

AN EMPIRICAL INVESTIGATION INTO THE IMPACT OF ERP TRAINING ON CROSS- FUNCTIONAL EDUCATION

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Abstract

As business schools continue to adapt their curricula to reflect the movement of businesses towards a more process-oriented view of business, the role of cross-functional education becomes increasingly important. Enterprise Resource Planning (ERP) software offers a robust platform for integrating business processes and has just recently begun appearing in the business curriculum. No studies to date exist that examine the relative benefits of ERP systems as a tool for doing this. This study examines the impact of teaching ERP system concepts and modules on students' understanding of the cross-functional nature of business.

I. INTRODUCTION

As business schools continue to adapt their curricula to reflect the movement of businesses towards a more process-oriented view of business, the role of cross-functional education becomes increasingly important. This is reflected in the importance that the AACSB gives to evaluating business school curricula with respect to the level of cross-functional integration. Business school curricula typically approach this problem in one of several ways. First, many business schools require that all students take a capstone Management Policy class. This class usually has a group project component where students play roles from different functional areas and work as a team to analyze a case or develop and implement a business plan for a specific product.

Another type of cross-functional curriculum is typically found in the Marketing Strategy class that often uses a cross-functional team to interact with a business simulation game scenario. This simulation is designed to reproduce the competitive nature of a particular business segment and provide simulated responses to the students' decisions in the game. These approaches are useful in that they give students experience in working as a team and a general *feel* for how businesses compete. However, they do not provide much insight into how information systems can be used to support the core business processes.

Enterprise Resource Planning (ERP) software offers a robust platform for integrating business processes and has just recently begun appearing in the business curriculum. ERP software vendors have been claiming that it can be used as a valuable tool for cross-functional integration of the standard business curriculum [Closs and Stank, 1999]. Some of the major ERP vendors have

also formed university alliances and participation in these has been growing at a steady rate over the last 5 years. The main ERP vendors include SAP, Oracle, Baan, JDEdwards and Peoplesoft. The market leader, SAP basically defined this market in the mid 1980s. The founders of SAP evolved their software from previous efforts to develop CIM and MRP II integrated packages. ERP software attempted to integrate all business processes around a data warehouse running on a 3 tier client/server platform. Sometimes referred to as Enterprise computing or Enterprise tools, ERP is generally defined as:

An integrated set of software modules designed to support and automate core business processes that may include logistics, sales, manufacturing, finance, and human resources. [Wagner, 2001].

It is difficult to identify the core concepts behind ER from the vendor literature, but these may be described generally as the integration of data and applications, open systems architecture, and the process view. Data and application integration refer to the fact that applications are processing data that is stored in a data warehouse environment typically using a robust relational database package such as Oracle or DB2. The ERP software modules lay on top of the database software. The open systems architecture design means that ERP software has middleware network and data protocols built into it to make the processing and storage of transactions transparent to the user. The process view suggests that the functionality of the software is built around core business processes rather than the more traditional functional areas of a business.

The use of ERP software in the business school curriculum is still in its early stages, and its effect has not been studied yet. Anecdotal evidence among educators using ERP software indicates that these courses are in very high demand among students and that employers view it very favorably. With respect to its impact on cross-functional education, no studies to date exist that examine the relative benefits of ERP systems as a tool for doing this. This study examines the impact of teaching ERP system concepts and modules on students' understanding of the cross-functional nature of business.

II. EMPIRICAL STUDY

For the purpose of this study, the notion of cross-functionality is operationalized by comparing the subjects' knowledge of the generic processes involved in Human Resource Management. Subjects who have had training in ERP are compared with a similar population of students who haven't had ERP training using their knowledge of HR functions as a basis for comparison. ERP system concepts include the study of how ERP systems support the process view, the nature of open systems, and the manner in which ERP systems integrate data and applications across the enterprise. After studying these core ERP system concepts, the students then worked in the core modules of SAP's R/3 software. These modules included Sales & Distribution (SD), Materials Management (MM), Financial (FI) and Controlling (CO). One group of ERP systems students was given the HR survey prior to studying the HR module in R/3 and another group was given the survey after studying the HR module. These two groups were

compared to another group of students from a similar population, but who had not studied any ERP concepts or HR modules. The following hypotheses state the goals of this study

H1: Individuals with ERP Systems training but without HRM training and/or experience will gain more cross-functional learning than individuals without ERP Systems training.

H2: Individuals with ERP Systems training and ERP HR training will gain more cross-functional learning than individuals with ERP Systems training but without HR ERP training and/or experience.

H3: Individuals with ERP Systems training and ERP HR training will gain more cross-functional learning than individuals without ERP Systems training or ERP HR training.

The survey that was developed to measure the students level of understanding of the crossfunctional nature consisted of 27 questions. These questions were randomized both with respect to positive and negative response biases and also with respect to specific HR task clusters. Subjects could respond using a 5 point scale with **A**strongly agree@ and **A**strongly disagree@ representing the most extreme views. At the beginning of the survey were 7 control questions to determine whether the subjects had any unusual exposure to HR functions either through work or other courses. Questions were also clustered around four general HR functions such as personnel management, and training.

III. RESULTS OF STUDY

From the subjects surveyed we received 115 usable responses. Our initial analysis of the data found that students who had the ERP and HR modules generally performed better than both the other student populations. On average they performed better on 16 out of 20 of the questions, though the differences were not statistically significant. The students who had the ERP but no HR module performed better than the students who had neither ERP or HR on 13 out of 20 of the questions. Of the control questions, it seemed that only the students who had studied Systems Analysis and Design prior to this course, performed significantly better than those who did not have it. It is possible that a non-parametric test such as the Kruskil-Wallace test may be more appropriate to test for the significance of the results in this study.

IV. CONCLUSIONS

The problem of how to measure a student=s understanding of the cross-functional nature of business is very difficult by its very nature. This paper presents the initial results of a study that examines how well Enterprise Resource Planning software might support cross-functional instruction. This research will be further refined by re-targeting different student populations and by broadening the scope of the survey instrument beyond just the HR functions. It is hoped that it will lead to the development of an survey instrument that may be used throughout the business school to better gauge the level of cross-functional instruction.

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