

Business Disaster And Recovery Planning: An Illustrative Case Of A Corporate Accounts Payable Department

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ABSTRACT

This paper presents a case that focuses on the Corporate Accounts Payable Department of a major corporation with the objective of reinforcing that organizations need business resumption plans for all units. Textbooks tend to focus on the information technology area which may lead students to overlook the need for business resumption planning in other areas. Students were asked to complete a set of case questions based on the case material. Comparisons of students' responses to a questionnaire regarding business resumption planning showed that students who completed the case demonstrated a stronger understanding of the topic than those who did not.

INTRODUCTION

This paper presents a case designed for use in an introductory accounting information systems course. The case material is based on the actual disaster recovery and business resumption planning documents of a large multi-national corporation. The purpose of the case is to supplement the information typically covered in AIS textbooks.

The first section of the case provides an introduction to disaster recovery and business resumption planning. The second part presents the documentation from an actual corporation. Students are asked to complete a short set of case questions based on the documentation. The following section discusses the case learning objectives and implementation guidance. It also includes test results regarding the effectiveness of the case. The paper ends with the conclusion section.

OVERVIEW OF DISASTER RECOVERY AND BUSINESS RESUMPTION PLANNING

The recent, massive destruction and death wrought on the Gulf Coast region of the U.S. by Hurricane Katrina is but the latest example of a natural disaster which has completely disrupted normal life for many thousands of people and brought most commercial activity in the area to a halt for many days. Unfortunately, this decade has had numerous disasters of almost epic proportions such as the terrorist attacks of 9/11/01, multiple hurricanes in Florida in 2004, and the Asian Tsunami in late 2004. The effect on businesses in the area of these disasters is usually profound and can last much longer than the recovery period from the initial disaster itself. In fact, many businesses in the areas of these disasters do not recover at all and end up going out of business entirely. A primary reason is the failure to plan ahead for what the business would do in case a crippling disaster strikes and how the company will recover and continue its operations in the wake of the disaster. The purpose of this case is to show you how companies can plan ahead for a disaster and how one company has planned to handle disasters and recover operations in its corporate accounts payable facilities.

Interestingly, the focus on disaster recovery planning was heightened in the late 1990s by a purely manmade event, the arrival of the year 2000 or the so-called "Y2K" event. There was widespread fear as the 1990s wound down that legacy computer systems programmed with only two digits for the year would grind to a halt at the stroke of midnight a.m. on 1/1/2000. Billions of dollars of programming effort and planning activity were invested to make sure that such a disaster did not occur. Of course, we know that no major disruptions did occur but many companies took the prospect as a cue to update their disaster plans. In reality, most disasters affecting business are quite localized to one company or location with fires and floods being the leading causes. However, recent disasters such as the World Trade Center terrorist attack of 9/11 and Hurricane Katrina have shown that traditional definitions of disaster may not be broad enough. These two incidents have demonstrated that disaster planners must now consider the possibility that significant parts or even entire cities could be rendered uninhabitable by either natural or manmade causes. One chief information officer in the U.S. government states: "It's a different world. There are so many more things to consider than the traditional fire, flood, and theft."

Other CIO's express concerns about terrorist attacks such as "dirty bombs" or bioterrorist attacks; even failures in the aging power grid of the country can produce a disaster. The Federal Emergency Management Agency (FEMA) defines an emergency situation as:

Any unplanned event that can cause deaths or significant injuries to employees, customers or the public; or that can shut down your business, disrupt operations, cause environmental damage, or threaten the facility's financial standing or public image. Obviously numerous events can be "emergencies" including:

1. Fire
2. Hazardous materials incident
3. Flood or flash flood
4. Hurricane
5. Tornado
6. Winter storm
7. Earthquake
8. Communications failure
9. Radiological accident
10. Civil disturbance
11. Loss of a key supplier or customer
12. Explosion

Some disasters may involve multiple occurrences of the events mentioned above. For example, a Category 5 hurricane such as Katrina may lead not only to extensive wind damage but collateral damage such as extensive flooding, fires, toxic spills, suspension of civil authority, and communication failures. However, whatever the cause or extent of the disaster or emergency situation, preparing to deal with the event must involve responding to, mitigating, and recovering from the disaster in order for the business to successfully move forward. Romney and Steinbart (2006) state that a good disaster recovery plan must provide for: ways to minimize the extent of the disruption, damage, or loss; temporarily establish an alternative means of processing information; resume normal operations as soon as possible; and train and familiarize personnel with emergency operations. Certainly, the case for good disaster planning and emergency management is compelling beyond the regulatory requirements now in place for listed corporations. Emergency plans are good for business because of the following:

1. They help satisfy the regulatory requirements of the Federal, State, and local government agencies and auditor expectations for such plans to be in place.
2. They may reduce a company's civil or criminal liability and may help to reduce insurance premiums.
3. They may help the organization fulfill an ethical responsibility to protect employees, the community, and the environment.
4. They may enhance the public image of the company and credibility with key stakeholders.
5. The plans will help the company's ability to recover from business interruption, market share and financial losses, and damage to key facilities.

So how do companies go about initiating a disaster recovery and emergency management process? Generally there are four significant phases to organizing, creating, and implementing the plan: (1) Assemble key personnel into a planning team; (2) Identify risks and capabilities of the organization; (3) Develop the actual plan; (4) Actually implement and test the plan. We will now examine these individual steps in more detail.

Assemble Key Personnel Into A Planning Team

A successful planning process will bring together key people from across the organization. All key functions of the organization should participate in either an advisory or active member capacity. This helps to get people invested in the process and it provides the breadth of knowledge and perspective needed for a comprehensive plan. Upper management support is essential to give credibility to the process and to provide the necessary resources to carry it out. The team needs a recognized leader appointed by the chief executive of the organization. The team will need an initial charge and then a mission statement which covers its purpose and a definition of the authority the team will have. Finally, the team will need to establish a work plan, schedule, and budget to carry out its mission.

Identify Risks And Capabilities Of The Organization

The second phase of the process is for the team to assemble information about existing plans and policies already in existence, assess the risks the company faces for emergency situations, and identify the resources, both internal and external, for dealing with disaster events. The team should assemble any existing documents, plans, or policies dealing with emergencies such as fires, evacuations, plant closings, hazardous materials, or mutual aid agreements. These documents may provide the basis for a comprehensive plan. Identification of applicable federal, state, or local codes and regulations dealing with health and safety of employees, zoning, fire, or transportation should be done as well. These will impact key portions of any emergency plan. The team will need to begin the process of identifying key processes, products, services, and operations. These mission critical activities must be provided for in any disaster plan. In addition, the prioritization of key activities is essential to any plan. For example, to keep employees on board, provisions must be made to meet the payroll on time.

A very crucial part of any plan is the assessment of risks the company faces. All risks have historical, geographic, technological, human, and physical dimensions. For example, almost any organization faces risks from fires, floods, power failures, hazardous materials, and even terrorism in today's world. On the other hand, it will be Atlantic and Gulf Coast areas which face the severest risk from hurricanes and the West Coast is most vulnerable to severe earthquakes. Each organization must identify hazards and estimate the probability of the occurrence of identified hazards. In addition, it will be useful to estimate the exposure or the attendant risk of loss should the company be stricken by a disaster. By knowing the hazards, probability, and potential exposure, the potential human, property and business impacts can be estimated. Finally, those resources the company will have at its disposal to deal with a disaster should be identified. Internal resources are personnel, facilities, and financial while the external resources are such elements as emergency response by government, support from key vendors, insurance, financial resources from owners and creditors, and possible government recovery assistance.

Develop The Actual Plan

Once completed, the actual plan will usually begin with an executive summary of key parts of the plan, emergency response and management elements, supporting documents such as call lists, diagrams of key facilities and shutoffs, lists of resources, alternative facilities to be used and key personnel assignments, and definitive plans for restarting operations in the alternative sites. If necessary, key hardware, software, and communication elements will have to be replaced for normal operations to continue. Once the plan has been written there will be a need for training schedules, approval procedures, and coordination with key outside organizations such as government agencies, vendors of key resources, and other mutual aid organizations. Finally the completed plan will be communicated to all key people and offices.

Implement The Completed Plan

For any disaster plan to be successfully implemented, the plan must become part of the corporate culture. Support by top management, broad involvement, training, and communication are all vital to integrating the plan into the culture. Nothing will ingrain this process better than drills and full-scale exercises of the plan. Drills designed to test knowledge of the plan, response to emergency functions, and evacuations are all valuable but the only way to fully test the viability of the plan is with an unannounced, full-scale test where a real life emergency situation is simulated with management, emergency teams, and community first responders all fulfilling their roles in the plan. Finally, new challenges and risks will make continued updating and revision of the plan necessary. This will be an ongoing responsibility of the disaster planning and recovery team.

The next section of the case shows a subset of the actual documents from the Corporate Accounts Payable/Freight Payable Business Resumption Plan for a major Midwestern manufacturing company. These documents are presented as they were developed by the company (explanations or clarifications by the authors are labeled as notes to students). The spreadsheet format for the business impact analysis worksheets is standardized throughout the organization. The company headquarters is located in a Midwest city that has a large river. The approximate sales revenue for the company in 2004 was \$30 billion with approximately \$2 billion in profit. The company has locations in North America, South America, Europe, Asia and the Middle East. The Corporate Accounts Payable/Freight Payable department pays vendors for most locations throughout the world.

CASE MATERIAL

Corporate Accounting Services Business Resumption Plan (BRP) Executive Summary

This summary allows quick access to information regarding Corporate Accounting Services (CAS) department actions and employee relocation during a disaster and subsequent recovery.

A. Disaster Recovery Sequence of Events

A disaster and subsequent recovery involve 3 phases: Emergency Response, Crisis Management, and Business Resumption.

Emergency Response includes all the activities necessary to provide for employee safety, stabilize the environment, assess damage, and communicate the extent of the disaster and estimated outage duration to operating departments. Emergency Response procedures are maintained by Corporate Security and Building Services groups.

Crisis Management includes the activities in CAS to coordinate departmental activity during an emergency. This includes the steps to determine the business implications of the disaster, communicate the disaster and implications throughout the department, and authorize execution of the Business Resumption Plan.

Business Resumption includes the steps in CAS to execute recovery strategies for those processes that cannot wait until the primary operating site is restored. Recovery strategies are documented in the "Business Resumption Plans and Call Lists" section of this manual. Each recovery strategy lists the process upper limit for downtime, relocation site, people to relocate, and any required material resources.

B. Corporate Accounting Services Relocation Plan

Relocation plans in this BRP terminate at 60 days under the assumption CAS employees will be returned to their primary site or reassembled in a long-term relocation site by that time. Relocation in the short-term will be accomplished based on the upper limit for downtime and the recovery strategy documented for each process in this manual.

Relocation Sites (Note to students: The acronyms below identify divisions or departments and buildings. For example AD and AB represent buildings and CAS stands for Corporate Accounting Services. It is not important for you to know what each acronym means.)

<u>CAS Area</u>	<u>Relocation Site</u>
Financial Reporting and Analysis	Financial Systems (AD)
Financial Systems (AD)	Financial Reporting and Analysis (AB)
Capital Assets	TTT Division
FAPS (Corp Off, S/COS, Inventory, L&S)	TTT Division
Controls	With Accounts and Freights Payable
Personnel	Controls (LD)
<u>CAS Area</u>	<u>Relocation Site</u>
Cost Management & Business	AD staff to Cost Management (AB),
Development Services	AB staff to CIS (AD)
Accounts & Freight Payables	CIS Financial & Accounting Systems (AD)

C. *Crisis Management Timeline*

A 30-day calendar follows indicating key dates and recovery actions necessary to resume critical business processes and communicate with customers and suppliers. (This timeline is not included in these educational materials.)

D. *Disaster Recovery Organization Chart*

An organization chart is also attached to help visualize the Corporate and building emergency response resources available and how the CAS BRP effort would interact with those resources. (This chart is not attached to these educational materials.)

Additional Explanation For Students¹: Accounts Payable And Freight Payable

The following section describes the worksheets used by the accounts payable and freight payable area to document their plans for bringing their operations back up in the event of a disaster. As noted earlier, the accounts payable and freight payable area pays bills for most of the worldwide locations of the company. The worksheets are split into three divisions including accounts payable, accounts payable freight payable controls division and freight payable. An explanation of the accounts payable business impact analysis worksheet is included next followed by worksheets for accounts payable and accounts payable freight payable controls. You will be asked to complete the worksheet for freight payable based on the narrative provided.

Accounts Payable

Worksheets are used by the Corporate Accounting department to summarize the important information included in their business resumption plan. Figure 1 shows a portion of Business Impact Analysis worksheet created for the Accounts Payable Department and the Accounts Payable Freight Payable Controls Division of the Corporate Accounting area. For the accounts payable area, the first column lists all of the major activities performed by accounts payable while the second column breaks these activities down into smaller processes. For example, the activity record accounts payable includes processes for mail, pricing, rejections, report distribution, data entry, maintaining the invoice register and managing the process.

¹ This type of explanation is not included in the corporate documentation. The worksheets included are based on actual corporate documentation although the information given is fictitious.

The maximum down time represents the longest time period that the company views as acceptable before this process is up and running. The recovery strategy is to relocate all individuals who work in accounts payable to another building owned by the company. Areas within corporate accounting are matched with other firm areas located in a different building. A mutual aid pact is formed between the paired departments that assumes only one of the two departments will need to be relocated so that each department can serve as a relocation site for its paired area. The relocation plan assumes that employees will be returned to their primary site or reassembled in a long-term relocation site within 60 days. The BRP assumes that accounts payable and freight payable employees will be relocated to the fifth floor of the administration building where financial accounting services is located. Accounts payable and freight payable will occupy the space during the 2nd and 3rd shifts.

For each process, the worksheet also contains the expected recovery time in days, the number of people who need to be relocated and any resources required. The general note contains the items that are required for each workstation (regardless of process) including a desk, chair, personal computer, phone and calculator. As a group, the Accounts Payable staff also requires access to a copy machine, FAX, microfiche viewer, and printer. Any special resources required by a particular activity are shown in separate notes. For example, the record process requires date stamps, the verification process requires tax software, the pay process requires a drill to punch paid vouchers, and the support process requires modems and procurement cards. Accounts Payable requires three specialized software packages, ST4, STX, and the EDI program. The worksheet also indicates that a list of suppliers, a list of customers and a contact list are also attached. The worksheet is presented in the standardized format used throughout the organization to ensure that critical information is recorded.

Freight Payable

The following narrative was prepared from interviews with the employees in the Freight Payable area of the Accounts and Freight Payables Department. Employees mentioned in the case were renamed to maintain anonymous. The company involved has approved the use of these materials for educational purposes. The BRP assumes that the freight payables department would be relocated to the 5th floor of the administration building along with the accounts payable department. These employees will be working the 2nd and 3rd shift. The freight payables area contains the activities outlined below.

1. Record activity-Susan Jones staffs the mail desk where freight invoices submitted are initially processed. These invoices are opened, documented and forwarded to the data entry area for formal recording in the data entry area. Susan indicated that she would need a workstation area that included a personal computer, a calculator, a telephone and a date stamp. She also occasionally needs to use a copy machine, a fax machine, and a printer.
2. Data Entry-Brian Jones indicated that the first task in the data entry area is matching of the freight invoice to the receiving record for the freight. Brian indicated that he has nine colleagues who assist him in this process. Brian indicated that he and all of his colleagues would need a workstation area that included a personal computer, a calculator and a telephone. These employees need access to the purchasing and receiving department software to match the invoice with the recorded receiving report. Employees involved in the matching area also occasionally need to use a copy machine, a fax machine, a microfiche viewer, and a printer.

When the matching process is complete, the invoices are forwarded to the four employees who enter the freight invoices into the computer system. These individuals need access to the accounts payable software, a personal computer, a calculator and a telephone. Employees involved in the data entry process also occasionally need to use a copy machine, a fax machine, a microfiche viewer, and a printer.

3. Verify/Pay-contains three processes including rate routing with 4 people, editing with 2 people and vouchering with 2 people.

Javier Rivera from rate routing indicated that he and his colleague Maureen Garnant verify that the rate charged on freight invoices and the routing method used match with the purchase order and with any outstanding agreements that the company has with its freight suppliers. These employees need access to the purchasing and receiving department software to match the invoice with the recorded purchase order and copies of any agreements with freight vendors. Each person would also need access to a workstation area that included a personal computer, a calculator and a telephone. Employees involved in the rate routing area also occasionally need to use a copy machine, a fax machine, a microfiche viewer, and a printer.

Caroline Wendel from editing indicated that she and her colleague Carl Black are involved in resolving any discrepancies between the invoice and the purchase order or the company agreement with freight vendors. To perform their function they need access to accounts payable software, purchasing and receiving software and copies of any agreements between the company and its freight vendors. Each person would also need access to a workstation area that included a personal computer, a calculator and a telephone. Employees involved in the editing area also occasionally need to use a copy machine, a fax machine, a microfiche viewer, and a printer.

Leland Johnson from vouchering noted that he had one colleague Alan Smith who worked with him in inputting the approved freight invoices into the corporate accounts payable system by entering the information into an online voucher. This voucher is then automatically processed and the check written by the accounts payable software. Distribution of these checks occurs in the accounts payable/freight payable controls division. Leland and Alan need access to the accounts payable software to complete their job. They also need access to a workstation with a personal computer, a calculator and a telephone. Alan and Leland also regularly use the departmental copier, FAX, and printer.

4. Support-The Freight Payable area has one manager, Alice Wan, who oversees all processes. Alice indicated that she needs access to a workstation with a personal computer, a calculator and a telephone. She also needs access to any software used by employees in her department. She frequently makes use of the copier, FAX, and printer.

Case Questions

1. The company in this case adopts a mutual aid relocation strategy. What are other options available? What benefits might lead them to choose the mutual aid relocation strategy over other relocation strategies? What risks should the company consider when they use a mutual aid relocation strategy? What controls might the firm use to mitigate the identified risks?
2. What factors do you think should be considered in choosing departmental pairings in forming internal mutual aid pacts?
3. What items of information do you think should be contained on the supplier, customer and contact lists for the accounts payable department?
4. Explain why you think the company set the maximum downtime at 3 days for distribution of AP and FP checks and 60 days for supplier/freight voucher audit.
5. Using the information provided above, prepare a Business Impact Analysis worksheet for the Freight Payable Department. Be sure to explain your assumptions in choosing a maximum down time for each process. If you believe that a contact sheet should be attached for suppliers or customers, simply indicate that in your solution by noting an attachment.
6. What do you think could go wrong with the current firm plan?

Figure 1
Corporate Accounting - Business Impact Analysis Worksheet

Department	Process	Maximum Down Time (days)	Recovery Strategy	Expected Recovery	Resources	People to Relocate	Suppliers	Customers	Contact List Y/N
Accounts Payable									
RECORD	Mail	3	RELOCATE	3 days	Note 1	5	ATTCH 1	ATTCH 2	Y
	Pricing	3	RELOCATE	3 days		18			
	Rejections/Misc. Inv	3	RELOCATE	3 days		4			
	Report Distribution	3	RELOCATE	3 days		1			
	Data Entry	3	RELOCATE	3 days		12			
	Invoice Register	3	RELOCATE	3 days		5			
	Management	1	RELOCATE	3 days		1			
VERIFY	Matching	3	RELOCATE	3 days	Note 2	13			
	Support Clerks	3	RELOCATE	3 days		10			
	Freight Verification	3	RELOCATE	3 days		4			
	Subsidiary Posting	3	RELOCATE	3 days		2			
	Misc Adjustments	3	RELOCATE	3 days		2			
	Internal Vouchers	3	RELOCATE	3 days		2			
	Routing Service Vouchers	3	RELOCATE	3 days		1			
	Defect Desk	3	RELOCATE	3 days		1			
	Training	3	RELOCATE	3 days		3			
	Senior Analysts- Utilities	3	RELOCATE	3 days		1			
	Senior Analysts- Freight	3	RELOCATE	3 days		1			
	Senior Analysts-	3	RELOCATE	3 days		1			
	Duplicate Payment								
	Senior Analysts- cells	3	RELOCATE	3 days		11			
	Tax	3	RELOCATE	3 days		3			
	Management	1	RELOCATE	3 days		6			

Department	Process	Maximum Down Time (days)	Recovery Strategy	Expected Recovery	Resources	People to Relocate	Suppliers	Customers	Contact List Y/N
PAY	Voucher Clerks	3	RELOCATE	3 days	Note 3	7			
	Senior Analyst	3	RELOCATE	3 days		1			
	Control Clerks	3	RELOCATE	3 days		2			
	Debit Balance	3	RELOCATE	3 days		1			
	Files	3	RELOCATE	3 days		1			
	Supervisor	1	RELOCATE	3 days		1			
SUPPORT	Secretary	1	RELOCATE	3 days	Note 4	1			
	Procard Assistant	3	RELOCATE	3 days		1			
	EDI	1	RELOCATE	3 days		2			
	Supervisor	1	RELOCATE	3 days		1			
	Equipment/ Bus. Plan	1	RELOCATE	3 days		2			
	Manager	1	RELOCATE	3 days		1			
						128			

General Note- Includes the following at each work station:
 Desk, Chair, Personal Computer, Phone, Calculator
 - available to group: Copy machine, FAX, Microfiche viewer, Printer

Note 1- Date Stamps
 Note 2- Tax Software
 Note 3- Drill
 Note4- Modem
 Procurement Cards
 Software:
 ST4, STX, EDI

Relocate to Admin Bldg.
 5th Floor-
 FAS 2nd and 3rd Shift

Note to students: Supplier lists include the names of all vendors for the company. The customer list is the list of all departments and divisions served by the accounts payable area. Since they are a service department, their customers are internal to the company. The contact list includes all necessary contact information for the individuals in the supplier and customer areas and any other important contacts.

Department	Process	Maximum Down Time (days)	Recovery Strategy	Expected Recovery Time	Resources	People to Relocate	Suppliers	Customers	Contact List Y/N
Accounts Payable/Freight Payable Controls Division	Distribution of AP and FP checks	3	Relocate	3 days		11 in total for all processes	AP & FP Information Services Check Processing	All company suppliers All company freight vendors	N
	Distribution of Wage Garnishment Checks	7	Relocate	7 days		“	Payroll/Legal Personnel Information Services-Check Processing Auditors	Wage Garnishment Recipients	N
	Provide monthly audit results to AP and FP personnel	60	Relocate	60		“		AP and FP	N
	Continuous Audit of AP and FP documents: Supplier Freight Voucher Audit	60	Relocate	60	Voucher Package, Accounts Payable Software, Calculator, PC	“	AP & FP	AP & FP	N
	Debit Memo Audit	60	Relocate	60	Debit Document, Accounts Payable Software, Calculator,PC	“	AP & FP	AP & FP	N

Department	Process	Maximum Down Time (days)	Recovery Strategy	Expected Recovery Time	Resources	People to Relocate	Suppliers	Customers	Contact List Y/N
	Continuous Audit of AP and FP documents:								
	Credit Memo Audit	60	Relocate	60	Credit Document, AP Software Calculator, PC	“	AP & FP	AP & FP	N
	Supplier Invoice Audit	60	Relocate	60	Supplier Invoice, AP Software Calculator, PC	“	AP & FP	AP & FP	N

Note to students: Since the accounts payable freight payable controls area serves to audit and control the accounts payable and freight payable areas, their supplier and their customer is the accounts payable freight payable area for all audits. They receive the input for their distribution of checks and performance of audits from the AP & FP area and the result of their audits are returned to the AP & FP area. The customers for disbursement of checks include any vendors or recipients of wage garnishment.

CASE LEARNING OBJECTIVES AND IMPLEMENTATION GUIDANCE

This case material was compiled from the actual disaster recovery planning documents of a large multi-national manufacturing company. We present the material in the same format used by the company and use notes to students to provide some explanations or clarifications to facilitate students' understanding of case material. Our experience shows that most students in the introductory course simply memorize some facts about disaster recovery planning but often do not really understand the comprehensive nature of the process. Textbooks generally address only the information technology area so students may not understand the importance of business resumption planning for all areas of the business. This case is designed to illustrate a real world business resumption plan. The use of materials based on actual documentation from an actual company appeals to students because they know it is real. The case can easily be covered in a single class period and students reported that it took approximately an hour to prepare for the case discussion and complete the answers to the case questions. The case is designed for use in the introductory Accounting Information Systems course. The first part of the case provides students a basic overview of disaster recovery planning and the second part of the case focuses on the business resumption plan for a corporate accounts payable department. This case not only provides students an opportunity to learn what a disaster recovery plan is, to understand the need for such a plan, and to prioritize the operations, it also stimulates students to consider factors (risks) involved in relocating their business unit and resuming the business operations should disasters occur.

The case was tested in a junior-level accounting information systems class. It took about 30 – 45 minutes of class time to go over. Students' feedback was very positive. Students were given a pretest to assess their level of understanding of disaster recovery. They had not yet read the text material on disaster recovery at the time of the pretest. After reading the text material and completing the case, the students were given a post-test to assess whether they understood the material better. We surveyed several leading Accounting Information Systems textbooks² and found that they cover the topic at a relatively high level and do not address business resumption planning for departments and divisions other than information technology. The importance of documentation is discussed but there are no examples of documentation included in the text. In addition, these textbooks either do not clearly address the need to prioritize activities or do not specify a process for identifying which activities should be concentrated on first. The case is designed to supplement the text and reinforce important process concepts so that students would have knowledge of how to approach the creation of a business resumption plan for the area in which they work.

Test Results

To determine whether students benefit from the case, we analyzed students' knowledge about business resumption planning before and after covering the case in class. Table 1 shows the results of the pretest and posttest questionnaires.

Table 1
Pretest And Posttest Results

Question- Pretest and Posttest	Pretest mean	Posttest mean	T- test value (p-value)
How well do you know about Disaster Recovery and Business Recovery (Continuity) plan?	2.48	4.58	-10.1 (<.0001)
What options are available for companies' relocation strategies	.07	3	-57 (<.0001)
Within the accounting function, there are processes relating to accounts payable, freight payable, and continuous audit of accounts payable and freight payable documents. Please rank them in terms of the order these processes should be resumed, assuming that it is impossible to resume all three of them at the same time (1 as the first to resume and 3 as the last to resume).	.37	.92	-5.16 (<.0001)

² The textbooks we surveyed include Romney and Steinbart, 10th edition; Hall, 3rd edition; Moscovice, Simkin, and Bagranoff, 8th edition; Bodnar and Hopwood, 8th edition; Dunn, Cherrington, Hollander, 3rd edition; Bagranoff, Simkin, Strand, 9th edition; Gelinias, Sutton, Hunton, 6th edition

Three questions appear on both surveys so we are able to do a comparison of the pretest and posttest responses. The question regarding the student’s knowledge of disaster recovery was scaled from 1-never heard about the term to 5-know well about what it is. The options available for companies’ relocation strategies were graded based on the number of the three major relocation strategies that students were able to list. The question regarding resumption of processes was scored based on a 1 or 0 assessment. Students who recognized that audit should be resumed last were given a score of 1 and students who included audit as 1 or 2 were given a score of 0. The order of accounts payable and freight payable was considered irrelevant as long as they were listed as items 1 or 2.

The students familiarity with the topic increased significantly after the case discussion (mean_{pretest} = 2.48, mean_{posttest} = 4.58, t = -10.10, p<.0001). Most students were not aware of any relocation options prior to the case discussion and made significant progress after the case discussion (mean_{pretest} = .07, mean_{posttest} = 3.0, t = -57, p < .0001). Another question asks students to prioritize various processes that need to be resumed. Once again, students increased their knowledge of the topic following the case discussion (mean_{pretest} = .37, mean_{posttest} = .92, t = 5.16, p < .0001).

Table 2 includes responses from the posttest questionnaire regarding the usefulness of the case, the length of time it took to complete the case, and the difficulty of the case. Students took approximately one hour to prepare the case, the majority found the case to be very helpful, and rated the difficulty between somewhat easy and somewhat challenging.

Table 2
Student Feedback

Question	Mean response score
Do you find the case is helpful for you to learn about the disaster recovery plan? (1= not helpful at all, 2=somewhat helpful, and 3=very helpful)	2.63
How long did it take you to go through the case?	65.6 minutes
Please rate the difficulty of the case in terms of reading and answering questions. (1= very easy, 2= somewhat easy, 3= somewhat challenging, and 4= very challenging)	2.56

The pre- and post-test comparison reported in Table 1 only shows that students made significant improvement after reading the textbook, listening to the lecture, and discussing the case. However, we cannot make the conclusion that the teaching case is the main contributing force to the improvement. To better determine the benefits of the teaching case, a similar questionnaire was administered to a different section of the same junior-level accounting information systems class offered in the same department and in the same semester. Both sections use the same textbook and have same material coverage, but are taught by different instructors. Students who filled out the comparison questionnaire read the textbook and completed the lecture, but did not complete the teaching case (control group). We asked students to indicate if they have work experience and if they ever encountered a disaster recovery plan at work. There is no difference between two classes on the work experience variable or exposure to a disaster recovery plan at work.

Table 3 presents the results of these comparisons. For the first two questions, the control group scored significantly higher than the treatment group pretest. Reading the textbook and attending to the lecture appears to help students in learning the material. The scores for the posttest of the treatment group are significantly higher than the scores of the control group, confirming the benefit of using the teaching case. For the third question, the control group did not score significantly higher than the treatment group (pretest). However, the scores for the posttest of the treatment group are significantly higher than the scores of the control group. This implies that students do not know how to prioritize business functions even after reading the textbook and attending to the lecture. However, after the case discussion, students seem to have a clearer understanding of the material.

Overall, we found that students knew more about this particular topic after reading the textbook and attending the lecture. However, students gained even more from the case discussion. Therefore, we believe that this teaching case is a useful tool in facilitating students' understanding of the topic.

Table 3
Impact Of The Teaching Case

Questions-	Pretest mean	Control group Mean (P value is in parentheses)	Posttest mean (P value is in parentheses)
How well do you know about the Disaster Recovery and Business Recovery (Continuity) plan?	2.48	3.67 ($<.0001$)*	4.58 ($<.0001$)**
What options are available for companies' relocation strategies	.07	.56 ($=.0002$)*	3 ($<.0001$)**
Within the accounting function, there are processes relating to accounts payable, freight payable, and continuous audit of accounts payable and freight payable documents. Please rank them in terms of the order these processes should be resumed, assuming that it is impossible to resume all three of them at the same time (1 as the first to resume and 3 as the last to resume).	.37	.44 ($=.59$)*	.92 ($<.0001$)**

* The t-statistic for the difference between the mean of the pretest and the control group is -5.86 for the first question, -4.03 for the second question, and -.55 for the third question.

** The t-statistic for the difference between the mean of the control group and the posttest is -5.86 for the first question, -22.66 for the second question, and -4.37 for the third question.

CONCLUSION

The paper introduces a business resumption planning teaching case based on the documentation of a real company. This case supplements the typical AIS textbook material by focusing on an area outside of information technology. This helps students understand that business resumption planning is needed in all company units. The case can be covered in 30 to 45 minutes.

The teaching case was implemented in an introductory accounting information systems class. Comparisons of students who completed the case and those who did not indicated students benefited from the discussion of the case.

Teaching Notes

Teaching notes are available upon request from the authors.

Sources of Additional Information

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