Classroom Minicases

Editor's Note: This is the first of a series of papers to be published by the Journal of Information Systems Education (JISE) that will provide readers with minicases that are appropriate for use in the IS classroom. We encourage other authors to develop and submit minicases, usually two per paper, that can be used in IS courses. We hope that this is a useful service for JISE readers and that it will become a regular publishing area in JISE.

Two Information Technology Classroom Minicases: Benefits Assessments and Implementation Issues

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ABSTRACT

Case method teaching is not limited to larger, complex cases. It is often useful to supplement classroom discussions with short cases, ones that have been targeted for one or two discussion points that challenge student thinking beyond the usual lecture or textbook. These shorter cases are called 'minicases.' The objective of a minicase is to broaden the thinking of students by raising difficult, focused questions. Discussing shorter cases provides an opportunity to think carefully about key issues and to challenge conventional thinking without the overhead of preparing a larger case. Minicases can provide the bases for stimulating classroom discussions, with students being asked to read, analyze, and discuss them within the context of a single class. Or, they could be utilized for homework assignments. Or, minicases might even be useful as essay questions on exams or as tools in assessing student-learning outcomes. This article presents two focused minicases that an instructor can use in a typical information systems overview course. The first of these deals with understanding and justifying intangible benefits and the second with an interesting systems implementation headache. For each case, a discussion of how to use the minicase effectively and a suggested solution are provided. This is the first in a series of three articles appearing in JISE dealing with the topic of IT Minicases.

Keywords: Information Systems Education, Case Method Teaching, Project Management, Information Economics, and Computer Systems Implementation

1. INTRODUCTION

1.1 Small Case Studies
Teaching using the Case Method is not limited to only large complex cases. The use of small cases as descriptive sidebars to illustrate topics in business textbooks is common. But short cases can also be used to engage the student in an interactive learning experience that requires grappling with difficult issues and formulating well reasoned analyses for problems posed.

It is often useful to supplement classroom discussions with short cases, ones that have been targeted to illuminate one or two precise points that challenge student thinking beyond the usual lecture or textbook. These shorter cases are usually no more than a few paragraphs in length, often a page or less. They are called 'minicases.' The objective of a minicase is to broaden the thinking of students by raising difficult, focused questions. A wide range of topics, of course, can be targeted, and these kinds of cases can greatly enhance the classroom experience for students. Minicases provide opportunities to think carefully about key issues, and

often to challenge conventional thinking in ways that textbooks normally cannot do. Also, for professors who are interested in using the case method in their teaching but are unsure how to do it effectively, using minicases provides a venue for getting experience with the process of case teaching with little pedagogical risk.

1.2 Using Minicases

Shorter cases can provide the bases for stimulating classroom discussions, with students being asked to read, analyze, and discuss them within the context of a single class. Or, they could be used for homework assignments at an appropriate time during a course after related readings and lectures have been completed. Or, minicases might even be utilized as essay questions on exams or as tools in assessing student learning outcomes.

Case studies, large or small, provide a form of synthetic experience for students. Few students have experience in all facets of business, even at the MBA level. What good cases provide is a way to explore real business problems and significant issues that occur in real business situations (Barnes, Christensen, and Hansen, 1994; Krause, 2005; Quattrone, 2006). Exposure to cases is closely akin to having real experience in the situations depicted. For example, suppose a business graduate faces a new situation that he or she has only encountered previously in the classroom as a case study. Even if that graduate has never been in that situation before, the case exposure puts the graduate in a position as if he or she actually has some related experience. This is because the graduate has already examined many of the issues involved and made some preliminary judgments, just as someone with experience in the area would have done. A graduate who has worked through a range of cases has familiarity with a wide spectrum of practical situations that he or she may one day encounter in business. Clearly, this is a profoundly important aspect of business education. And minicases can play a central role in providing this kind of critical analysis and understanding for business students.

1.3 Overview

The primary objective of this paper is to present two minicases that an instructor can use in a typical information systems overview course that offers a survey of topics and principles and is geared to exploring how such information systems are utilized in modern business organizations. Overview courses like these are typically found in various forms in graduate MBA and undergraduate BBA university degree programs, or their equivalent (Avison, 2003; Giullian, Odom, and Totaro, 2000). This paper presents minicases that can be utilized to stimulate discussions and supplement examinations in these kinds of IS courses. The author has often used minicases successfully in such information systems courses in the past. Topics range from information economics, to questions of ethics, implementation issues, user relations, loss of critical resources, concerns about diversity, and beyond. This article presents two minicases, as described below, to demonstrate the kinds of issues and problems that can be addressed in the classroom using this technique.

All of the events depicted in these minicases are true, though the names of the companies involved have been withheld and the names of the participants are disguised. The companies are all successful, global or regional firms that are among the leaders in their industries. In the text that follows, each minicase discussion employs the same three-part format. The first section for each minicase consists of a *recommended approach* for use in the classroom. This includes a review of the subject matter related to the minicase and its intended focus. The second section presents the body of the minicase. This includes the *minicase description* and the associated *discussion questions*. The third section for each case includes a *suggested solution*. It is called a 'suggested solution' because other valid viewpoints may emerge during discussions. The suggested solutions, then, are really a short 'teaching note' to assist the instructor in preparing for discussion leadership. Finally, concluding each of these solutions is a brief summarizing the actual 'real life' outcome for each minicase. These outcomes are not necessarily *solutions* for the minicases. They only reflect what actually happened and should be presented to the students only after case discussions have been completed. The outcomes help to provide the students with closure for the minicase discussions.

Finally, because the order of topics in an information systems course can vary depending upon the text and preferences of the instructor, there is no intended order of presentation for these minicases. Therefore, the cases in the presentation that follows can be utilized in whatever order an instructor determines to be appropriate for his or her course.

2. MINICASE: JUSTIFYING INTANGIBLE BENEFITS

2.1 Recommended Approach

2.1.1 Subject Area: This case is useful for probing issues in information economics, especially when considering cost/benefit analyses for information technology (IT) systems or components. The norm in justifying IT projects is to show that benefits will offset and exceed costs in some specific timeframe, say three years (Armour, 2006; Armour, 2002; Dehning, Richardson, and Zmud, 2003; Dykman, 2003; Gerland, *et al.*, 2002; Karlsen, Gottschalk, and Andersen, 2002).

Both costs and benefits must be reduced to dollar amounts to establish economic potential and to help convince executives to invest scarce funds in any particular project. However, these costs and benefits often cannot be easily quantified into dollar amounts. This is particularly true for newer technology implementations for which impacts are not well understood. The net result is that newer technologies, often those with the greatest potential for impacting business organizations positively, are also often the most difficult to justify in conventional terms. This is an important issue for students to understand.

2.1.2 Intended Focus: The focus of this minicase is justifying information systems projects on the basis of intangible benefits. It is conceptual in nature, focusing on brainstorming 'how to do it,' rather than 'running the numbers' for a specific situation. Students need to recognize that this is an aspect of justifying projects that is both central to getting modern IT projects funded and very difficult to do in practice.

2.2 Description and Discussion Questions

2.2.1 Minicase Description: You are employed by a large, multinational firm engaged in light manufacturing and fabrication of transportation products. Most of the products for this firm are custom built in large lots based upon unique customer specifications. One of the key employee roles in the selling and manufacturing process is that of the 'buyer.' Buyers track markets for raw materials and subassemblies for each customer's order in order to determine a price to be quoted for that customer. Once a price is agreed, the buyer purchases the needed materials and coordinates the manufacturing necessary to fulfill the order. Because prices fluctuate, any breakdown in the currency of information relating to the costs of raw materials and subassemblies can be very expensive for the firm. Accuracy and timeliness of this information is critical for ongoing success of this business, and failures in this area have sometimes been a serious problem in the past.

You are working on a project to develop and implement a new technology to improve buyer access to critical information, a leading edge data warehousing technology that you believe will catapult the firm well ahead of its competitors and yield significant competitive advantage in its businesses. A few smaller competitors have implemented similar technology (that you are aware of) and they have had mixed success. But you feel that your firm can learn from their mistakes and you are anxious to proceed. This new technology appears to have huge 'upside potential' for your firm.

The problem is that most of the benefits are not tangible. They are very difficult to quantify on the front end of the project; for example, 'improve operational efficiency' or 'enhance buyer decision-making' or maybe 'strengthen customer responsiveness,' or the classic 'improve productivity.' Your management wants to see tangible benefits (i.e., real dollar savings to offset real systems development expenses) prior to approving funding for your project. Still, you are convinced that the intangible benefits, once realized, will far outweigh developmental expenses, if you could only get your management to recognize the potential, take a chance, and proceed with the project.

2.2.2 Discussion Questions: How would you make a business case for developing potentially highly profitable new systems technologies that are based primarily on intangible benefits? How would you justify funding such a project and convince senior management to proceed with it?

2.3 Suggested Solution

2.3.1 Student Background and Approach: The problem is that, today, firms must maintain currency in information systems technology to maintain competitive advantage. This is especially true if their principle competitors are current. In most companies, there are usually far more IS projects to be funded than can be, during any given budget cycle. So, projects have to be ranked. If this ranking ignores intangibles, then the company may simply fund the wrong projects and lose out on important new technologies that competitors may (ominously) be embracing.

As noted in this minicase, most of the potential benefits for new technologies tend to be intangible. The fact that these technologies are, in fact, *new* means that little is known about them in a given organizational setting, and it is often difficult to quantify accurately (or even comprehend) their potential financial impacts on that organization prior to implementation. All of this increases the risk associated with implementing new information systems technologies, and makes it more difficult to convince senior managers to approve these kinds of investments. So, the problem to be raised here deals with justifying promising new technologies. Such technologies often have serious potential for improving the firm's competitive position in the marketplace, but too often the associated benefits turn out to be intangible and hard to quantify. This is a significant issue. Students should struggle with this problem and appreciate its difficulty and importance for business management.

Before attempting this case, students need to be familiar with tangible cost and benefits, spreadsheets, discounted cash flow analysis, break-even analysis, and the typical accounting practices in this area. The first part of this minicase solution is to suggest that one begins with a traditional cash flow analysis for the *tangible* costs and benefits. Even if most of the benefits are intangible, it is usually highly desirable for the tangible positive cash flows to offset the tangible negative cash flows for the period of the analysis (usually three years), so that the project will at least break even in term of 'hard dollars' during that period. Sometimes, one has to really struggle to find enough positives to reach the break-even point, but senior management generally will expect at least that much tangible economic justification.

Then the focus shifts to the intangibles, in this case specifically, to *intangible benefits*. How does one argue that an intangible impact is potentially significant? It is done by developing credible examples, business cases really, that illustrate what that potential might be. The first question to consider here is what makes something 'intangible.' Something is intangible because no data exists about certain key factors that are part of the needed economic analysis. Making conservative estimates of those factors and using real, verified data to fill in the rest of the analysis makes a credible case in favor of the technology. If executives agree with the plausibility of the estimates, the accuracy of the real data, and the validity of the logic of the analysis, then they are very likely to agree with the overall argument. The idea is to convey to management the scope and breadth of the *real* financial impact expected for the new technology. There is no reason to assume that the executives have any actual understanding of any new technology, and objective is to provide them with a clear understanding of the true potential.

2.3.2 Actual Outcome of this Minicase: So, the basic approach was to find enough tangible benefits to reach break even in a preliminary analysis and then supplement that with an analysis of the intangible benefits to illustrate in a credible way the 'upside potential' of the new information systems technology. The new system in this case cost about $5.5 million over three years to develop and implement. One of the tangible benefits was that buyers would *telecommute* and work from home, eliminating substantial commute time and office space requirements. Another key tangible benefit was that fewer buyers would be needed because of increased

efficiencies in the new system. For the intangible benefits, positive cash flows were estimated in the $16 million range. It was estimated that past bad contracts resulting from poor pricing estimates by the buyers would disappear, and this was a major source of intangible positive cash flow in support of the project. Also, included in the analysis were scenarios based upon estimates for the best, worst, and most likely cases for the executives to ponder. Having a range of expected outcomes like this increased their comfort with the analysis. This approach proved very effective for justifying investment in this new technology. Senior management authorized the project, and it eventually demonstrated savings in excess of $20 million over the first three years.

Students are generally fascinated by this minicase because they typically have never really considered the potential importance of intangible benefits and costs in business decision-making. This helps to reshape their thinking about 'real world' economic analysis, for example. Some important business decisions are not nearly so 'clear cut' as students might have previously surmised. Through this minicase, students begin to see the prominence of more subjective assessments and managerial judgments as key parts of the decision-making process in business situations especially those relating to information technology.

3. MINICASE: AN IMPLEMENTATION HEADACHE

3.1 Recommended Approach
3.1.1 Subject Area: This minicase deals with the challenges in implementing large-scale systems development projects. Usually, this kind of process involves either a phased implementation or the parallel operation of old and new versions of a system, during which time, the older system can be relied upon while problems with the new system can be resolved. And user management is very much involved (Bryde, 2005, Mintzberg, 1983; Lapointe and Rivard, 2005; Ross and Weill, 2002; Sharma and Yetton, 2003). But sometimes, these more conservative approaches are not possible, as is the situation in this minicase. This is a case about the relationship between user and IS executives. It deals with the complexity of such relationships and their potential impact upon critical business functions. After covering the different approaches to implementing systems, this would be an interesting case to consider because it raises a number of difficult issues that students should ponder.

3.1.2 Intended Focus: One point in this case is that systems projects are not necessarily cancelled just because they are late or over budget. If a company really needs a system, then it often grimaces (in a figurative sense) and keeps on going. That is the situation in this minicase. The other issue here is that implementation of computer systems is risky, in general. And, in this particular situation, it is very risky.

3.2 Description and Discussion Questions
3.2.1 Minicase Description: You are working for a large electric utility in the Western US. Your company is finishing a new computer system called a Customer Information System, or CIS. This project was originally planned for two years, seven years ago! It is very late and it is not operational. But it is viewed by senior management as critical for the future of the firm and cannot feasibly be

canceled. The VP for Information Systems believes the CIS is ready to be put into production. The users are balking, however. The problem is this. The CIS in a power utility is by far the biggest system on its computers. This is because the CIS keeps all the information about the firm's customers' usage and billing history. This information is available in a huge online database that customer service operators use to answer customer questions when they call with questions about their bills or service.

In this case, the CIS is much bigger than half the capacity of the mainframe computer at the power utility, making it impossible to run both the old CIS and the new CIS at the same time. So how do you test it? If it becomes fully operational it will fill the biggest computer at the site. There is no place for the old CIS system to run production while the new one is being tested. And what about moving the new system into production? If you are running the new system, you cannot run the old one in parallel. So, there is no backup if the new system crashes or has other problems during its migration and early operation in production status. This could cause serious disruptions, and delays on a scale that would have serious repercussions for the utility's business operations.

3.2.2 Discussion Questions: Assume you are a consultant to this firm. How could they get the new system running without jeopardizing the ongoing production work? What would you recommend they do in this situation?

3.3 Suggested Solution
3.3.1 Student Background and Approach: This system is far behind schedule and over budget. Even so, the sense of senior management is that the system is critical for the future of the firm, and so much money has been invested to date that it would be folly to cancel the project. But still there is a lot of pressure to get the project done and the new system into production usage, and the VP of IS is driving hard to get this done without spending much more money. Over a weekend, he simply wants to switch off the old system, load the new system onto the firm's mainframe computer, open for business the following Monday, and see what happens. The users are understandably in a panic! They are being asked to go 'cold turkey' and cut over to a new system that they believe has not been adequately tested. They are being asked to do this with no fall back plan (or even fall back *capability*), if the new system should fail in production. Such a failure would seriously disrupt the operations of the firm and damage both its relations with customers and its professional image in the business marketplace.

Ultimately, this is a case about power. Who should decide what is best for the firm here, the users who are the business VP's and their managers who run the business *or* the VP of IS and the technical managers who are experts in the technology. This is formal power (that derived from one's position on the organization chart) versus expert power (that derived from knowing how things work). As information technology has proliferated across organizations, the expert power of the technical staff has become much more important and influential in corporate decision-making. In this case, there is a technical constraint that forces the issue. They have to either spend a lot of money to get

another computer for testing the system and doing a parallel implementation, which everyone understandably is resisting, or they have to implement the new system 'cold turkey.' The classroom discussion here should center on the balance of power between the user VP's and the VP of IS, as well as the realities underlying the implementation decision that must be made.

3.3.2 Actual Outcome of this Minicase: This is a real business situation, of course, and the final resolution of this problem was designed to meet the needs of the user VP's. They won the battle. The decision was to develop a testing plan that was well documented and whose progress would be reported over an additional six-month period of testing. This process was put in place to satisfy the concerns of the users and assure them that the components of the system had been thoroughly tested prior to implementation. Overall 'systems testing' was still inadequate, but at the end of the six months, the system went into live production, *cold turkey*, and performed without any significant difficulty. And the company had its new system.

In this minicase, students begin to appreciate the organizational politics associated with the implementation of information technology projects. Students learn about the inherent risks faced by modern business organizations brought on by increasing dependence upon information technology for critical operational and strategic support. They are typically mystified by the idea that a company can be 'brought to its knees' by a relatively obscure failure in its information technology function. The key insight here for students is an appreciation of the relationships between the information technology personnel and the user departments that they support.

4. CONCLUSION

4.1 Summary
The objective of this paper has been to provide two short real-world cases that can be used to supplement the teaching of a university information systems survey course. These minicases are short, focused presentations of difficult situations that challenge student thinking and force students to reconsider basic assumptions. Each minicase deals with a topic that is typically taught in IS courses at both the graduate and undergraduate levels. These cases may be used to stimulate class discussions, as homework assignments, or as examination questions. For each case, a discussion of how to use the case effectively in the classroom and a suggested solution are provided. Additionally, the actual outcomes of each case are included.

4.2 Toward the Future
The use of realistic and challenging minicases as championed in this article stimulates student understanding and fosters an approach that involves students in active learning. The development and circulation of focused and challenging minicases among Information Systems Faculty would signal a significant improvement for information systems teaching and learning. If a vehicle could be found for sharing such short cases among faculty across the IS teaching profession, then the promise of this approach might

be achieved. If IS faculty members could develop and document sets of well-focused and challenging minicases in their respective areas of specialization, the result would be a collection of current, insightful, and easy to use tools for stimulating classroom discussion and student interest in a range of current IS topics. These kinds of minicases could supplement and significantly enhance the curriculum for the typical graduate and undergraduate Information Systems course.

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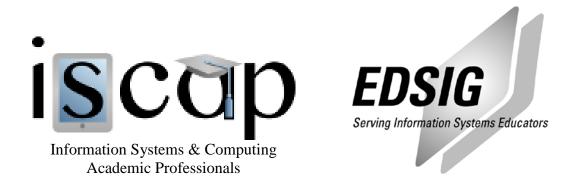
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