems students encountered following the ERPsim task instruction sheets. These reasons were also the major factors why the undergraduate students were less likely to see the simulation game as a good way to learn. Students continued to be very engaged in the game and enjoyed the process. However, many students blamed the non-user friendly interface, the difficult of executing the game activities, and the lack of disclosure on how to play the game as the reasons for failure to successfully reach their planned goals and objectives. Undergraduate students found the game hard and did not like the way the game was played due to three factors: (1) the speed of the game, (2) the inability to see how the game related to marketing/retailing, and (3) the need to develop and defend a marketing/retailing plan. 2012-2013 Post ERPsim results are presented in Table 3.

Table 3 2012-2013 Post ERPsim Assessment Results

Question	Variable	ALL (52)	Mkt Mgt (16)	Grad Retail(5)	Under Retail (31)
2	SAP Knowledge (7 pt. scale)[a]	3.87[b]	3.8 [b]	3.50 [b]	3.96 [b]
3	SAP Navigation (7 pt. scale)[a]	3.09[b]	3.0 [b]	3.00 [b]	3.15 [b]
9	Simulation as way to learn	71.7%	66.7%	100%	70.4%
11	Recommend using again	65.5%	73.3%	100%	55.6%
12	Hardness to play ERPsim (10 pt. scale)[a]	5.58	5.25	5.20	5.81

Note: [a] 1 represents very knowledgeable, very capable, or very easy and 7 or 10 no knowledge, no clue, or very hard; [b] Significantly different from Pre scores at .000 level.

4. Recommendations and Conclusions

Based on the assessment results, four things were identified that needed to be addressed when incorporating ERPsim into future graduate and undergraduate marketing classes. First, there needed to be further adjustment in the time for each round based on if the class is an undergraduate or graduate class. The simulation recommended allowing 20 minutes per round. Given the simulation was designed to expose students to SAP versus learn a business functional area; the timing for the rounds was not critical. However considering students are learning SAP and executing marketing/retailing plans, the round time were too short and should be extended to at least 30 minutes. This time extension worked for the graduate students, but the undergraduate students still complained; thus, the round time for undergraduate students will be increased to 45-50 minutes.

Secondly, even though plans were required per 2012-2013 assessment results, the development and evaluation of the plans were not of an acceptable quality. It was evident from the submitted plans that the students had only basic marketing/retailing tactical and strategy planning plus objective development knowledge that proved to be inadequate for the class and simulation standards. In addition, since ERPsim involves the implementation of a plan and students had no experience implementing or adjusting a plan before playing ERPsim, they struggled. Discussions regarding marketing/retailing plan development and implementation need to be made more robust, discussions need to occur at the end of each round to assess team performance, strengths and weaknesses that were encountered during the game to enable adjusts to be made for the next round.

Thirdly, the plan requirement needs to be revised to include a predetermined level of ending inventory. Previously, there was not an ending inventory requirement attached to the plan. By adding a predetermined ending inventory, it will create a more realistic, continuation feel to the game. It will reinforce the marketing/retailing concept of having the right product available at the right time at the right place in order to continue the business even though the game can only be played for three rounds.

The fourth change will be the discussion of “what marketing is” and how it varies depending on the type of market and product. Evidently, because ERPsim indicated “marketing” was “advertising only”, students bought into that as the definition of marketing. In the assessment post survey, students indicated they did not think the simulation was meaningful in a marketing class as marketing had “little or no impact” on the ERPsim results. Even though the students have been exposed to a definition of marketing in numerous marketing classes, the students totally forget the full definition of marketing while playing the game because the ERPsim game designed by IS professionals, operationalized marketing as advertising only. Students do not see that having the right product, at the right price, in the right place, at the right time as marketing or retailing. Further, students do not understand how advertising and advertising expenditures would vary depending on the type of economic market they are operating in as well as the type of product. Thus, the presentation of what marketing is, how it varies depending on market and product type, and how the entire game is marketing related needs to be included in the presentation on why the ERPsim game is part of marketing classes.

Finally, students view ERPsim as a simulation game that should reflect the same user friendly front end presentation as the video games they play. Students complained about the game infer-face being less than user friendly and indicated it is a reason not to use ERPsim in marketing classes. Somewhere while playing the game, the game mode overrode the fact that ERPsim is based on SAP’s ERP operating system. The presentation of ERPsim needs to emphasize it is an ERP system simulation that will not necessarily be user friendly as the system was built by IS professionals nor will it be easy to navigate ERP software given the complicated process of

designing software over several years that integrate business functions and actions.

Overall, the assessment of including SAP ERP via ERPsim in marketing classes was positive. However, via the assessment, it was clear it is still a work in progress. Trying to take a technology tool not designed for another business function and integrate that technology tool into another business function is not without issues. Only with time and implementation will creative ways to integrate technology into marketing courses occur as we prepare our students for the 21st century.

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