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INTEGRATION OF AN SAP SIMULATION GAME INTO AN IS COURSE

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ABSTRACT

This paper describes the introduction of a simulation game into an IS class for business students not majoring in IS. The intention was to give the students experience in business processes and to demonstrate the importance of all components of an information system in providing information for business decision making. The students found the game enjoyable and (surprisingly to many) relatively easy to use. They gained an appreciation of ERP capabilities and saw how they might use such systems in their future workplaces. In addition to the enjoyment they also saw some of the implications of not following procedures or team members not completing their assigned tasks. The students strongly supported its inclusion in the course in future years.

Keywords

SAP, Simulation Game, Teaching,Information Systems

INTRODUCTION

At Georgia Southern University all business students (except accounting majors who take an Accounting IS class, and IS majors) are required to take two courses in Information Systems, the second of which concentrates on the use of Information Systems by business professionals. The text book used for this class is David Kroenke's*Using MIS*. As those familiar with this textbook will be aware, Kroenkehas as a key focus Information Systems being comprised of 5 components – *hardware, software, data, procedures* and *people* – each needs to function satisfactorily for the Information System to be successful. Animportant aspect of the course is to get the students thinking about business processes and how Information Systems are an integral part of those processes. In common with most undergraduate students, the students taking this class have limited work experience in business and what they do have is often limited to data input or taking action on reports produced by the system without any real understanding of the business processes involved. They also have little experience in working in teams in a decision-making environment.

The Information Systems Department at GSU has a strong ERP emphasis area – students, especially Business students opt to enroll in the Department's Enterprise Systems minor. The Department has been a long standing member of the SAP University Alliance. Among the benefits of participating in the ERP courses, students become eligible to attend a SAP industry certification course on ERP Integration (TERP10). It was decided to give the students an opportunity to gain some exposure to business decision making and business processes by having them engage in the SAP Simulation Game (ERPSim Distribution) as part of their classroom experience. A survey completed by the students after the Game was aimed at answering the following questions:

1. Was this a valuable exercise?
2. Did it demonstrate the use of information systems in business?
3. Would they be comfortable in using similar software in their future professions?

In addition the departmental objectives were to demonstrate the importance of the *procedures* and the *people* elements of an information system by teamwork and an understanding of what the processes involved.

THE SAP SIMULATON GAME

The ERPSim exercise provides a practical application of using information for decision making. It also gives examples of standard business processes and experience in the use of information to make tactical managerial decisions. Students were

placed in teams(about 4 to a team) for this exercise and were provided with a Job Aid (a .pdf file of procedures to follow) so that they could familiarize themselves with the exercise prior to the first day of the event.

The exercise consisted of ordering and distributing various bottled water products into 3 regions of a European country. Each product was defined uniquely with a material number and each team sold the same 6 products – therefore, initially the playing field was level and no one team had any advantage over another. They would be competing against other teams in class as to which team could make the most profit. Students were able to make decisions about pricing (per product) and how much to spend on marketing (product per region).Initially, all teams were provided with the same inventory of each product so they could simply begin by selling that stock.

The game was played over 3 business quarters of 20 simulated days each quarter. When running the simulation, the software simulates 20 days in about 20 minutes. This means business happened rather quickly, so students had to be prepared to respond accordingly to changes in the business environment. Extra complexity was added in the form of lead times for customers and suppliers. With regards to customers, it takes 1-3 simulated days for the product to reach the customer and 10 days before the customer will pay. On the supplier side, replenishment of products also takes 1-3 simulated days.

The job aid detailed three key processes that lead to decisions – the sales process(the key decisions are pricing and marketing expense) – the planning process(what markets to concentrate on and how much to order) and the procurement process (sending purchase orders to the vendor for replenishment). The quantities in the purchase order resulted from the planning process. These decisions are made by the individual teams and then entered into the SAP system. The processes are represented at an overview level in Figure 1 below, and the tasks associated with each (the *procedures* in Kroenke terms) are given in Figure 2.

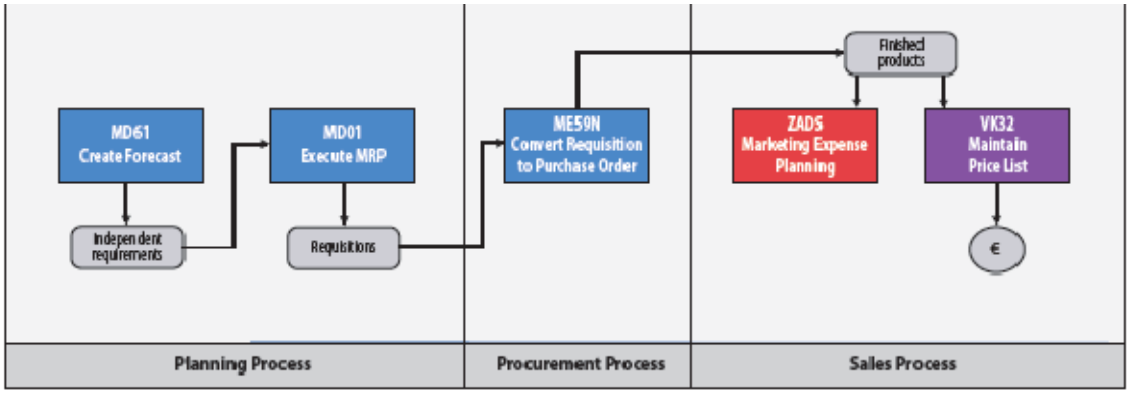

Figure 1 - SAP Game Processes

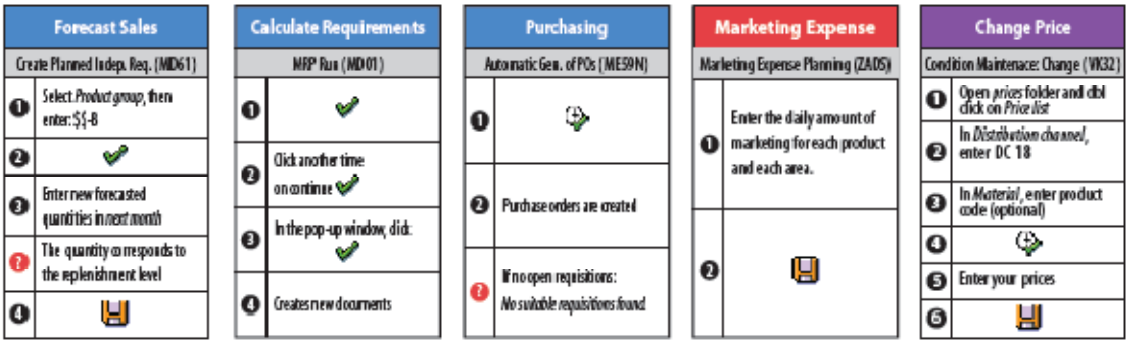

Figure 2 - Procedures for each Process

The system provides the following reports for use in the decision making:

1. Purchase order tracking
2. Inventory
3. Financial statements
4. Sales orders
5. Market information (available every 5 days and provides an overview of the entire market)

At the end of each quarter (the full three quarters fitted into 2 class periods of 1 hour 15 minutes each, getting started explanations, instructions and first quarter simulation on day 1, second two quarters and final results on day 2), team standings were presented and teams encouraged to revise their strategy if necessary. A review of the whole exercise was conducted the following week.

DISCUSSION

This section contains observations from the instructors and students involved; it also provides some analysis of the survey data conducted. The survey was completed by over 90% of students who undertook the exercise in three classes over 2 days (n=83). No demographic information was collected and the surveys were submitted anonymously. Although the teams were involved in a competition with each other, the surveys were not related back to the team success (or otherwise) in the competition.

Technology familiarity

At the beginning of the exercise many students were apprehensive about using what they saw as a complex and unfamiliar technology. They saw the exercise as highly technical and that it would be a challenge to the skills they possessed. By and large this proved not to be the case, even for the students who did not rate themselves as above average in technical competence. The instructors suggested to the students that soon into the exercise they would forget that they were using SAP and would be concentrating on the decision making process. It is also worthy of note that the instructors put considerable effort into explaining the task and taking the students slowly through an example. Figure 3 below demonstrates the apprehension at the beginning of the exercise, Figure 4 their feeling at the end of it, both from the end of course survey. Over 90% of the students felt they would be comfortable using such systems in their future profession.

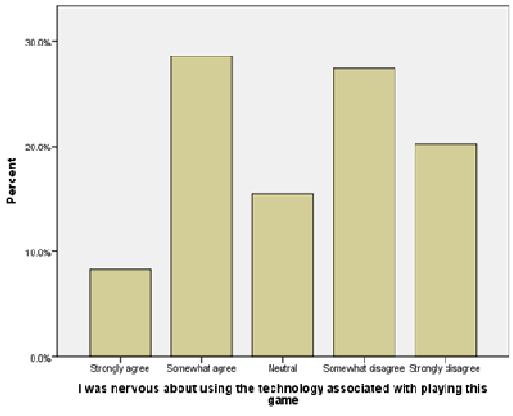

Figure 3 – Concern about technology

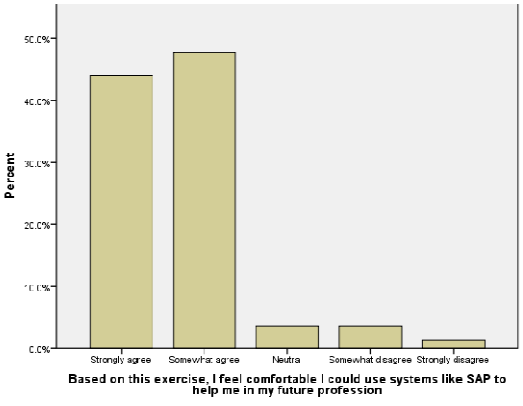

Figure 4 – Comfortable with the System

Student comment from the survey:

> *He was right, you really forgot you were using the software. It did an excellent job at simulating how a real business would be run. It was user friendly and enjoyable. My favorite class so far, and I really felt like I learned a lot. The instructors also explained everything very well.*

The above suggests that the effort put into explaining the task and the use of a "real world" exercise were worthwhile in that students who had expressed a degree of nervousness quickly overcame it. Although graphically represented above, statistically the results are significant too – a comparison of the means for the data in Figure 3 and 4 revealed a p value < 0.001. It is perhaps relevant that the students worked in teams and within those teams were able to select their own tasks to perform, which may have enable them to concentrate on activities with which they were more familiar. But, in reviewing the students' comments in the survey, while a small number remarked on being a little confused with the reports and what was required in each task, none commented on any difficulty associated with using the technology.

The Value of the Exercise

The students endorsed the value of the exercise very strongly with almost 100% agreeing or strongly agreeing that it was a good demonstration of business decision making and that it was a great example of using information systems in business. There was no one disagreeing with these statements. Likewise when asked if the exercise should be part of the course in future, almost strongly agreed – see Figure 5 below.

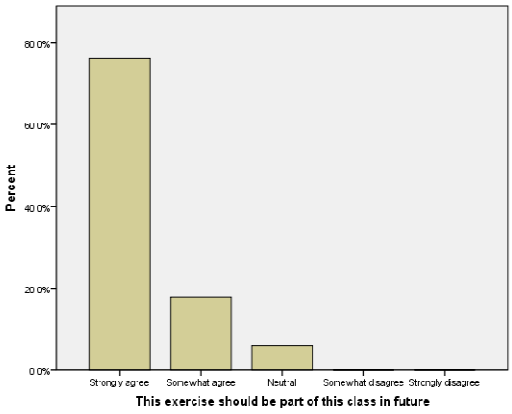

Figure 5 – Include in future classes

As to reasons to support this result, stepwise regression analysis indicated that enjoyment and the practicality of the "real world" example explained a large part of it. Table 1 below provides the regression result, significant at $p < 0.001$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649[a]	.421	.414	.441
2	.682[b]	.466	.453	.426

Predictors: (Constant), I liked playing this game, The SAP simulation game was a great example of using information systems in business

Table 1 – Regression on Inclusion in Future Classes

Teamwork

The students were given information prior to the day of the exercise that they would be working in teams of approximately 4 people each. Some self-selected but by and large they sat in their usual positions, with latecomers being assigned to fill up team groups. A small number of students commented on some of the difficulties encountered in working in teams but for the most part the teams seemed to work well. See Figure 6 below. In the wrap up the following week, the students were asked to consider their team experience in the light of the Kroenke "*people*" component – this illustrated to them the importance of that component.

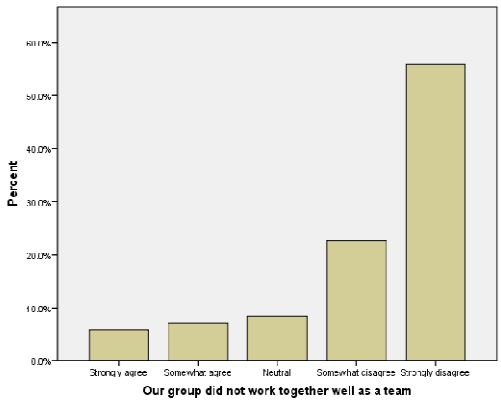

Figure 6 – Teamwork

Playing the Game

Many students have little experience of business processes. The initial reaction to the game was one of confusion but it is surprising how quickly this evaporated – most students reported confusion in the beginning (Figure 7) but not when considering the whole task on completion (Figure 8). These results are also statistically significant with a p value <0.001, suggesting that the game is well designed and has sufficient information available in the form of information and procedures to enable the student to see it as a meaningful and useful exercise.

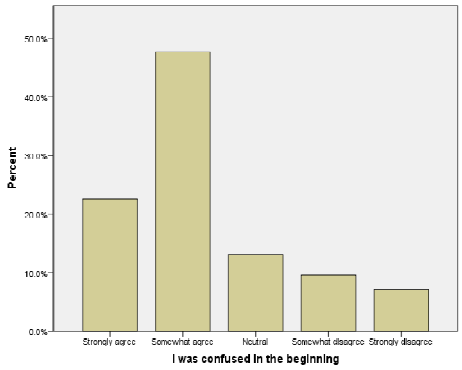

Figure 7 – Confusion at the start

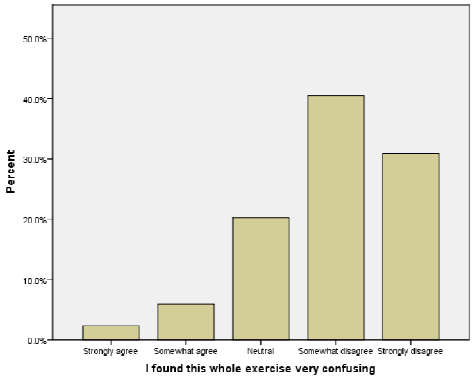

Figure 8 – Confusion at the end

Wrap-up

At the start of class the following week a review and wrap-up of the game was conducted. The following issues were covered:

- Business processes – the graphic in Figure 1 was shown and the students taken through it step by step. They were then asked to come up with business processes from their own professions and to consider the information that would be necessary for the decision making at each step.
- Security – several students had security issues during the game, mostly revolving around forgotten passwords. They were unable to reset these themselves and need administrator intervention – an example of data security in practice.
- Procedures – the students were asked to comment on the usefulness of the procedures (the Job Aid) they had been given and to provide examples of what would happened if certain procedures were not followed – unsurprisingly these centered around running out of stock, failing to sell sufficient product etc. – in other words a failure to meet business objectives.
- People – The teamwork was used to demonstrate the importance of people knowledgeable about their tasks in an information system. Students were asked to share examples from the game as to how they had ensured that this part of the information system components had functioned well. Examples provided included breaking the exercise into roles and appointing a supervisor who could assist if necessary.

CONCLUDING REMARKS

The SAP Game seems to have been a success in that it gave the students practical experience of business processes and underlined the essentiality of all components of an information system. Moreover the students enjoyed playing it. The comments made were largely very favorable with suggestions for improvement being in the areas of more time and a more detailed explanation, possibly related to their performance in the competition. One unanticipated benefit to the department was that several students approached the instructors wanting to discuss taking a minor in the ERP emphasis area. A word of warning – while this Department was fortunate to have an SAP expert to run the game, there is a learning curve and an occasional technical issue did arise during the simulation which may have presented problems otherwise. Nevertheless, the game is considered to be a very beneficial addition to the course.