# Using Enron to Teach the Value of Integration

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**Abstract**

Motivating business students in an Information Systems course is a unique challenge. In this paper, we discuss the use of a case study involving Enron in an IS Theory and Practice course. The case study points out what can go wrong when the business, organizational, and IS strategies within an enterprise are not balanced. Writing assignments as part of the case study are also highlighted.

**Keywords:** Case study, Enron, IS Strategy, IS 2002 Model Curriculum, Writing assignments

## 1. INTRODUCTION

Motivating business students in an Information Systems course is a unique challenge. The instructor must work hard to find material that will engage and interest the student while also meeting the learning objectives set forth for the course. In this paper, we discuss the use of a case study involving Enron (Berinato 2002) as a "hook" that enables the instructor to meet the objective of motivating business students to understand the significance of coordinating business, organizational and information systems strategy and the integration of data sources across the organization.

To just about every business school student, Enron should be a household name. While the story of Enron's accounting practiies andethics violations are getting "old", the story of Enron's information systems strategy may not be well known. Using the case study, *Enron IT: A Tale of Excess and Chaos* (Berinato 2002), students learn more about Enron and their failings in managing not just their financials but their information technology (IT) operations as well. In addition, the case points out how a culture of decentralization can have a severe impact on all aspects of the organization. This case study is an opportunity to show students first hand how bad IT can be managed and begs the question, "If Enron was not taken down by the accounting scandals, could their IT operations have caused a corporate collapse?"

This paper is structured as follows. In section two, the use of case studies as pedagogy is discussed, especially in IS courses. Section three shows how the case study is used in a course a kin to the IS 2002.3 Information Systems Theory and Practice course in the IS 2002 Model Curriculum (Gorgone, J. T., G. B. Davis, et al. 2002). Section four discusses some of the distinguishing features of the Enron case that make it attractive to IS and business students; uses of the case study in other courses in the model curriculum are discussed. Course impacts and future work are discussed in the next section. This section highlights some of the accrued benefits of including this case within the theory and practice course as well as further refinements of the use of this case in the IS 2002.3 course. The final section gives Web links to case study resources that might enhance other IS courses.

## 2. CASE STUDIES AND IS PEDAGOGY

"Case studies cut across a range of companies, industries, and situations, providing an exposure far greater than what students are likely to experience otherwise." (Corey 1996, p.1). The use of case studies in the pedagogy of many IS educators is important to help students learn and appreciate the realities of IT-related decision-making situations. In addition, "Cases can allow students to develop high-order reasoning skills, bring real world examples into the classroom, allow students to learn by doing, bring organizational impacts, social values, and ethical issues to the forefront of discussion, and include realistic content, objectives and knowledge transfer." (Hackney, McMaster et al. 2003, p.229). Finally, case studies can assist students to enhance their teamwork, problem solving, and oral and written communication skills that are highly valued by potential employers (Cappel 2001; Alsop 2004).

Case studies provide an instructor the opportunity to help provide these skills to students in a number of different ways through the preparation and presentation of the case study. Many authors present guidelines for effective case study usage in the classroom. These guidelines state that the three most important things that both instructors and students can do is "*Prepare, Prepare, Prepare*". Assuming that the instructor has done their part in the preparation of the case study, including the creation of learning objectives to be covered, the students must also prepare.

Preparation for a case study on the part of students can vary widely, and guidelines for student preparation do exist (Edge and Coleman 1982; Ronstandt 1993; Corey 1996). The first activity the students must engage in is in reading the case; in fact many authors (Edge and Coleman 1982; Ronstandt 1993; Corey 1996) suggest first reading the case quickly and then rereading the case more carefully, with thought to answering some key questions. After close reading of the case, students should able to identify the key issues in the case, the major players in the case, and a list of facts related to the key issues. In order to assess the preparation of the students for the case study work and the discussion, faculty can prepare a writing assignment to guide the student learning. Writing assignments can be created both as a pre-case as well as a post-case analysis tool to ensure the maximum learning has been derived from the case study.

Pre-case assignments can range from a simple list of "thought" questions to a formal written analysis of the case based on the content of the course and the issues raised in the case. Post-case assignments can also come in many forms but a formal analysis document is most often called for in order to develop the students' analytical thinking and problems solving skills (Corey 1996). Formal analysis assignments need to include a good problem definition, a breakdown of the issues described in the case, analysis of the important issues, a marshaling of the relevant facts, and conclusions with formal recommendations (Corey 1996). It is up to the individual instructor but these assignments can be graded or un-graded, however, formal feedback on these written assignments help students to understand the areas of critical thinking they must still develop (Bean 1996).

In this paper, we discuss the use of a case study that not only "hooks" students' interest but also provides richness in the realities of the decision-making situation. The author uses both pre- and post-case writing assignments to further the student learning experience. In the next section, we discuss the use of the Enron case study in the IS Theory and Practice course (IS2002.3).

## 3. USE IN IS STRATEGY COURSE

*Enron IT: A Tale of Excess and Chaos* (Berinato 2002) is currently being used in an IS Theory and Practice course that is required for all senior business majors. While taking this course the seniors are also enrolled in a business strategy course, however, little integration between these courses currently exists.

The objectives covered by the use of the Enron case study in this course are:

- Identify, compare and contrast business strategy, organizational strategy and information systems strategy.

- Describe the types, roles and functions of information resources (Pearlson 2004).
- Compare and contrast the technologies involved in enterprise information integration.

Prior to introducing the case in class the students are asked to read the first chapter of the textbook by Pearlson and Saunders (2004) and are presented a lecture on data and information integration strategies. Both Enterprise Resource Planning (ERP) and Enterprise Application Integration (EAI) are covered and examples of successful implementations of both technologies are discussed in class.

The major theme of the first chapter of the Pearlson and Saunders text is in understanding the roles played by business, organizational and IS strategy. Pearlson and Saunders (2004) use the Information Systems strategy triangle (ISS∆) to depict the relationship between these key elements as an equilateral triangle. The ISS∆ suggests three key points about strategy (Pearlson and Saunders 2004):

1. In most successful firms, business strategy drives both organizational and IS strategy,
2. IS strategy affects both business and organizational strategy and IS strategy can be and is affected by the other two,
3. IS strategy has both intended and unintended consequences with business and organizational strategies.

Enron is a perfect example of the interplay between business, organizational and IS strategy in that, while the business strategy of Enron was well known, the organizational strategy of fragmented business units that valued competition (without communication) over cooperation lead to disastrous consequences in their "non-existant" IS strategy.

First of all, the overall prevailing organizational strategy of competition between internal groups of the corporation led to each group creating and orchestrating its own IT policies and purchases; this lead to massive overspending on IT systems due to duplication of systems and singularity of purchases.

Second, the internal groups lacked a locus of control over IT spending; "practically anyone with a new idea was free to spend money" (Berinato 2002, p.2). In order to justify an IT purchase, employees only need to show a return on investment (ROI) of 38% for approval; this lead to spending on systems that were—at best—marginally successful. Another related problem was that lack of sufficient management control and follow-up. Many of the purchases of IT equipment were never even used after they were ordered and arrived. After Enron was ruined, many IT purchases were found still in their original packaging.

The impact of Enron's IS "strategy" was seen by the work (actually overwork) of the IT call center. At its peak (in 2001) the internal help center was handling one support call every 90 seconds; in one month the call center had over 12,000 calls. These calls were largely the result of two things: first, lack of a common standard for IT systems and, second, implemented IT systems that lacked sufficient training for employees to effectively use the systems.

Enron's data situation was equally decentralized. Data islands were commonplace and even worse, "the same data existed in different forms on different islands. Entire teams were dedicated to the task of deciphering the data." (Berinato 2002, p.2). One Enron veteran was quoted as saying "preparing annual reports was a joke" (Berinato 2002, p.3).

However, Enron was beginning to counter this data island mentality. In October 2000, Enron decided to begin to implement a massive SAP deployment. By summer 2001, the integration project began to have rewards for Enron as a whole due to the deployment of the human resources, financial information, asset Management and tax module of the SAP system being operational since early 2001.

The case study is used to enhance the problem solving and oral and written communication skills of business students. A pre-case writing assignment is given to determine the initial level of understanding of the students in regard to the details of the case study. The students are asked to answer seven questions (shown below) and provide written responses to the individual questions.

1. What business is the company in this case in and what is their primary business strategy?
2. Describe both the organizational and Information Systems strategy and the relationship between them. With regard to the Information Systems Strategy Triangle, discuss the problems experienced by this company.
3. Are these the actual problems or only symptoms of underlying problems?
4. What problems is the call center experiencing? Why?
5. What strategies did the company undertake to remedy their problems? Be specific.
6. Describe the outcomes of the strategies that the Enron undertook; specifically what changes were becoming apparent?
7. Describe at least two "lessons learned" that you think are most important.

In addition to the case material, students are also given Web links to further content on Enron as a corporation (through Hoovers.com), and on both ERP and EAI fundamentals.

On the day the pre-case writing assignment is due, the students are engaged in an in-class discussion about the case and how the case illustrates both the positive and negative aspects of Enron's actions. The focus of the discussion is on how the decision to undertake an implementation of the SAP system (an ERP implementation) began to bring the Enron IT chaos to an end. The students are asked to discuss how this particular IT decision affected the organizational strategy of fragmented business units and how this might have affected the ability of Enron management to prepare quarterly and annual reports.

As a wrap-up to the case study discussion the students are asked to write a one to two page "action-influencing" memo addressed to the appropriate person at Enron, (the students must figure out who this person is) that includes the following aspects.

1. a description of the firm,
2. a description of the problems encountered and the reasons for them,
3. a description of the Management Support System implemented,
4. the impact of the system on the firm
5. a discussion of at least three "lessons learned" from this case study.

The students must decide the ordering of these items given the fact that a memo should be clear and concise. The most important point of this memo should be stated in the opening paragraph (what action you want to see taken) with the subsequent paragraphs used to show the rationale for this action.

The richness of this case study for the IS2002.3 course has been the major focus of this paper, however, other content is included in the case so that this specific case can be used effectively in other courses throughout the IS 2002 Model Curriculum. In the next section we highlight some of these other courses and how the case may be used.

## 4. USES IN OTHER AREAS OF IS 2002 MODEL CURRICULUM

The Enron case study describes an organization in disarray when it comes to IT management. A number of problems are manifested due to the nature of the organizational strategy employed by Enron and its executives. However, the focus of the case study does not necessarily have be on the impact of the organizational strategy but can also look at some of the poorly chosen actions undertaken and how they impact Enron's bottom line.

Specifically, the case study could be used in the IS 2002.7: Analysis and Logical Design by focusing on how Enron often shortcut life cycle stages in order to implement systems more quickly; increasing the risks of projects not meeting user requirements. For example, even after Enron started to implement the SAP system they quickly—too quickly—implemented an SAP tool called CATS (Cross Application Time Sheet) to assist employees in tracking project hours. It was later estimated to cost $176,000 to "fix" the CATS application; the fix was never approved and the CATS system was left unused.

In the IS 2002.1 course—Fundamentals of Information Systems—the interplay between the ethics of IT professionals (within Enron) and the design and development of organizational systems could be addressed. The case study quotes an Enron Web designer as saying "…and in the back of my head, I was wondering how they (Enron) could afford all of this. They never said no." (Berinato 2002, p.3) Also, the case study points out incidents of technology being ordered and paid for and going largely unused due to lack of the necessary technology skills within a purchasing group.

In other IT projects, Enron often used outside consultants and outsourcing when the necessary skills to develop the systems were often available in-house. The examination of the proper use of outsourcing is one of the stated learning objectives in the IS 2002.2: Electronic Business Strategy, Architecture and Design course and the IS 2002.10: Project Management and Practice course.

## 5. CASE STUDY IMPACT AND FUTURE WORK

Many benefits have accrued from the use of the Enron case study in the author's IS Theory and Practice course. This course is required of all business students as part of a sequence of four IS courses that are required of all business majors as part of their degree program. This course is designed to show the impact of IS on particular business disciplines (marketing, human resources, operations, etc.), however, most (non-IS) students find the course (from comments in past course evaluations) irrelevant and unimportant to their future career endeavors.

Given this lack of motivation and interest in the course, this case study provides a "hook" for many of these students. From a survey of course evaluations and assignments concluded after this initial case study, many students find this case interesting. Students use this case study as a means of comparisons to other examples where the impacts between the business, organizational, and information systems strategies are less evident. In addition, the discussion that is part of this case has the highest rate of interaction and inclusion from all students throughout the semester.

This case study has now been used for the past four semesters. The nature of the assignments and the discussion has not been changed, however, the timing of this case in the course has. Initially, this case was used as a final case study in the course, however, the past two course offerings this case has been used as an opening case (necessitating the movement of the integration discussion). In the future further changes are anticipated; but these will be minor. These changes include using a memo format to structure the pre-case assignment deliverable; being more deliberate in making connections of other material with the Enron case (like the use of outsourcing); and asking the students to focus more on the nature of ERP and its impacts on other firms and their organizational strategy to contrast Enron.

## 6. WHERE TO FIND RELEVANT CASE STUDIES

There are many education-related sites for instructors to be able to find potential case studies to use in their IS courses. The most popular sites for business and information systems case students are either the Harvard Business School or the Richard Ivey School of Business at the University of Western Ontario. Idea-Group, Inc. provides a number of annals that contain IS-related case studies; they also provide a searchable site for these case studies. A recent positive addition to the Journal of Information Systems Education is the publishing of case studies as a regular feature of the Journal (Hackney, McMaster et al. 2003). Web sites for each of these repositories are given below.

In addition to these IS education-related sites, many "trade" publications in the Information Systems area have also published case studies (the Enron case was found at CIO Magazine). These sites are also given below.

Harvard Business School: http://harvardbusinessonline.hbsp.harvard.edu/b01/en/cases/cases_home.jhtml

Richard Ivey School of Business: http://www1.ivey.ca/cases/

Idea-Group, Inc. http://www.idea-group.com/cases/

Journal of Information Systems Education: http://www.jise.appstate.edu/index.htm

CIO Magazine: http://www.cio.com/

CIO Insight: http://www.cioinsight.com/category2/0,1426,80,00.asp

Darwin Magazine: http://www.darwinmag.com/

Computerworld: http://www.computerworld.com/

Baseline Magazine: http://www.baselinemag.com/

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