AFIT/GIR/LSR/92D-2

A STUDY OF ORGANIZATIONAL DOWNSIZING AND INFORMATION MANAGEMENT STRATEGIES

THESIS

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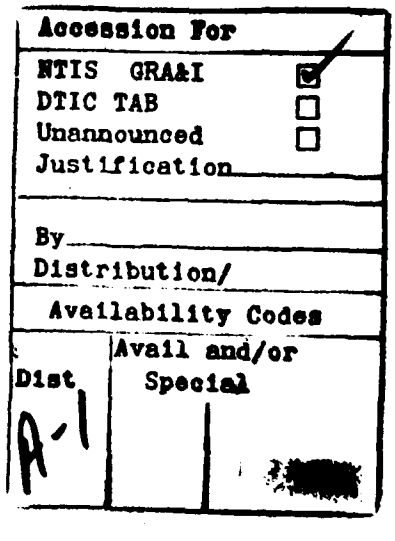

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
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Preface

The purpose of this study was to perform initial exploratory research into potential relationships between organizational downsizing and strategic information management. Downsizing, a form of restructuring, has been a major trend in organizations in the last decade. It almost always significantly impacts an organization and can have a major bearing on that organization's continued success. Likewise, how an organization manages its information also plays a major role in its success. Because these two issues are so important to so many organizations, the question arises: Is there a relationship between the two?

This study may be important to the Air Force as it continues both its largest downsizing in history and implementation of new information technology and management practices. Air Staff planners need to consider a change to one part of the Air Force as a change to the entire organization, with effects that may reach far beyond the specific areas targeted for change.

We would like to thank the managers from the six organizations we interviewed for taking time from their busy schedules to participate in this study. This thesis would not have been possible without them. We would also like to thank our advisors, Lieutenant Colonel Clyde C. Caufield and Major Wayne G. Stone for their guidance, expertise, and occasional refereeing.

Ms. Brown would like to give special thanks to Major Wilson Guilbeaux for his friendship and support during these past few months. Captain Long would like to thank his fiancee, Christina, for her love, support, and patience during the frequent times when this research forced him to spend more time with his computer than with her.

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Abstract

Organizational downsizing and strategic information management are two important trends that have developed in the business world over the last 10 years. This study was conducted to identify possible links between these two trends. It also tried to identify some potential benefits and pitfalls associated with simultaneously restructuring an organization and upgrading its information management systems. A review of available literature disclosed that while extensive research had been done previously on both downsizing and information management, there were no apparent attempts by past researchers to link the two subjects. Therefore, this study is initial, descriptive research in this area. Interviews were conducted with six organizations of varying size and type that had both downsized and upgraded information systems. While the small size of the sample and time constraints on the authors limited the depth and scope of the study, some significant information about relationships between downsizing and information management strategies was found. In most cases, organizational managers did not plan the two as a unified effort. However, there were some indications that planning the two in unison might produce better results. Several areas were identified where additional research may help further define and identify the possible relationships found in this study.

A STUDY OF ORGANIZATIONAL DOWNSIZING AND INFORMATION MANAGEMENT STRATEGIES

I. Introduction

General Issue

Organizational downsizing was a major trend of the 1980s. More than 85 percent of Fortune 1,000 firms downsized between 1987 and 1991, with more than 50 percent of them downsizing in 1990 alone (Cameron and others, 1991:58). The Air Force is not immune to this trend. Due to congressional mandates, the Air Force is downsizing in fiscal years '91 through '93, with a projected decrease in personnel of 20,684 (Maze, 1991:3).

When it became clear that reductions in recruiting and commissioning would fail to sufficiently reduce the number of personnel on active duty, the Air Force was forced to turn to manpower cuts to meet the requirement of the force reduction (Maze, 1991:3). The service is attempting to reduce force size through voluntary separation incentive programs and involuntary reductions in force. This reduction is currently in progress and is projected to continue through the end of fiscal year 1993.

Specific Problem Statement

This research examines information management strategies used by organizations during downsizing. Air Force strategic planners have no clearly defined information management strategies associated with downsizing. (AUSG, 1991:Appendix 2).

This research is descriptive. In this study, the researchers looked at organizations that both downsized and installed or upgraded an information system within the last ten years. The researchers hoped to make some very broad categorizations from the study about a possible relationship between strategic planning for downsizing and for an information management system. This research will describe what top management in

some organizations considered when planning for downsizing and developing new strategies for managing information, i.e. examples of what other organizations have tried in the past during the downsizing process. The information was drawn from a sample population of organizations that have downsized and employ information management systems of some type. The sample population is outlined in greater detail in Chapter III.

Investigative Questions

The objectives of this study are to answer the following questions:

1. Why did the organization downsize? Was downsizing driven by external factors such as the economy or by an internal determination that the organization could function more efficiently with fewer people?
2. What downsizing methods did organizations select and why?
3. What information management strategies did organizations select, and why?
4. How were these strategies implemented? What specific tactics were used at each level of the organization?
5. What was the perceived effectiveness of the various strategies and tactics?
6. What was the relationship between downsizing and the information management strategies?

Scope and Limitations

Ideally, this research would involve gathering data from all civilian organizations that have downsized and data on how those organizations used their information management systems in the reduction process. The scope of this research is limited to civilian organizations that have downsized and are within a 500 mile radius of the Dayton area. While this narrow scope limits the size and randomness of the sample, it is manageable and allows greater depth of investigation with personal contact and follow-up interviews with respondents. While the use of personal interviews to gather information is a benefit, it can also be a limitation. It is limited in the fact that the

information obtained consists of post hoc perceptions rather than direct observation by the researchers. Observation provides the opportunity to collect data at the time it occurs and thus ensure its completeness (Emory and Cooper, 1991:402). With post hoc interviews, the researcher loses this opportunity.

The scope of this research is also limited due to the nature of the organizations studied. Six organizations were included in the sample; they varied greatly in their industry. Since the organizations do not cover the spectrum of industries, the results cannot be generalized to all organizations.

Definition of Terms

The following terms are used throughout this research:

Demassing: The process of removing "large chunks of managers and professionals" from organizations solely for the purpose of reducing personnel-related costs (Tomasko, 1990:29).

Downsizing: Reduction in the size of an organization that generally involves a horizontal and/or vertical flattening of organizational structure. Objectives include lowering costs, speeding up decision making, pinpointing individual responsibility, and increasing management productivity (Tomasko, 1990:59-61).

Strategic Planning: Deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use and disposition of these resources (Ahituv and Neumann, 1990:111).

Information Technology : devices that transmit, manipulate, analyze, or exploit information (Huber, 1990:48).

Management Information System: An information system that makes some managerial decisions and provides managers at all levels of an organization with the information needed for making other decisions (Ahituv and Neumann, 1990:133).

Strategic Information Systems: Information systems specifically configured to particular organizations and their management systems with the purpose of helping the organization achieve its overall strategic objectives (Ahituv and Neumann, 1990:200).

Database Management System (DBMS): A software package specially designed to flexibly share several databases among multiple users (Ahituv and Neumann, 1990:587).

Decision Support System (DSS): Computerized systems that decision makers in the process of making unstructured decisions. A decision support system relies on "the decision maker's insights and judgement in all stages of problem solving -- from problem formulation, to choosing relevant data, to selecting the alternative solutions, and on to evaluating the solutions" (Ahituv and Neumann, 1990:163-4).

Executive Information System (EIS): "An executive information system is a computer-based means by which information can be accessed, created, packaged and delivered for use on demand by high-level, nontechnical executives" (Fireworker and Zirkel, 1990:25).

Structured Decision Systems (SDS): Also known as expert systems, structured decision support systems are those systems that make structured, programmed decisions. Within given parameters, they simulate the decision an expert would make in a set situation (Ahituv and Neumann, 1990:161).

Potential Contributions

This study is being sponsored by the Assistant for Strategic Planning, Directorate of Information Management, Office of the Secretary of the Air Force. The sponsor feels that research in this area will be valuable to Air Staff planners as they prepare for the downsizing the Air Force is currently scheduled to undergo by 1995. The sponsor indicated that examples of strategic planning from civilian organizations who have

undergone downsizing may provide useful examples for Air Staff planners, particularly if they include information management as part of those plans.

The relationship between downsizing and an organization's information system, if there is one, is not well defined. This study may shed some light on the relationship and perhaps define it. Since the study involves looking at the downsizing strategies organizations used and whether the information system was considered in the strategy, some determination about effective and ineffective approaches could be made. This could provide Air Force strategic planners with useful information so they can avoid some of the problems encountered by other downsizing organizations.

Summary and Overview

This chapter explained the pervasiveness of downsizing in the 1980s and its impact on organizational strategic planning. Because there are no information system models currently outlined for use by strategic planners, there is a need for this research. Six investigative questions were proposed, the answers to which will assist strategic planners faced with downsizing decisions. It described the limited scope of the research and defined key terms associated with downsizing, strategic planning, and information systems.

The sequence of the following chapters is as follows: Chapter II is a literature review which previous research in the areas of downsizing, strategic information management, and applications of information technology. Chapter III outlines the research methodology the researchers used to answer the investigative questions. Chapter IV describes the organizations who participated in the research and outlines their downsizing and information management strategies. Chapter V outlines relationships observed by the researchers between the seven organizational case studies and recommendations for more specific future research.

II. Literature Review

Background

Though there is significant evidence that information management plays a vital role in organizational success, there is no research that specifically investigates the impact of information management on downsizing or the relationship between the two. Therefore, a need for research in this area has been identified (Air University Study Group, 1991:Appendix 2). The purpose of this review was to discover if previous research identified links between strategic information management practices and organizational downsizing.

Review Scope

Literature was reviewed in three areas: downsizing, strategic information management, and specific applications of information technology. In the organizational behavior area, attention was focused on sources dealing with downsizing, including both early ones predicting downsizing and current ones reviewing corporate downsizing operations in the last decade. In the information management area, attention was focused on sources dealing with information management strategies prior to the downsizing operations of the 1980s and sources documenting information management strategies developed during the 1980s when downsizing became widespread. In the information technology area, research concentrated on the specific impact that particular technologies may have on organizations and their operating practices. While no established links between information management strategy and downsizing were found in individual sources, discovery of the information practices used by companies known to have downsized during the period may provide a basis for further research in this area.

Downsizing

Downsizing as a result of technological advances was predicted as early as 1958 (Leavitt and Whistler, 1958:41,44). It was theorized that some routine, programmable functions performed by humans could be replaced by automated systems. Leavitt and Whistler were among the first to predict that certain information-related tasks performed by humans could be performed by automated systems. The technology to implement this prediction, however, did not become readily available until the development of the microchip in 1973 and subsequent advances in software programming.

> It wasn't until the mid 1980s that the right ingredients finally came together: powerful PCs and workstations that could shape masses of numbers into simple, colorful tables and charts; the touch screen and the mouse; interconnections that could weave a single network out of a company's different hardware and databases; and the software to turn it all into a system. (Main, 1989:77)

New developments in organizational theory paralleled technological advances. Links were established between organizational decision-making and information processing (Galbraith 1974:28-36). Further research in the 1970s developed the view of organizations as information processing systems (Tushman and Nadler, 1978:614). Organizational downsizing, however, did not become widespread until the 1980s, when American corporations were pushed into it by growing competitive pressure and economic difficulties (Heenan, 1989:23).

Olson (1982:71-92) summarizes predictions of changes that may occur in individual work patterns, management control, and organizational structure as a result of implementation of office technology. In particular, she states:

> Predictions of the effects of office automation vary widely. Generally, it is claimed that office automation will increase office productivity. The underlying assumption is that the same amount of office work can be performed with fewer people, or the same number of office workers can handle increased volumes of office work. However, predictions regarding the organization and skill requirements of the remaining office work force still vary widely. (Olson, 1982:71)

Several researchers (Tomasko, 1990:74; Browning, 1990:13; Rossetti and DeZoort, 1989:29) challenge Olson's assertion concerning the increased efficiency due to office automation. Tomasko cites the example of accountants in corporations. The number of accountants on staff increased by 30 percent between 1978 and 1985; this at a time when corporations were emphasizing automation of accounting functions. Tomasko concludes that efforts at productivity improvement (automation) can actually have the opposite result by increasing the frequency and number of reports generated. Browning discusses a report that indicates "the average output of an American information worker has not budged since the early 1960s-despite huge growth in...the average technology investment...." (1990:13). In other words, computers did not increase productivity. Finally, according to Rossetti and DeZoort, information technology and effectiveness are not synonymous. Information technology alone is not enough; an organization must change its structure and processes to better use its information technology.

Olson's comments regarding the "remaining office work force" and predictions that adding technology will increase productivity with the same number of workers or maintain productivity with fewer workers precede the majority of organizational downsizing operations in the 1980s.

More than 85 percent of Fortune 1,000 firms downsized between 1987 and 1991, with more than 50 percent of them downsizing in 1990 alone (Cameron et al, 1991:58). The American Management Association tracked and documented downsizing through the 1980s, but concentrated on the numbers of people affected, not the specific strategies associated with downsizing.

> Nearly six out of ten large firms, defined as those with more than $500 million in annual sales, reported a reduction in force in the past 18 months, with an average of 2,770 employees (or 8.9% of the workforce) let go. Half of the sample's mid-sized firms (those with sales of between $50 and $500 million) downsized, costing an average of 125 jobs (or 11.1% of the firm's employees). Among small firms (those with less than $50 million in annual sales), 40% reduced their workforces, with an

average of 39 workers (or 13.6% of the firm's employees) terminated. (Greenberg, 1987:35)

Much of the literature reviewed dealing with organizational behavior and management concentrated on personnel issues. Because "human service" is a key part of an information system (The Society for Management Information Systems, 1970:17), an understanding of these issues may be important in dealing with the human component of organizational information systems during downsizing operations. Various sources covered types of downsizing strategies (Lawrence and Mittman, 1991:33-37), dealing with employee morale (Alevras and Frigeri, 1987:29-31; Fisher, 1988:42-52), and planning new roles for managers in downsized organizations (Horton and Reid, 1991:22-23). There is some evidence, however, that downsizing by simply reducing the number of employees was mismanaged by American corporate managers, and that further downsizing is still needed (Cameron et al, 1991:58; Heenan, 1989:18; Henkoff, 1990:40). Only Heenan (1989:23) mentions information technology's "important role" in downsizing, but mentions no specifics in this area.

Downsizing processes can be classified in several ways, ranging from a broad strategic perspective to specific tactics.

Cameron et al (1991:62) describe three types of strategies: workforce reduction, structure change, and systemic change. Workforce reduction is what is typically thought of when downsizing is discussed. Reduction includes layoffs, attrition, buyouts, and retirement incentives. Lawrence and Mittman (1991:33) further delineate the reduction strategy into the specific tactics of the "preventionists, people pushers, and parachute packers." Preventionists try to avoid layoffs through pay cuts, hiring freezes, part-time work, and job sharing; all in an attempt to retain employees. People pushers try to entice people to leave the organization through attractive early retirement and

voluntary separation incentives. Parachute packers resort to laying off employees, but try to cushion the blow with severance pay and extended health benefits.

Kozlowski et al (1991:28-29) categorize downsizing tactics along the same lines, but use five categories rather than three. The categories are normal attrition, induced redeployment, involuntary redeployment, layoff with outplacement, and layoff without outplacement assistance. Attrition relies on the normal ebb and flow of people in an organization--people leave and are not replaced. Induced redeployment "offers employees incentives to comply with downsizing efforts." (Kozlowski et al, 1991:28) Methods include transfer, early retirement, limitations on promotions, part-time schedules, job sharing, and leave-without-pay. Involuntary redeployment is the same as the voluntary program except employees are forced to participate in the program. Demotion is an additional involuntary tactic. The final categories, layoff with and without outplacement assistance, are just what they imply. Employees are terminated, but in the first case are assisted in transitioning out of their jobs, while in the second case, no assistance is provided.

The second strategy described by Cameron et al (1991:62) is "organization redesign." This involves changing the organizational structure through elimination of functions or layers of the organization, merging sub-units, or redesigning tasks.

Cameron et al (1991:62) final strategy, systemic change, involves "changing the mind-set or culture of the organization." It is a long-term change implemented in an effort to avoid the need for future short-term reductions. Few organizations turn to systemic strategies.

The firms most successful at downsizing implemented all three strategies: workforce reduction, organization redesign, and systemic strategies. (Cameron et al, 1991:62)

Tomasko (1990:57-58) also discusses what it takes to successfully downsize. He states five principles learned from successful downsizers. These are "start before you have to; prepare for the downside; use a rifle, not a shotgun; continually manage size and shape; and go after more than costs and jobs." Discussion of these principles follows.

"Start before you have to." Tomasko suggests organizations not wait until they are forced to downsize, but rather react when early warning signs of the impending need to reduce become evident. An organization that is forced to downsize is more likely to face the dangers inherent in the process: decreased morale, creation of a revolving door syndrome where as fast as managers are dismissed, new ones are needed to do the remaining work, survivor guilt, creation of a sense that bargains and promises have been broken, etc. Acting early, before it is absolutely necessary, allows better preparation and planning.

"Prepare for the downside." Tomasko stresses it is essential that organizations prepare for downsizing. He quotes Harry Levinson as saying, 'To undertake successful organizational changes, an executive must anticipate and provide means of working through that loss.' (1990:218). Tomasko (1990:218) suggests an organization set up task forces to deal with the different issues that arise in the downsizing process. Working through these issues ahead of time will put the organization that much ahead of the game once downsizing is implemented.

"Use a rifle, not a shotgun." According to Tomasko (1990:70), reductions should be pinpointed; specific staff and/or management layers should be cut rather than initiating an across-the-board reduction target. It is important that organizations diagnose where the problems lie: are there too many management professionals or too many management functions? Each situation requires a different downsizing strategy.

"Continually manage size and shape." Tomasko (1990:58) points out that the downsized organization differs, perhaps significantly, from what it originally was, and managers have to be trained to run the new organization. "Sustainable downsizing, in most cases, requires completely rethinking the logic behind a corporation's organization" (Tomasko, 1990:238).Other organizational changes must be implemented in order for the organization to remain streamlined and lessen the chance that more downsizing becomes necessary. "Changes also need to be made in organizational structure, compensation systems, career ladders, hiring and training practices, and at times the overall corporate strategy" (Tomasko, 1990:58).

"Go after more than costs and jobs." Tomasko's final point is downsizing should be an attempt to gain benefits other than cost savings and a lower head-count. Downsizers tend to focus on decreasing the number of personnel and may give only lip service to other objectives such as faster decision making and improved line management morale. He says good downsizers want to accomplish more than job elimination. "For them [planned downsizers], the overall goal is to build the most efficient and effective organization they can, and then to put practices in place that will keep on delivering this kind of organization" (Tomasko, 1990:59).

Strategic Information Management

There are clear links between effective management of information and organizational success. "The strategic application of [information technology] may well be the single most important factor of determining winners and losers" (Hughes, 1990:105). "Strategic planning for information systems is imperative to the survival of any organization" (Carter et al, 1990:10). One source (Bakos and Treacy, 1986:107-119) surveyed previous research dealing with the influence of information technology on individual organizations and processes that allow smooth integration of technology and

corporate strategy. The researchers then attempt to develop a comprehensive viewpoint of the specific relationship between technology and organizational strategy.

Strategic planning for an information system should be integrated into the overall strategic planning for an organization. The information system plan cannot exist as an island unto itself. King (1985:vi-vii) makes the point that information systems strategic planning can be successful only if (1) it is related to the overall business strategy (2) the information resources, both existing and planned, are used to identify possible positive changes than can be made to the business strategy and (3) the information system is a strategic weapon to be used by the organization.

Battaglia (1991:23) states that an organization's information processes should be aligned with the "strategic direction of the company" (1991:23). He calls this alignment process a "management function" which implies it is something that managers should do. According to Burch, "Management continually asks [or should ask], 'How can we deploy our information system to support our company's strategic goals?'" (Burch, 1990:21).

In addition to the new emphasis on including information systems planning in overall strategic planning, senior executives, strategic planners, and information systems managers are increasingly turning their attention to opportunities for achieving competitive advantage through information technology (Bakos and Treacy, 1986:107-108). Bakos and Treacy offer several explanations for this recent trend, not the least of which is the publicity received by companies that have gained significant competitive advantage through information technology. The unstable economic conditions of the last few years have helped create a challenging business environment and an "economic imperative" for information technology. The technology is also offering a greater array of capabilities at lower costs than ever before. Finally, firms' abilities to use the technology are also improving. The transaction processing and

decision support systems already in place in most firms provide a base on which systems for competitive advantage can be built. Without this base, many of these systems would not be possible.

Organizational decision making style, form, and size are variables that affect the successful implementation of information systems. Organizational structure will determine the information system type (Tavakolian, 1989:309-315). The use of information technology, on the other hand, may also have an impact on these same variables. Increased use of more advanced information management systems is linked to "flattening" of organizational structures. "The typical large business 20 years hence will have fewer than half the levels of management of its counterpart today, and no more than a third the managers" (Drucker, 1988:45). Examined together, these two articles imply that the original structure of an organization will determine the type of information system used, and that the organizational structure may, in turn, be modified by the presence of the information system.

According to Zinn, "experts agree that [the] ability to cross-reference information and share common data within an organization will be key to competitiveness in the 1990s and beyond" (Zinn, 1990:72). A review of literature from the last five years on the roles of information technology and management information systems in corporations disclosed two trends. First, the use of information technology will be used to achieve increased market share and improve product quality. Second, management information systems will be used to analyze strategy and aid decision making.

In order for an organization to remain competitive, it must use advanced information technologies (Huber, 1990:51). This point of view is shared by several authors (Sen, 1987:137; Browning, 1990:5; Bakos and Treacy, 1986:112) writing on the use of information technology in the corporate world. Although they define competitive in different ways, the issues of cost reduction and increased market share surface time

and again. Sen, for instance, says that information technology, when used fully, can be a valuable resource for a company. He further states it can impact the organization by reducing costs, increasing market share, and improving product and service quality. Browning agrees that information technology can affect the company in three areas: productivity, competitive advantage, and responsiveness. Productivity can improve when a company replaces people doing routine jobs with machines. A company can enhance itself in the eyes of its customers through information technology. American Airlines and American Hospital Supply both used innovations in information technology to carve niches in their respective industries. Information technology can also help a company respond more quickly to its customers' needs.

Bakos and Treacy (1986:112) also discuss information technology and competitive strategy. They describe four areas of opportunity for information technology to support competitive strategy:

> (1) improvement of operational efficiency and functional effectiveness, (2) exploitation of interorganizational synergies, (3) product innovation with IT [information technology], and (4) acquisition of bargaining advantage over one's customers and suppliers. (112)

Improving operations is important to the organization internally, but not of great significance in enhancing the organization's competitive advantage. Synergism leads to cooperative information systems among organizations, often to the benefit of all involved. Information technology impacts both products and service. New technology can become an attribute of a product, making the product more valuable, or it can improve a service, making the service more appealing to customers. Finally, through information technology, an organization can make itself indispensable to a customer by providing unique and/or previously unavailable information or services. By doing so, the organization becomes the customer's provider of choice (Bakos and Treacy, 1986:113).

Information technology influences company strategic operations in several ways. For instance, decision makers have traditionally obtained information by way of an information-processing network consisting of individuals at different levels and positions in the organization. Because of the number of people involved, information can be distorted and is often late in arriving. To reduce distortion and improve timeliness, managers often turn to computer-assisted technologies (Huber, 1990:59). Computers can be used for information processing in the place of some clerical workers and managers; the fewer individuals information travels through, the less opportunity for distortion and delay. A possible problem with the "elimination of intermediate nodes [clerical workers and managers]" (Huber, 1990:59) is the decision maker may become overloaded with information. This, obviously, could prove detrimental to the effectiveness and efficiency of an organization.

Menkus says the purpose of most information systems is to provide clarification for management. Managers have difficulty remaining current on all operations in large, complex organizations. Since the manager is unable to directly observe what is going on, he must rely on the information system to provide information (Menkus, 1990:5).

Two sources (Menkus, 1990:5; Tomasko, 1990:3-4) advocate the use of information technology, specifically management information systems, to aid in executive decision making. Menkus says, "systems need to become, in effect, an extension of management, rather than simply another means of dumping great quantities of information into the executive suite" (5). Tomasko stresses that to remain competitive, managers must "keep up with developments in information technology and must explore using expert systems as a way to strengthen their managers capabilities" (3-4).

Hughes (1990:107) discusses several ways information impacts strategic management. Because computer terminals may be located virtually anywhere in an

organization, everyone has access to data; design concepts become reality in short order and corporate personnel have direct interfaces with manufacturers, suppliers, and customers. All of this means it takes less time to get things done in a corporation that fully uses its information technologies capabilities.

All of the literature reviewed in this area clearly implies that effective use of information technology is essential to good decision making. Bush and Robbins underscore this by pointing out that a manager has information based on his own knowledge and experiences and that a management information system supplies extrinsic information derived from sources outside of the manager. (Bush and Robbins, 1991:8). This is seconded by Huber (1990:50) who feels information systems have certain properties that aid the decision maker's ability:

> (a) to store and retrieve large amounts of information quickly and inexpensively; (b) to more rapidly and selectively access information created outside the organization; (c) to more rapidly and accurately combine and reconfigure information so as to create new information (as in the development of forecasting modes or financial analyses); (d) to more compactly store and quickly use the judgment and decision models developed in the minds of experts, or in the minds of the decision maker, and stored as expert systems or decision models; and (e) to more reliably and inexpensively record and retrieve information about the content and nature of organizational transactions. (50)

Applications of Information Technology

The next group of literature reviewed covered strategic applications of information technology and the impact of those technologies on the organizations involved. Menkus (1990:5) says, "systems need to become, in effect, an extension of management, rather than simply another means of dumping great quantities of information into the executive suite". However, while some studies of information system implementation exist, none of those reviewed contain specific references to organizational downsizing. The absence of references regarding information systems and downsizing prompted these researchers to examine the issue.

Zinn (1990:73) described information systems in the banking world. He notes that information systems in financial institutions have, in the past, focused on the transaction processing part of information technology. The system tended to be very decentralized and data was not integrated among the various parts of the system. Because of the lack of integration, information often did not reach the decision makers. In order to remain competitive, banks must move away from the attitude of an information system as a transaction processor and toward the concept of an information system as a strategic management tool. Institutions that modify their attitudes will move to the forefront of the industry. It is important that data be shared among areas so that it can be converted into information useful to decision makers.

Meador and Mahler (1990:64-65) examine the differences between information management systems implemented at two large organizations, Dupont and Digital Equipment. The main reason each company chose a particular information system was the difference in the computer literacy of their employees. DuPont used a "dispersed" approach, with end-users "developing their own systems using standard, low-cost tools." Digital, on the other hand, used a "centralized" approach involving a "centralized development center where specially trained programmers or knowledge engineers used custom tools to create systems." Both systems were tailored to the computer literacy of the respective corporate staffs, the Digital staff being highly computer literate and the DuPont staff being more business oriented.

Fireworker and Zirkel (1990:26-31) studied the implementation of an executive information system (EIS) in an unnamed multidivisional corporation. They identified on six problems involved with implementing an EIS: politics, logistics, hardware, software, time, and cost. They describe how these problems may affect implementation and note the gains each company made in productivity and cost savings through using their respective systems.

Two authors (Browning, 1990:16; Houdeshel and Watson, 1987:136) discuss companies that have successfully implemented information technology to their competitive advantage. Browning discusses American Airlines, Otis Elevators, Federal Express, and American Hospital Supply. American Airlines implemented a seat reservation system that put the airline above its competition. Otis Elevators installed an automated system where customers call in complaints to a computer which dispatches repairmen without human involvement. Federal Express developed a computer system that keeps track of parcels so that the location of a parcel is known at any given moment. American Hospital Supply's computer system allows customers to order from the company through its own computer system (1990:16).

In addition to Browning, Houdeshel and Watson cite successful information technology implementation. Their discussion focuses on the Management Information and Decision Support System at Lockheed-Georgia. According to the authors, the Management Information and Decision Support System contributed to cost savings. It automated the production of many reports and graphs and consolidated some reports produced by other systems. Users view the reports on terminal displays; non-users receive hard copies of the reports. Top managers use this EIS as a strategic tool to obtain up-to-date information about the organization so they are fully informed at all times. The system is flexible, so it can be used in different ways, depending on the user's needs. The system provides the managers with the kind of information they need and the information has the attributes (relevant, timely, and accurate) to make it useful to managers. The information is relevant because it pinpoints problem areas and provides additional information about related areas. It is timely because the administrators constantly update the system. It is accurate because all information is verified before it is put into the system (1987:136).

While all the above examples go into various degrees of detail about implementation of information systems, strategic use of the systems, and their relative effectiveness, no mention is made of whether any of the companies also downsized during this period. If these organizations downsized, research as to whether the implementation of these systems had any relationship to the downsizing, and what the relationship was, may provide information pertinent to the research problem.

Summary

Information is a resource that is integral to an organization. This review has provided an overview of literature on organizational downsizing, strategic information management, and information technology. It has examined the relationship between information systems, corporate goal attainment, and decision making. The review establishes downsizing as a prominent organizational trend from the early 1980s to the present and reveals the impact of information technology in two ways. First, information technology's contribution to goal achievement in terms of cost reduction, market share increase, and product innovations. Second, information technology's contribution to improved decision making. Based on this research, it is apparent that advanced information technologies, information systems, and management information systems are vital to maintaining a viable organization.

Organizational strategists writing after the wave of downsizing operations in the 1980s imply that some unsuccessful downsizers did not plan their information strategy well and simply expected technology to replace people. They provided a historical perspective on two of Olson's (1982:71-92) concerns. First, simply replacing people with computers was not the answer to downsizing resulting in a loss of personnel. Second, training the remaining workforce to deal with new organizational relationships and new technology is important to success after downsizing. These implications about

training and technology may also provide a starting point for research in this area (Cameron et al, 1991:58; Heenan, 1989:18; Henkoff, 1990:40).

This review of available sources did not uncover any documentation of strategic information management practices specifically associated with downsizing or follow up on any of the many predictions about the directions information management would take organizational culture. Though there is much evidence to suggest that various information management strategies have been used by corporate organizations that have successfully downsized, there is no direct link between these strategies and any specific organization. Further research may uncover specific links between specific downsizing practices and specific corporate entities.

III. Methodology

Research Design

This research was formal and descriptive with the main method of data collection being survey by personal interview. It involved case studies of six organizations that have downsized and either installed or modified their information system. Data was analyzed to determine if any trends or strategies regarding downsizing and information systems could be detected among the organizations.

According to Emory and Cooper, "formalized studies . . . serve a variety of research objectives, among which are (1) descriptions of phenomena or characteristics associated with a subject population. . . ." (Emory, 1991:148). Emory and Cooper also state "the objective in a descriptive study is to learn the who, what, when, where, and how of a topic" (Emory and Cooper, 1991:148). This research examines information management strategies (characteristics) used by organizations (subject population) during downsizing. The objective of the study is descriptive because it attempts to reveal patterns and relationships between organizational variables related to information systems and downsizing. Any information gleaned from these patterns and relationships will then be provided to Air Force information management strategic planners who can use them in developing information management models to aid in the downsizing process.

Because this research involves case studies rather than a statistical study, it is qualitative in nature. A case study is designed for depth rather than breadth. "Case studies place more emphasis on full contextual analysis of a limited number of events or conditions and their interrelations." (Emory and Cooper, 1991:142) While a case study is often not considered "true" research, it can actually provide valuable information and put forth new hypotheses (Emory and Cooper, 1991:143).

The population consisted of six civilian organizations that have downsized in the last ten years--the time frame during which computer technology became prevalent in business. While downsizing can be defined as reductions in personnel, functions, hierarchical levels, or units; in this study, downsizing was limited to personnel reductions. Therefore, the relevant population for this study was organizations that reduced their personnel numbers in the last ten years.

This study looked at a number of variables associated with downsizing and the use of information management functions in the downsizing process. These variables are mentioned here and operationally defined in the data collection section of this chapter. Variables included were the size of the organization, the degree of downsizing, the technique used to downsize, changes in organizational structure due to downsizing, types of employees let go, and the involvement of organization members in planning the downsizing. Other variables included the existence of an overall strategic plan for the organization, the presence of an information system strategic plan, and the computer literacy of personnel. Finally, variables such as the type of management information system and when it was installed in relationship to the downsizing process were studied.

Sample

A nonprobability, convenience sample was most appropriate for this study. It was not practical to survey all organizations that have downsized in the last ten years. Therefore, the sample was limited to organizations within a 500 mile radius of the Dayton, Ohio. While use of this method necessarily limited the size and randomness of the sample, it allowed greater depth of investigation with personal contacts. Researchers had ready access to respondents and were able to establish credibility and rapport with them.

The size of the sample was also limited to organizations willing to participate in the research who met the initial selection criteria. Six civilian organizations contacted met the criteria and consented to interviews. While not a large sample, the organizations were of different sizes and types and provided sufficient diversity of structure and size to meet the requirements for initial research in this area. Additionally, the small number of organizations allowed the researchers to analyze the data in depth, rather than conduct a cursory analysis of a larger sample.

The primary data collection method for this research was structured personal interview with open-ended questions. The personal interview allowed the depth and detail necessary for this type of research.

Survey Instrument

The investigative questions listed in Chapter I had to be answered in order to provide useful information for information management strategic planners in a downsizing organization. From these investigative questions, the following outline for interviews with participating organizations was developed:

Demographic and Downsizing Questions

1. Approximately how many people do you employ?
2. Approximately how many people did your organization lose when you downsized? From what areas did you lose them?
3. How is your organization structured? (Organizational chart?)
4. Did the structure of your organization change when you downsized?
5. Why did you downsize? What were the reasons?
6. Who initiated the downsizing? Was it imposed from outside your organization or did you initiate it yourselves?
7. If there were several reasons for downsizing, which was the most important?
8. How did you plan your downsizing? (Structured or adaptive?)
9. Has downsizing affected how information flows through your organization?

Management Information System Questions

1. Briefly describe the computerized system(s) you had before you downsized. (Hardware, software, etc.)
2. Is your system any different today?
3. Why did you select your current system?

4. How did you use computers before you downsized? (Word processing, spreadsheets, inventory control, decision support, etc.)
5. How do you use computers now? Any changes?
6. How well did your people know computers when you got your current system?
7. What kind of training, if any, did they get when the system was installed? Have they had any recently?
8. Describe the timing of your downsizing in relationship to the installation of your computer systems.
9. How was your information system installed: all at once or gradually?
10. Were you already planning for improvements to your information system before you downsized, and did the downsizing change your plans?

Effects and Effectiveness of Downsizing and IS

1. What did you expect downsizing to do for your organization? What were your objectives?
2. Did you plan for your information system to help meet those objectives?
3. Did your information system help meet those objectives?
4. In what areas, if any, did your information system fall short?
5. Were there any benefits from the new information system that you hadn't anticipated?

For The Future

1. Based on your experience, how would you suggest other organizations faced with downsizing plan their information systems?

    a. What do you think worked for you?
    b. What didn't work?
    c. What would you have done differently?

Due to current program limitations, the instrument was subject only to face validation by an expert panel by members from the Air Force Institute of Technology staff. They evaluated the instrument and provided comments and suggestions on the question content, wording, structure, and sequence (Emory and Cooper, 1991:356-372).

Data Analysis

Miles and Huberman describe methods for "generating meaning" in qualitative research (1984:215); specifically, "noting patterns, themes,...and clustering help the analyst see 'what goes with what'" (1984:215). These methods were employed in this research in order to make some sense of the response received from the various sources and attempt to pull them all together.

Data analysis involved matrix building and clustering. The matrix format consisted of rows that represented the interviewees and columns that represented the variables being examined. Emphasis was placed on making the matrix "functional, one that will give you reasonable answers to the questions you are asking-or suggest promising new ways to lay out the data to get answers" (Miles and Huberman, 1984:211). The data entered into the matrix cells consisted of paraphrases of the interviewees' responses to survey questions.

The matrix was used as a stepping stone to clustering information. In clustering, "we are trying to understand a phenomenon better by grouping, then conceptualizing objects that have similar patterns or characteristics." (Miles and Huberman, 1984:219-220) A dendrogram was used to cluster the data. The dendrogram "groups the clusters in a horizontal tree-like structure, with similar elements clustered together in nearby branches. The product of this effort is a focused diagram showing areas of common attitudes or comments with their varying degrees of similarity and differences clearly demonstrated by the structure of the branches in the diagram." (Cowser, 1991:43)

In order to better explain the research conducted, it is necessary to define the variables analyzed in this study.

Size of the organization: number of people employed.

Degree of downsizing: percent of employees let go in the downsizing process.

Techniques used to downsize: firing individuals, attrition--people leave the organization and are not replaced, or nonaccession--a hiring freeze.

Changes in the organization structure: demassing, vertical flattening, or horizontal flattening. Demassing involves thinning out the number of people within an organizational layer. Vertical flattening involves reducing the number of functional organizational divisions. Horizontal flattening involves removing entire layers of management from the organizational structure (Tomasko, 1990:29-30).

Type of employee released from the organization. The ability to automate tasks varies based on task requirements. It may or may not be appropriate to attempt to replace lost personnel with information technology based on the task(s) they were performing.

Involvement of organization members in planning for the downsizing: participative approach to organizational change or managed strictly at the top levels of the organization.

Existence of an overall strategic plan: blueprint for achieving organizational goals.

Existence of an information systems strategic plan: strategic plan for the management of information.

Computer literacy of personnel: familiarity of personnel with computer operations may impact the type of system used by the organization and how the system is used in downsizing implementation.

Type of Management Information System:

Decision Support System (DSS): An aid to decision makers in the process of making unstructured decisions. A decision support system relies on "the decision maker's insights and judgement in all stages of problem solving-from problem formulation, to choosing relevant data, to selecting the alternative solutions, and on to evaluating the solutions" (Ahituv and Neumann, 1990:163-4).

Executive Information System (EIS): "An executive information system is a computer-based means by which information can be accessed, created, packaged and delivered for use on demand by high-level, nontechnical executives" (Fireworker and Zirkel, 1990:25).

Structured Decision Systems (SDS): Also known as expert systems, structured decision support systems are those systems that make structured, programmed decisions.

Within given parameters, they simulate the decision an expert would make in a set situation (Ahituv and Neumann, 1990:161).

Database Management System (DBMS): A software package specially designed to flexibly share several databases among multiple users (Ahituv and Neumann, 1990:587).

Timing of Management Information System installation with regard to downsizing implementation: was the Management Information System implemented or changed prior to, in conjunction with, or following downsizing?

Summary

This chapter delineated the methodology and the reasons behind the choice of methodology. The qualitative nature of the research spearheaded the decision to collect data through personal interview. Each organization's responses were treated as separate, unique case studies. The responses were placed in a matrices and data that showed certain trends was clustered in dendrograms to illustrate similarities in responses from organization to organization. The next chapter discusses the data collected in the interviews.

IV. Data Analysis and Findings.

Chapter Overview

The purpose of this research, established in Chapter I, was to examine information management strategies used by organizations during downsizing. Chapter II outlined previous research on downsizing, information technology, and strategic use of information management. Chapter III described the methodology developed to answer the investigative questions from Chapter I.

Chapter IV describes the data collection process used to obtain information from respondents and the information obtained. It also discusses analysis of the data and observations drawn from that analysis.

Data Collection and Limitations

Telephone contact was made with each respondent to set up interviews. Respondents were told the nature of the research and asked about downsizing and information management initiatives to determine whether or not they had both downsized their organization and improved their information systems. All six respondents had both reduced personnel in some manner and upgraded information systems.

Personal interviews were scheduled with managers in each organization using the questionnaire developed in Chapter III. While every attempt was made to talk to senior managers thoroughly familiar with both personnel and information management issues, some managers were not available for personal interviews in the time allotted. The researchers also refined their interviewing techniques as the interviews progressed. Later interviews were more extensive due to greater experience with the topic and improved interviewing technique. After the initial interviews were complete, contact was made with organizations interviewed earlier in the process to make sure information

of similar detail was obtained from every respondent. Follow-up interviews were conducted both in person and by telephone.

Despite the small size of the sample, meaningful data was collected. The basic questionnaire proved valid for all respondents and personal contact allowed the researchers to probe more deeply in areas where respondents were particularly knowledgeable. The researchers feel that the data, while far from comprehensive, does establish a basis for some observations on the relationship between information management strategies and organizational downsizing, as well as directions for further research in this area.

Interview Summaries

Summaries of the interviews are included to introduce the organizations interviewed and describe the processes they each used in upgrading their information systems and reducing personnel. These summaries, while not direct quotes in most cases, are based on the statements of the points of contact (POCs) at each organization. No inferences were drawn by the researchers. When there were questions about certain responses during the interview review process, the POCs in the particular organization were called back and the questions were cleared up over the telephone.

All respondents were guaranteed anonymity, in that no names would be used, either corporate or individual. Respondents were assigned designators based on the order in which they were interviewed.

One theme developed during the interviews concerning the use of the term "downsizing." Some of the respondents took great pains to point out that they considered their activities to be "restructuring," of which "downsizing" was only a part. The summaries of the interviews and subsequent data analysis reflect this attitude of the respondents. However, in the final analysis the researchers concentrated specifically on

relationships between downsizing and information management strategies, not on overall restructuring activities.

Organization #1

Org1 is a for-profit, long term rehabilitative care center with 100 beds. It is one of 55 such centers owned by its parent company. Org1 currently has 110 employees organized in the following manner: an administrator with eight department heads (activities, dietary, social services/admissions, office manager, nursing, maintenance, housekeeping/laundry, and nursing assistants). The point of contact was the center administrator.

Downsizing. Prior to January 1991, Org1 had been using a nursing pool to provide patient care. In January 1991, new owners bought the facility and the decision was made to staff the facility with permanent employees; in the process, it became apparent that there were extra positions. The decision was made to release 12 staff members, 10 nursing assistants and 2 dietary employees. These members belonged to the lowest level of the organizational structure. Methods other than layoffs were considered when selecting the downsizing method. Attrition was used--one dietary employee left the organization and was not replaced. In addition, nursing assistants were given the opportunity to become certified as they could be retained on a part-time basis.

Information Systems. The new owners of Org1 required more information than had the previous owners. In addition, payroll was to be done at the facility level rather than at corporate headquarters. In response to this, two personal computers (PCs) were installed in Org1--one PC to handle dietary tasks and one to handle billing, payroll, and insurance processing. The system was installed in a piecemeal fashion. Org1 made sure one system worked before installing the second. This was also intended to "spread costs over time." The software installed included word processing and a spreadsheet program. The dietary application was recommended by a consultant and the business

applications were dictated by the parent organization. The two PCs work independently; they do not "talk" to each other. In addition to the PCs, a modem was installed to connect the facility with its headquarters.

Training was provided for users. A consultant provided training in-house for the dietary system. The office manager was sent to a seminar to be trained on the business applications.

Downsizing/Information System Relationships. Essentially, there was no correlation between the downsizing and the installation of the information system. The two occurred and approximately the same time, but according to the point of contact, there was no correlation. He did comment that "if we didn't have the system, we would need another employee."

Retrospective. Org1 plans to expand its information system in the future. The goal is to have a terminal at each nurse's station, as well as one for the administrator. The PCs will be networked, enabling them to communicate.

Organization #2

Org2 produces rubber products. It is one of forty-five companies owned by its parent company. Org2 employs 6500 people in 14 plants and 12 distribution centers worldwide. The point of contact was the human resources administration manager who had a great deal of knowledge about both the downsizing side of the issue as well as the information system side.

Downsizing. The recession precipitated the downsizing of Org2. Downsizing was primarily motivated by the parent company's desire for higher profits. Additionally, the parent company became concerned about possible long-term effects associated with the recession and the decision was made to "tighten up" the organization before the company began to lose money.

In February 1991, Org2 implemented a 10 percent reduction in all expenses across the board. Org2 and its parent company decided together on the 10 percent figure. The company's president and his immediate staff took a 10 percent reduction in salary; elsewhere in the organization, the 10 percent reduction mandate was achieved via layoffs and other cost reduction initiatives.

The decision on who would be released was made based on position, not person. In other words, classes of jobs were targeted, not individuals. Seniority was not considered. Some individuals were allowed to "step-down" to a lesser position if it was available, but these individuals were not allowed to bump incumbents from their positions. The downsizing plan was based on Total Quality Management and Managing for Continuous Improvement concepts.

Downsizing resulted in a flattened organization. According to the point of contact, it pushed decision-making down to the supervisory level, allowing lower level managers to feel more in control. It also forced people to manage who had not really managed before.

Information Systems. The information system conversion was planned 18 months prior to implementation. As a cost cutting procedure, Org2 got rid of its IBM mainframe and replaced it with two minicomputers, saving $100,000 per month. The particular minicomputers were selected because they interface with what is already in the plants and that system works well. New software was acquired so the new system could carry out functions such as inventory, accounts payable and receivable, billing, general ledger, etc. The old and new systems were run in parallel for at least one month before switching over to the new one. Personnel received training, both on and off site, depending on the system. In addition, a training team travelled to the plants to provide training on the inventory system.

Org2 discovered some shortcomings in the new system. First, the memory and disk space were not enough--they did not meet the demands of the organization. This required the upgrade of the two minicomputers. Additionally, the system was too slow.

The information system staff consists of approximately 60 people, half of whom are contractors. When the contracts expire, some of the staff may be released.

Downsizing/Information System Relationships. The new information system did not lead to the personnel reductions; in fact, the idea was that a change in the information system could prevent some layoffs. In other words, if the new information system could save money, fewer layoffs would be required to attain the 10 percent reduction goal. The point of contact noted that Org2 expects to save approximately $100,000 per month by switching to smaller, less expensive leased computers, a savings that may be used to avoid further layoffs in the future.

Retrospective. The cost cutting method was deemed a success according to the POC. At the end of the fiscal year, the president of Org2 said the profits were even more than had been projected.

An unexpected benefit of the new system is its user friendliness. It is much more user friendly than anticipated; therefore, users find it easier to work with.

Organization #3

Org3 is a bank that employs over 800 people. Its organization follows traditional lines, with a president, three executive vice presidents, three senior vice presidents, six divisions at the main office under two of the senior vice presidents, and over 40 local branches under the other senior vice president. The bank is managed locally, though it is part of a larger, national corporation. The point of contact was a senior vice president familiar with both the bank's personnel issues and its information systems. Org3 was directed to downsize, as was every other subsidiary of the parent corporation, by the

national corporation president. At the time of the interview, Org3 was seven months into a planned restructuring scheduled to take two years.

Downsizing. The main reasons for the downsizing were to cut costs and "reduce fat" from the bank's organizational structure. The guiding principle of the downsizing was to find out which of its offices or branches were performing tasks most efficiently and duplicate that efficiency throughout the organization.

To help plan the downsizing, Org3 hired a consulting firm. The consultants provided an overall model but did not plan the downsizing. Org3 managers developed their own plan.

The main goal of the bank's downsizing plan was to reduce operating expenses by 10 to 15 percent across the board. The plan included eliminating a layer of middle management at the division level, reducing personnel by 100 to 120 from all levels of the organization, and several major software upgrades to the bank's information management system.

Specific management reductions included eliminating six assistant division chief positions and removing an entire layer of middle management from the local headquarters staff. The remainder of the job cuts came from all levels in the local branches.

Other reductions in the local headquarters came from centralization at the regional level of tasks previously performed locally. This centralization required significant upgrades to the bank's information management system.

Information Systems. The bank's information system, prior to the restructuring, consisted of separate personal computers (PCs) and six separate mainframe systems with different banking applications. The PCs were used primarily as word processors and the six banking systems performed separate functions and did not completely interface. The

specific use of computers in any given office or branch depended on the expertise of local users.

Org3 was planning an information system upgrade prior to being directed to downsize, but not on the scale currently being undertaken. The original plan included a modest local area network and some equipment upgrades. When Org3 received the order to cut costs, they realized they would need significantly greater improvements than originally planned to their information system to meet cost reduction goals.

Under the modified plan, Org3's main goal in improving information systems was to automate processes and centralize data access as much as possible. This included connecting the local headquarters to all the local branches with a local area network and connection to the regional headquarters via a wide area network. It also included developing and acquiring integrated systems to replace older, outmoded banking applications and investing in new applications that would provide Org3 with a better capability to serve its customers.

Computer literacy among users varied from untrained to expert throughout Org3 prior to the commencement of the information system upgrade. Org3's upgrade plan included a three-part computer training program. The first part introduced the MSDOS operating system, Wordperfect, and Lotus 1-2-3. The intermediate stage continued with intermediate and advanced MSDOS, Wordperfect, and Lotus training. The third stage covered advanced Wordperfect, Lotus Macros, DOS Windows, and Harvard Graphics. Org3 managers considered this training integral to the restructuring, as they are depending on use of the new information system upgrades to help meet overall organizational restructuring goals.

In addition to integrating banking applications and establishing a local area network, information system upgrades allowed Org3 to establish a central database of information on all employees. They automated sourcing of internal candidates for open

positions. They also implemented an automated system that handles compliance with the myriad of government rules and regulations covering both personnel and financial issues.

Org3 managers searched for the best models developed by computer users throughout the organization and encouraged other internal organizations performing similar functions to adopt those models. Also, many of the improvements to Org3's main banking applications were gleaned from PC applications that individual users at branch offices had developed and/or modified for their own use.

The information system improvements were brought on line gradually, in parallel with the old systems. Average time for transferring from old to new systems has been three to four months. The new systems are modular and integrated, allowing fairly easy installation and integration.

The point of contact stated that Org3 had some trade-offs associated with the new information system. In some cases, new applications provided less capability than the old ones. However, as not all of the capability of the older systems was being used, having standardized systems throughout the organization was considered more beneficial to Org3 as a whole. New systems were designed for the average, rather than the expert user. Also, as the new systems are modular, additional capabilities can be added rather easily at a later date, if desired.

One unanticipated benefit the point of contact mentioned was that the new applications were easier to use, primarily because the screens were easier to read. He felt that because the new systems were more user friendly than the old because of improvements to the "front end" of the applications, it helped the integration of the new systems into Org3.

Downsizing/Information System Relationships. Org3's downsizing and information system upgrade were part of an overall organizational strategic plan. The

plan called for personnel downsizing and information system improvements to occur simultaneously. Under the "best practices" approach, managers examined operations at every branch with particular emphasis on how many people it took at each branch to perform any given task. Branches that had fewer people performing particular tasks generally also had some automated process or a procedural improvement aiding the performance of that task. Org3 managers then encouraged other branches to adopt those practices throughout the organization, including whatever automated processes or procedural improvements that made those practices more efficient or productive. This is where most of the personnel cuts were obtained.

Org3 expected downsizing to reduce costs. It did, but the point of contact stated that without changes in business practices, the downsizing by itself would not have met restructuring goals. He also stated that it took both information system and procedural improvements to enable the changes in business practices that allowed Org3 to reduce costs through personnel reductions.

Retrospective. The point of contact felt that the most important facet of the success of Org3's organizational restructuring was having an overall, structured plan with specific time-frames. However, he also felt that some of the design of the new information system had been a bit "haphazard" because no overall system and organizational analysis was performed during the planning stage. Given the chance to go back and do the entire restructuring again, the point of contact stated that a systems person who understood their operations should have been "plugged in early" in the planning process and at the highest decision-making level. The point of contact stated that it would be better, in Org3's opinion, to teach an information systems person the fundamentals of the banking business rather than try to train a banking person on information systems.

Org3 benefitted from the willingness of managers to use the best practices available regardless of origin and from innovative applications and procedures developed by individuals at all levels of the organization. The point of contact stated that Org3 is meeting cost reduction goals through the combination of downsizing (which includes both organizational restructuring and personnel cuts), information system improvements, and procedural improvements.

Organization #4

Org4 is an international forms production company that employs over 5,800 people. Its organization follows traditional lines, with a president, an executive vice president, three vice presidents, and three main divisions organized along product lines. Org4 is a Fortune 500 corporation, with over $700 million in annual revenues. The points of contact were the Director of Human Resources and the Director of Information Systems. Org4 was directed to restructure by the Chief Executive Officer on the advice of its Board of Directors. Part of the organizational restructuring included some downsizing.

Downsizing. The main reasons for the restructuring were to reduce costs and increase profits The downsizing portion of the restructuring included the elimination of over 600 jobs. Approximately 250 of these cuts came from headquarters staff and 100 from field sales personnel. The remaining 250 were associated with plant closings.

Org4 managers developed their own plan for the restructuring. In addition to the job losses, the downsizing plan also included decentralizing some organizational functions to narrow the organizational structure. The previous structure was organized along divisional lines (marketing, administration, engineering, manufacturing, etc.) with centralized support for all product lines managed by vice presidents. During restructuring, support functions were decentralized and distributed under vice presidents in charge of specific product lines, allowing elimination of some lower-level executive positions formerly associated with support functions. Support functions are now

managed by directors within each division, with the directors in the Forms Division also responsible for managing overall support for that function within the organization.

As mentioned previously, Org4 planned their restructuring themselves. The only outside consultants used were for outplacement of displaced employees.

The main goal of Org4's restructuring was to cut costs and remain competitive in their market. Their restructuring was proactive to avoid potential problems, rather than a reaction to the current environment.

Information Systems. The bank's information systems, prior to the restructuring, consisted of over 1,300 personal computers (PCs) and a large IBM mainframe with various organizational applications. The PCs were used mostly for word processing and the mainframe for data processing. PCs were not networked with the mainframe.

Org4 was planning significant information systems upgrades prior to the restructuring. These upgrades included obtaining more advanced mainframe computers, networking existing PCs with the mainframe system, establishing a comprehensive corporate computer network, and adding new applications, software and capability. The upgrade plan also included increased use of satellite communications, as the planned corporate network would service over 3,000 terminals at 178 locations worldwide. Another hardware upgrade included buying laser printers for forms production.

Org4's main goals for information systems improvements were to increase task automation, speed information transfer, and maintain levels of service in spite of personnel reductions. New applications for billing and accounting helped eliminate duplicate payments to contractors. New inventory applications, coupled with the new national network, helped reduce finished goods inventory by facilitating "just in time" delivery of products. Also, the newest mainframe has a graphic user interface instead of character-based interfaces used by older mainframes, enabling more user-friendly

applications. Day to day work is more computerized than before system upgrades. Other applications included an in-house health claims system and establishment of Electronic Data Interface as the organization standard.

Computer literacy among users in Org4 varied from fair to expert prior to the commencement of the information system upgrade. Most employees had at least some computer experience. Org4's upgrade plan included an ongoing computer training program that covered Wordperfect, Multiplan, PC Basics, and various organization-specific applications used within Org4.

Org4 managers selected the new systems, in part, because of significant sunk costs in existing systems and operating systems. The new mainframe was another IBM to maintain compatibility with older systems. PC applications are either MSDOS or Windows based, to maintain compatibility throughout the organization.

The information system improvements were brought on line gradually, in parallel with the old systems. Average time for transferring from old to new systems has been one month. Technical upgrades are being constantly made to existing systems to improve capability, notably in expanding the corporate network. System software upgrades are modular and integrate easily with existing applications. Contract programmers are hired as needed for software modifications.

Downsizing/Information System Relationships. Org4's downsizing and information system upgrade were part of an overall organizational strategic plan. The plan called for organizational restructuring and information system improvements to occur simultaneously. However, Org4 managers considered downsizing as a business practice, and not driving or driven by information system capabilities. There was no conscious attempt to relate the two when planning either the restructuring or information system upgrades.

Org4 expected the restructuring to reduce costs and help keep their products competitively priced, and that information system upgrades were planned to support the restructuring. Some new systems were planned to maintain capability in spite of personnel losses, but it was unclear from the responses whether the new systems enabled the personnel cuts or were developed as a reaction to planned cuts. Both points of contact, however, felt that the information system upgrades definitely helped with the restructuring and the downsizing.

Retrospective. Org4's points of contact felt that the most important facets of the success of their organizational restructuring were "acting fast," getting users to accept responsibility for systems development and installation, and placing greater emphasis on business practices than on technology for its own sake. The Human Resources Director said "timing is everything" and the Information Systems Director warned: "Don't become enamored with technology." Both credited extensive long-term planning for the success of both the organizational restructuring and new information systems.

They also noted that problems occurred for two reasons: giving in to time pressure and starting things without planning. In particular, the IS Director noted a past problem with individual departments "doing their own thing" when acquiring computer applications, leading to some compatibility problems when establishing the corporate network.

Given the opportunity to redo the entire process, Org4 managers would "challenge everyone more" to show why new systems are needed. Also, they specifically recommended setting the foundation for change by planning well ahead for all changes, such as individual software compatibility in individual offices and departments.

Organization #5

Org5 is a large hospital with over 4,000 employees and 772 beds for inpatients. Its organization follows traditional lines, with a president, two executive vice presidents,

three vice presidents, and one assistant vice president managing hospital operations and centralized support functions. The points of contact were the Director of Human Resources and a Senior Vice President of Hospital Operations. Org5 was directed to reduce costs by the Chief Executive Officer. The cost reduction was not driven by external pressures, as the hospital was in a very strong market position. The CEO felt, however, that it would be best to change while strong and maintain their position rather than wait for a decline and react to it. The CEO and the Board of Trustees introduced their concept for this cost reduction as "Operational Excellence."

A significant aspect of Org5's process was six months of analysis and planning. As part of this, both personnel and information systems managers completed a 100 percent review within their functional areas before any changes were developed for staff reductions or new systems.

Downsizing. The hospital's cost reduction plan included some downsizing. The downsizing portion of the plan included the elimination or downgrading of over approximately 150 jobs. Of these, 130 were nursing positions slated to be downgraded to orderly or nursing assistant positions when incumbents left. Managers felt that since the hospital was under no immediate pressure to reduce costs in the personnel area, attrition was an acceptable method of reducing costs in this area.

The remaining 20 positions were eliminated entirely and the people in them let go. While this at first seems a rather modest reduction in terms of overall hospital manning, the cuts are more significant when viewed in light of what populations they affected and what percentage of those populations the cuts represent. All 20 positions eliminated came from either the executive or middle management levels. The POCs described "executive level" as vice president or higher. The hospital released four vice presidents, a 20 percent reduction of executives. They also let go 16 out of 300 middle managers, approximately a 5.3 percent reduction at that level. This was the only

organization interviewed that had the highest proportion of reductions at the highest level of the organization hierarchy.

Another goal of the plan was to significantly flatten the hospital's organizational structure. Under the old structure, there were four to seven levels of management between the CEO and line workers. The restructuring plan called for no more than three levels. The loss of executive positions, coupled with the flattening of structure has resulted in increased work for executives and managers at all levels. Along with this increase in individual work came increased individual authority and responsibility, as decision-making was decentralized.

Org5 managers developed their own strategic plan for change called "Operational Excellence" (OE). The OE plan was a complete overhaul of how the hospital did business in every area, from health care to support functions like housekeeping, financial planning, and data processing. The hospital received over 4,000 suggestions for the OE plan from employees through a computerized "Suggestion Box" system that was part of the information system upgrade, and between 250 and 300 employees served on primary or secondary task forces to develop ideas. This was the most extensive employee participation program in the planning process of the six organizations interviewed.

The main goal of Org5's restructuring was to cut costs and maintain their leading position in the local health care market. Their restructuring was proactive to avoid potential problems, rather than a reaction to the current environment.

Information Systems. Org5's information system, prior to the restructuring, consisted of "a few" PCs and an IBM mainframe with various organizational applications. The PCs were used mostly for word processing and the mainframe for health care data processing. PCs were not networked with the mainframe. The hospital

had an electronic mail system, but it was only used internally by the Information Systems department.

Org5 was planning significant information systems upgrades prior to the restructuring. These upgrades included more advanced applications for the mainframe, networking existing PCs with the mainframe system, establishing a local area network, and adding new applications, software and capability. New applications were developed for various health care activities, including the Radiology Department and the pharmacy. The upgrade plan also included installation of a voice mail system.

Org5's main goal for information systems improvements was to speed decision-making. While the hospital did not replace its old mainframe, it did spend over $300,000 on new PCs and upgrades to older computer hardware. With the increase in the executives' and managers' workload, Org5 paid particular attention to systems for facilitating information exchange. Planners emphasized the use of networks, particularly electronic mail and voice mail. Use of both voice mail and electronic mail by managers at all levels in the organization had a significant positive impact on information flow in the organization, as managers and executives could send specific, direct messages instead of waiting to make personal contact. One POC noted that it took some education of users before people accepted the automatic systems. Most managers were used to conducting business face to face or over the telephone. However, the POCs felt that as users became more familiar with the electronic systems that information flow within the organization has become faster and more efficient.

Computer literacy in Org5 varied from novice to expert prior to the information system upgrades. The average user could follow menu-driven applications. Some departments were very computer literate, particularly the Finance Department, which had been using computers for several years before most of the rest of the hospital staff. Org5's upgrade plan included an voluntary computer training program that covered

Wordperfect, Multi-Mate, and Lotus 1-2-3. Training was free and conducted during duty hours. Employees only needed their supervisor's consent to attend training.

Org5 managers purchased new PCs primarily based on the operating system used by existing PCs: MSDOS and Windows. While the IS department favors continuing with applications based on those systems, one POC mentioned that users outside of the IS department who are becoming increasingly computer literate have been inquiring about possible alternative systems for use in the organization.

The information system improvements were brought on line gradually, in parallel with the old systems. Average time for transferring from old to new systems has been 3 months.

Downsizing/Information System Relationships. Org5's downsizing and information system upgrade were part of an overall organizational strategic plan. The points of contact, while hesitant to commit fully to the position, felt that information system improvements may have enabled many of the other improvements achieved under the OE plan. They did not feel that the system was originally intended to enable downsizing, but that they had downsized "as systems allowed."

Org5 expected OE to reduce costs, help decentralize decision-making, and maintain their market position. The respondents felt that their information systems improvements had "definitely" helped achieve those goals, and that the new systems helped managers cope with increased workload brought on by the managerial downsizing.

They also noted one benefit that had not been expected in the original strategic information systems plan: overwhelming user participation in the Suggestion Box system. Hospital employees made over 4,000 suggestions through the system, far more than expected. The respondents felt that higher than expected user participation in the OE process produced a better plan.

Retrospective. The POCs felt that the most important facets of the success of Org5's organizational restructuring were having a detailed strategic plan for information systems and high user participation in the overall OE process. They also felt that changing both structure and systems proactively instead of under outside pressure was a key to their success. They noted that having time for planning and implementation is not always possible under such pressures. They were generally quite satisfied with the entire process, though one POC mentioned that if they were to do it over that one year might be appropriate for analysis and planning instead of the six months they took.

Organization #6

Org6 is an Emmy award winning public television broadcasting station employing 38 full-time staff. The organization structure exists as follows: president and general manager, three directors (broadcasting/telecommunications, development/marketing, and administration) report to the president, and each director has several managers and/or coordinators reporting to him/her. The POC was the administrative support coordinator.

Downsizing. Org6 decided to downsize in an attempt to "tighten up" the organization. This was in response to cutbacks in funds as well as increased costs. The president/general manager, along with members of the finance/budget and executive committees initiated the downsizing. In the downsizing, the organization lost three managers through attrition. One manager left and was not replaced; two other manager positions were downgraded from manager to coordinator. Coordinators have less responsibility than managers.

Information Systems. Prior to downsizing, Org6 had PCs with word processing, spreadsheet, database management, and desktop publishing applications. Presently, the organization is beginning to tie the PCs together into a network. The network will better aid the organization in meeting its objectives. The network is being developed in

stages. Currently, the president/general manager, the directors, and some administrative and accounting personnel are networked. Eventually, the entire organization will be connected. The network is a commercial package.

Org6 contracted out for the network set up. The director of administration conducted the system analysis provided to the contractors.

Downsizing/Information System Relationships. There does not appear to be a correlation between the downsizing and the information system changes. The personnel who left the organization (in the downsizing process) did so before the new information system began to be installed. The idea that the information system be used to do jobs better was a long-range goal even before the downsizing occurred.

Retrospective. Org6 is pleased with the new information system. The products are better than before and the printing of documents is faster and quieter.

The point of contact stressed including employees in the development of a new information system. This prevents them from feeling left out of the process. In addition, she suggested "use what you have." In other words, make do with the parts of the system that you can--whole scale changes are not necessarily required.

Data Analysis

This section describes the two analysis tools used to sort and compare the data: the unordered meta-matrix and the dendrogram cluster. It also outlines the similarities and differences noted in data provided by the respondents.

Gathering similar data from more than one site multiplies the data by as many single sites as are in a study. Meta-matrices are charts that assemble information from more than on site in a standard format (Miles and Huberman, 1984:151-158). The meta-matrices used for the initial comparison of information were based on the questionnaire used during the interviews. Eight meta-matrices were developed to display data.

Following the meta-matrices is the Observations section of this chapter. It includes five dendrograms showing relationships of various pieces of information from the meta-matrices. Individual responses from columns are grouped with similar responses from the same column. Analysis in these figures focused on identifying what factors may have influenced particular strategies or tactics adopted by the organizations interviewed and their effectiveness. The findings of this research are based on the relationships displayed in the dendrograms of information from across several matrices. Given the small size of the sample population, however, the researchers acknowledge that the observations noted in this chapter may be limited in their suitability for general use.

Organizational Information

Table 1 is the meta-matrix of organizational information that describes the size and type of organizations interviewed, what restructuring the organization underwent, and the degree of downsizing experienced by each. As can be seen from the matrix, the organizations varied in size from 38 to over 6,500 employees. Three of the six had all employees at a single location, one had employees dispersed at 47 locations in the Dayton OH area, and the other two were international corporations listed in the "Fortune 500."

Despite the difference in size and function, there were some similarities in how the respondents restructured. Org2 and Org3 flattened their structure to some degree by eliminating one or more horizontal layers of management. Org4 and Org6 narrowed their structure by eliminating one or more vertical levels of management directly below the top manager. Org5 did both. Only Org1 did not change its essential structure while downsizing. The only common theme observed in the mechanics of the restructuring was that managers and workers below the level of vice president were the most vulnerable to job elimination, with the exception of Org5, which eliminated 20 percent of their executive (vice president and above) positions.

Personnel downsizing in the majority of the organizations was generally implemented below executive level. (Orgs1-4.) The "degree" of downsizing listed on the matrix represents the percentage of people lost to the organization due to the downsizing. Orgs1-4 downsized an average of 10.2 percent between them. Org5 managed to avoid large personnel cuts at lower levels by downgrading 130 nursing positions to nursing assistant positions as incumbents left or retired from the organization, with a corresponding savings in personnel costs.

Org5's most significant difference from Orgs1-4 is the number of executive-level positions eliminated. Org6 also eliminated or downgraded three manager's positions in their organization, though not for the same reasons as Org5.

TABLE 1

ORGANIZATIONAL INFORMATION

Org	Size and Type	Restructuring	Downsizing
1	Nursing home. 110 employees at one location.	None.	10 nursing assistant positions and 2 dietary workers. Degree: 10%
2	Rubber products manufacturer. 6,500 employees at 26 locations. Over $700 million in annual sales. 'Fortune 500'	Flattened slightly by eliminating assistant product managers.	10% across-the-board reduction at all levels below VP. Degree: 10%.
3	Bank. 862 employees at headquarters and 46 branch offices.	Eliminated a layer of middle management at headquarters.	Approximately 110 jobs, mostly at branches. Degree: 11.3%
4	Forms producer with 100 sales locations, 26 manufacturing plants. 5,800 employees and $700 million in annual sales. 'Fortune 500'	Decentralized support functions to product divisions.	Downsized by 600 personnel throughout the organization. Degree: 9.5%
5	Hospital. Over 4,000 employees at one location.	Reduced layers of management between CEO and line workers from as many as seven to three.	4 VP and 16 middle manager positions. Degree: Less than 0.5% total. 20% of executive and 5% of middle management.
6	Television Station. 38 employees at one location.	One managerial position and downgraded two others.	Three managers, through attrition. Degree: 7.3%.

Organizational Restructuring

Table 2 shows data associated with the respondent's restructuring processes. Analysis in this area attempted to answer the first investigative question from Chapter I: Why did the organization downsize? Was downsizing driven by external factors such as the economy or by an internal determination that the organization could function more efficiently with fewer people? All six respondents listed financial reasons for restructuring. Restructuring in all six organizations was also directed or strongly recommended by the Board of Directors, or equivalent, in all organizations.

There was some information to answer the second investigative question: What downsizing methods did organizations select and why? Planning for the restructuring varied. There was no consistent pattern to how each organization planned their restructuring, with the possible exception that all planning was managed at or near the top of the organization. Most respondents also seemed reluctant to discuss specific downsizing practices. However, those who did respond in this area indicated that, when there was no choice but to let people go, jobs were eliminated based on position rather than seniority.

TABLE 2

ORGANIZATIONAL RESTRUCTURING

Org	Reasons for Restructuring	Directed By	Planning for Restructuring
1 Nursing Home	Reduce costs.	Strongly recommended by parent corporation. Administrator made final decisions.	Strategic plan, mostly concerned with change in employment practices.
2 Rubber Products	Desire for higher profits.	Combination of organizational managers and parent holding company managers.	Based on Total Quality Management and Managing For Continuous Improvement concepts.
3 Bank	Cut costs and "reduce fat" from organizational structure.	National corporate president.	Employed consulting firm to develop model. Bank managers designed plan based on model.
4 Forms Producer	Reduce cost and remain competitive	CEO and Board of Directors.	Strategic. Developed by Human Resources managers and upper-level executives.
5 Hospital	Proactive: took advantage of strong financial position to position better for future.	CEO.	Two-year plan called "Operational Excellence." A management initiative fueled by over 4,000 employee suggestions.
6 Television Station	Funding cutbacks and increased programming costs.	Board of Trustees.	Attrition of Director positions was not part of the station's original plan.

Previous Management Information Systems

Table 3 displays data dealing with the types of information systems respondents had prior to restructuring. Orgs2-6 had computer systems prior to restructuring, with Orgs2-5 operating mainframe systems for business applications. A characteristic of all the prior systems was a general lack of networking capability outside specific locations or beyond certain specific business applications.

PCs were used for word processing, spreadsheet, and other general applications in Orgs2-6. Some applications were developed by users in Org3 to automate certain routine data processing tasks, but they were unique to whatever location employed them.

Computer literacy varied in all organizations, with clerical, administrative, and data processing staff having the most initial familiarity in most organizations and higher-level managers having the least experience with computers. The exception to this was Org6, where the highly-technical nature of the job environment meant many employees had considerable personal experience with computers outside of the organization.

TABLE 3

PREVIOUS MANAGEMENT INFORMATION SYSTEMS

Org	Previous MIS Hardware	Previous MIS Software	Prior Computer Literacy
1 Nursing Home	None.	None.	Minimal. Only administrative personnel had any computer experience.
2 Rubber Products	IBM mainframe, some PCs.	Business applications on mainframe, word processing on PCs.	Clerical knew computers "well," management "not well."
3 Bank	Six mainframe systems; some PCs.	Separate, checking systems on each mainframe. Departments had some individual applications on PCs.	Novice to expert.
4 Forms Producer	IBM mainframe and 1,300 PCs.	Business applications on mainframe and general applications on PCs.	Fair to expert.
5 Hospital	IBM mainframe and some PCs. Voice mail system.	Finance applications on mainframe and some general applications on PCs. E-mail capability, but not used outside of IS department.	Most users had some basic competency. Any user could follow menus. Some departments though, like Finance, were very computer literate.
6 Television Station	Some PCs in individual offices.	Word processing, spreadsheets, database, and desktop publishing.	Very experienced due to highly technical nature of job environment.

Management Information System Upgrades

Table 4 illustrates some of the changes the respondents made to their information systems. Responses in this area helped answer the third investigative question: What information management strategies did organizations select, and why? All respondents selected systems that increased their ability to process information in "real time" throughout their organizations. Software was selected for compatibility with existing systems or, when there were no current systems, based on performance standards developed by managers.

Compatibility was the main factor in system selection in virtually every instance. Even Org1, with its relatively modest upgrade, installed a business system based on compatibility with similar software used by the parent corporation. There was also a significant trend toward networking computer systems in all organizations. Orgs2-6 all established at least one organizational computer network, and Org1 has plans to set up a computer network within the nursing home for health care.

New applications for each organization include functions for automating data collection and processing previously done manually or outside the organization on contract. All of the organizations also have, or plan to have, a central data repository of some type for information.

TABLE 4

MANAGEMENT INFORMATION SYSTEM UPGRADES

Org	New MIS Hardware	New MIS Software	Reasons for Selection
1 Nursing Home	Bought two PCs.	Installed dietary application on one PC and a general business application for the other.	Dietary application recommended by consultant and business application dictated by parent corp.
2 Rubber Products	Replaced mainframe with two mini-frames. Networked new minis with systems at plants.	Added new business software.	Software for compatibility with existing applications. Projected $100,000 per month savings from using miniframes.
3 Bank	Networked mainframes and PCs.	Standardized applications. Attempted to automate procedures and centralize data storage.	"Best practices." Whatever worked best at any location was adopted throughout the organization.
4 Forms Producer	More powerful mainframe and set up 18 local area PC networks at headquarters. Built world-wide network.	Upgraded to menu systems for business applications and Windows$_{tm}$ for general applications.	Compatibility with existing systems.
5 Hospital	Purchased over $300,000 worth of new PCs, plus network hardware.	E-mail network for entire hospital. Upgraded mainframe applications.	Based on performance. Analyzed detailed cost and service information.
6 Television Station	LAN hardware and eight PCs.	More powerful general applications. Networked support group.	Based on analysis by Administration Director and consultants.

Information System Planning, Installation, and Training

Table 5 shows many similarities in how the respondents planned and installed their new information systems. Responses in this area helped answer the fourth investigative question: How were these strategies implemented? What specific tactics were used at each level of the organization? All plans were described as "long-range," with most also described as "strategic." Orgs1-4 planned their information system upgrades at the same time they planned their overall organizational restructuring. Org5 had already embarked upon their information system improvements prior to their Operational Excellence initiative, but modified the plan slightly to accommodate OE. Org6 also modified their plan slightly when the opportunity to restructure arose.

Installation also followed a common theme. All respondents installing new systems ran them in parallel with older systems for at least one month before completely converting. Systems were also installed in stages. Reasons for this included spreading the costs of new systems over time and allowing managers to get one system working before trying to install the next.

All respondents implemented in-house training programs for users. Org1 and Org2 sent users to training seminars, and Orgs1-3 employed consultants to come into their organizations to train users on new business applications. Org2 also sent a corporate training team to all plants to train users on the new inventory control system. Training appeared to be an important part of every organization's system upgrade plan.

TABLE 5

INFORMATION SYSTEM PLANNING, INSTALLATION AND TRAINING

Org	MIS Planning	MIS Installation	User Training
1 Nursing Home	MIS plan part of long-range strategic plan.	Piecemeal. Made sure one system worked before installing next. "Spread costs over time."	Consultant training for dietary system. Office manager sent to seminar for business application.
2 Rubber Products	Part of overall organization long-range strategic plan. Planned 18 months for MIS before implementing.	Modular. Systems run in parallel for at least one month each.	Off-site and on-site, depending on the system. Training team sent to plants for new inventory system.
3 Bank	Long-term plan; part of change of business practices in bank.	Gradual. New systems run in parallel with old until all data verified. Modular.	Corporate training program.
4 Forms Producer	MIS plan part of long-range strategic plan.	Gradual. New systems run in parallel with old for one month.	Continuous. Mostly on general applications.
5 Hospital	Detailed MIS plan already implemented prior to restructuring. Incorporated within plan.	In parallel with older systems.	Voluntary training conducted free during duty hours.
6 Television Station	Planned by Admin Director with help from consultant. Part of Trustees efficiency improvements.	Brought up in stages. New systems installed in parallel with older ones with no set time limits.	Spreadsheet and desktop publishing training.

Information System/Restructuring Timing and Expectations

Table 6 shows that information system improvements and restructuring occurred simultaneously in all six organizations. Four of the organizations initiated both processes at the same time. All six organizations stated that their main expectation for restructuring was to lower costs, but only four stated that information system improvements were planned to help restructure the organization.

Org3, Org4, and Org6 specifically planned for their information system improvements to help managers compensate for increased workload. Org3, as part of the "best practices" approach shown in Table 4, looked for places within their organization where users had developed individual applications that allowed certain tasks to be accomplished with fewer people. They then copied and adopted those practices throughout the bank. Org4 gave fewer specifics about their upgrades, but indicated that they had taken projected personnel losses into account when planning system improvements. Org6 noted that new budget applications were specifically included in their system improvement plan to help Directors cope with increased budget responsibilities due to the loss of half of the Director positions in the organization.

Table 6

INFORMATION SYSTEM/RESTRUCTURING TIMING AND EXPECTATIONS

Org	Timing of MIS Improvements vs Restructuring	Expectations For Restructuring	Was MIS Planned To Help With Restructuring?
1 Nursing Home	Simultaneous.	Reduce personnel costs.	No.
2 Rubber Products	Simultaneous.	Reduce costs 10%.	Some, to avoid layoffs. No specific targets, though.
3 Bank	Simultaneous.	Reduce costs.	Yes, as part of changes in business practices.
4 Forms Producer	MIS plan implemented prior to restructuring, but modified slightly as part of overall restructuring.	Reduce costs.	"Absolutely."
5 Hospital	MIS improvements planned well in advance of OE initiatives. Some new systems already in place prior to OE.	Lower operating costs.	Not really.
6 Television Station	Simultaneous.	Reduce costs.	To help remaining Directors handle increased budget responsibilities.

Information Systems vs Restructuring

The responses displayed in Table 7 help answer the sixth investigative question: Was there a relationship between information management strategies and the effectiveness of organizational downsizing? Org2 and Org4 were both certain that information system improvements had helped their organizations achieve restructuring goals, including downsizing. Org3, Org5, and Org6 were more cautious in their assessment, but indicated that their new information systems were probably helping with restructuring and downsizing. Only Org1 felt that information system upgrades had no impact on their organizational restructuring or downsizing.

Org2 and Org3 noted shortfalls in information system upgrades, but neither indicated that they hindered restructuring. However, Org2, Org3, and Org6 all noted that the new software was more user-friendly than anticipated and felt that this might have helped integrate the newer systems into the organizations.

Respondents from Org5 did state that information system improvements "may have enabled Operational Excellence," but not by design. They were referring to the Employee Suggestion System, which was a recent improvement to their hospital information system. The Employee Suggestion System is a bulletin board electronic mail system for hospital employees to make inputs to management planning. Employees submitted over 4,000 suggestions over the system, many of which formed the bulk of the organization's OE plan. While OE would have happened without the system, Org5 respondents indicated that it would probably not have had the same impact without the tremendous employee involvement encouraged by the suggestion system.

TABLE 7

INFORMATION SYSTEMS VS RESTRUCTURING

Org	Did MIS Improvements Help Restructuring?	Did MIS Improvements Fall Short Or Hinder Restructuring In Any Areas?	Were There Any Unanticipated Benefits From New MIS?
1 Nursing Home	No.	No.	No.
2 Rubber Products	Yes.	Some problems with size and power of new systems, but did not affect organizational restructuring.	Software much more user friendly than anticipated.
3 Bank	Too early to tell.	Some standardized new systems not as advanced as old systems. "Averaged to the norm."	"Screens easier to read and follow." More user friendly than expected.
4 Forms Producer	Yes. "Met expectations."	No.	None that they could think of.
5 Hospital	"May have enabled Operational Excellence."	No.	Employee Suggestion System. Inspired "huge" employee input to OE plans; over 4,000 suggestions.
6 Television Station	Probably. Even with fewer Directors and overall people, no degradation noticed.	"Not really."	Better quality software than expected; more user-friendly.

Respondent Recommendations

Responses listed in Table 8 helped answer the fifth investigative question: What was the perceived effectiveness of the various strategies and tactics? Getting users to accept responsibility, user involvement, user training, structured planning, timing, and expert analysis were all noted as effective strategies and tactics. Giving in to time pressure, not planning before starting things, and analysis that did not go deeply enough to anticipate user needs were noted as problems.

Only three organizations had anything they would have done differently. Org3 would bring a systems person in, teach them about the banking business, and then "plug them in at the highest level" of the decision-making process. This parallels what Org2, Org4, and Org5 actually did, as those organizations have information systems experts at or near the highest levels. Org3 and Org5 might both take longer with the analysis stage. A respondent from Org4 stated he would challenge every new proposal, which seems to imply a desire for more analysis prior to implementing new systems, as this was the same organization that raised the issues of giving into time pressure and starting things without planning.

TABLE 8

RESPONDENT RECOMMENDATIONS

Org	What Worked Best?	What Didn't Work?	What Would Be Done Differently?
1 Nursing Home	User Training.	Not applicable.	Nothing.
2 Rubber Products	User responsibility and involvement in change.	System size and power not quite enough at first.	No suggestions.
3 Bank	Having an overall plan and structure with time frames.	"Nothing comes to mind."	Would teach a systems person about banking and "plug them in early and at the highest level" of the decision-making process. Also: do systems analysis earlier. Both would have made planning easier.
4 Forms Producer	"Acting fast." Getting users to accept responsibility.	Giving into time pressure. Starting things without planning.	Challenge every new proposal to make certain "why we need to do this."
5 Hospital	Strategic plan for OE. High user involvement. Having time for planning and implementation.	Nothing.	Possibly take longer for planning; a year instead of six months.
6 Television Station	Expert analysis and user input..	Nothing.	No specific suggestions.

Findings

Based on the data collected, it appears information management strategies can be employed to help with organizational downsizing. Figures 1 shows the data from column 3 of Table 6, and Figure 2 shows data from column 1 of Table 7. Even though only half of the organizations stated that their information system upgrades were planned with downsizing in mind, five responded that information management improvements had, to some degree, helped achieve organizational goals associated with downsizing. Org3 was the biggest user of automated processes to compensate for loss of personnel, with Org6 also using better software to help managers deal with an increase in individual responsibility brought about by loss of management personnel.

However, the help provided was not always a benefit to work practices. In particular, Org2 planned its changes in hardware to reduce costs that might otherwise have resulted in personnel cuts. The projected $1.2 million savings realized from going from mainframes to miniframes is to avoid having to reduce the budget by that amount in other areas, including personnel. The relationship here is purely financial; less expensive computers or fewer people. In this instance, Org2 apparently felt it would be better served by keeping its people and acquiring less expensive systems.

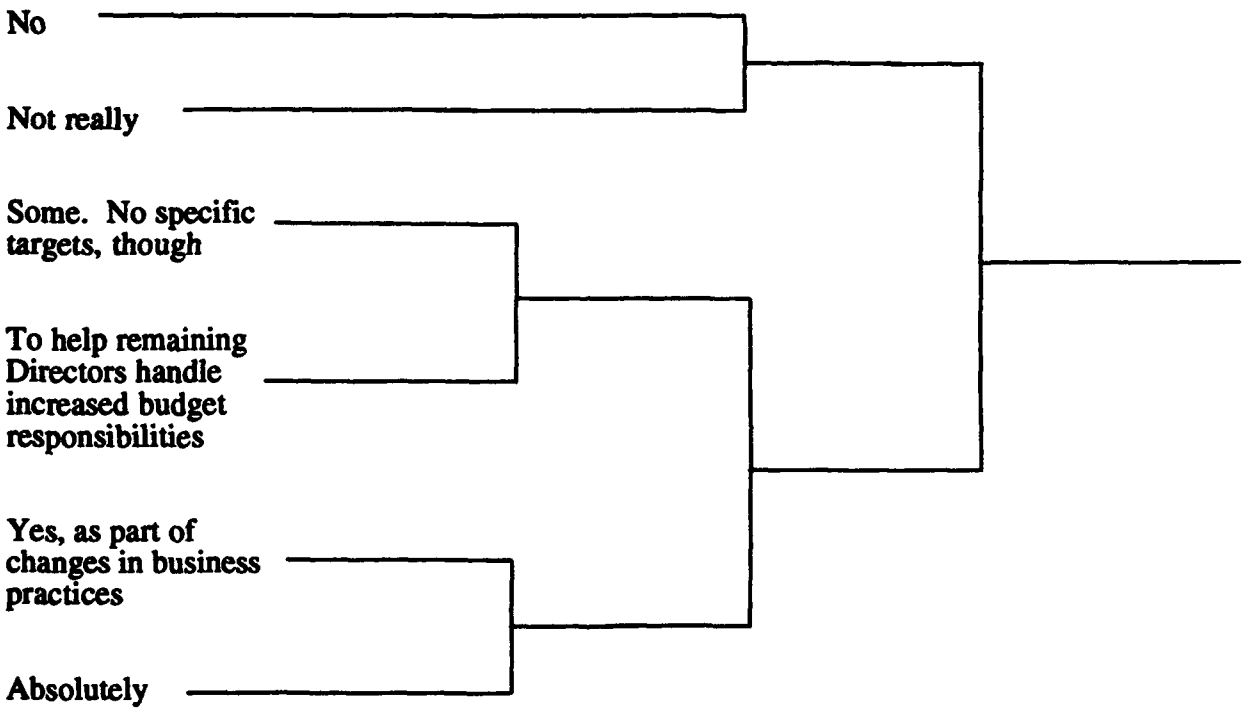

Figure 1. Were Information System Upgrades Planned to Help Restructuring?

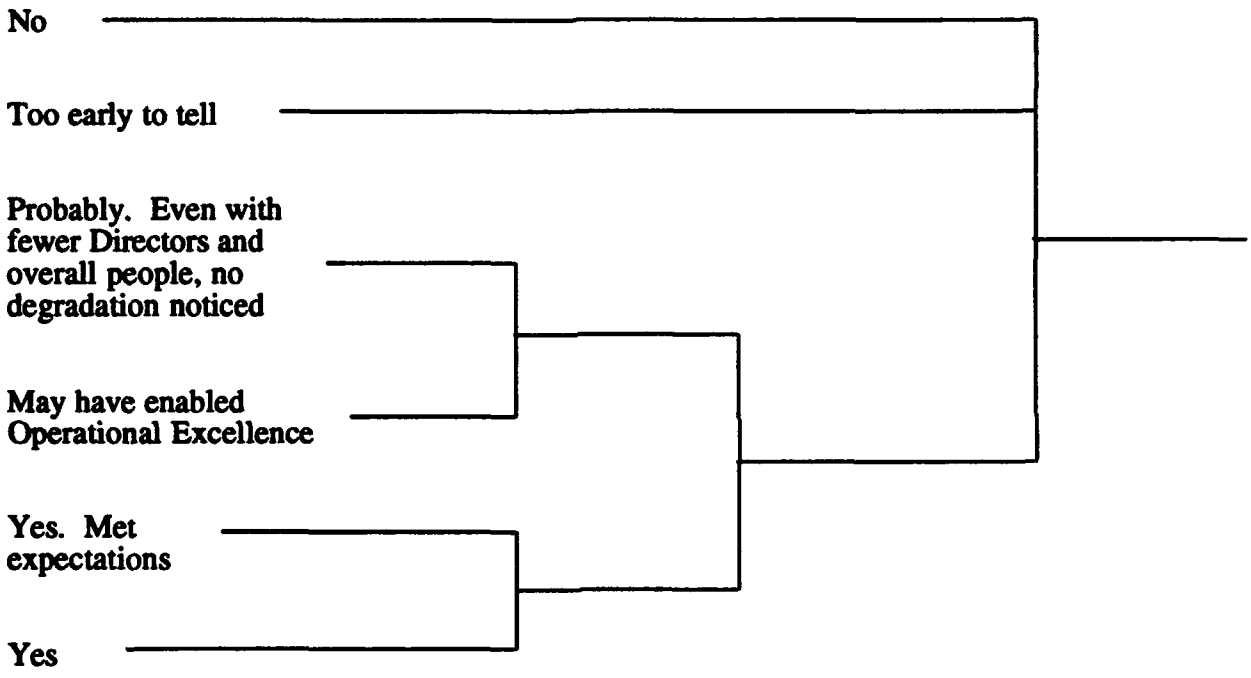

Figure 2. Did Information System Improvements Help Restructuring?

Figure 3 is a compilation of data from all of Table 8, Respondent Recommendations. Positive data is grouped based on the level of the organization it is most closely related to, user or manager. Negative data falls mostly into the management area, with recommendations for change also oriented toward management decision-making.

A key from Figure 3 is the importance respondents placed on user involvement in the change process, both organizational and for new systems. In particular, getting users to accept responsibility for new systems was a strong concern of a respondent from Org4, who felt it was very important to the success of their upgrades.

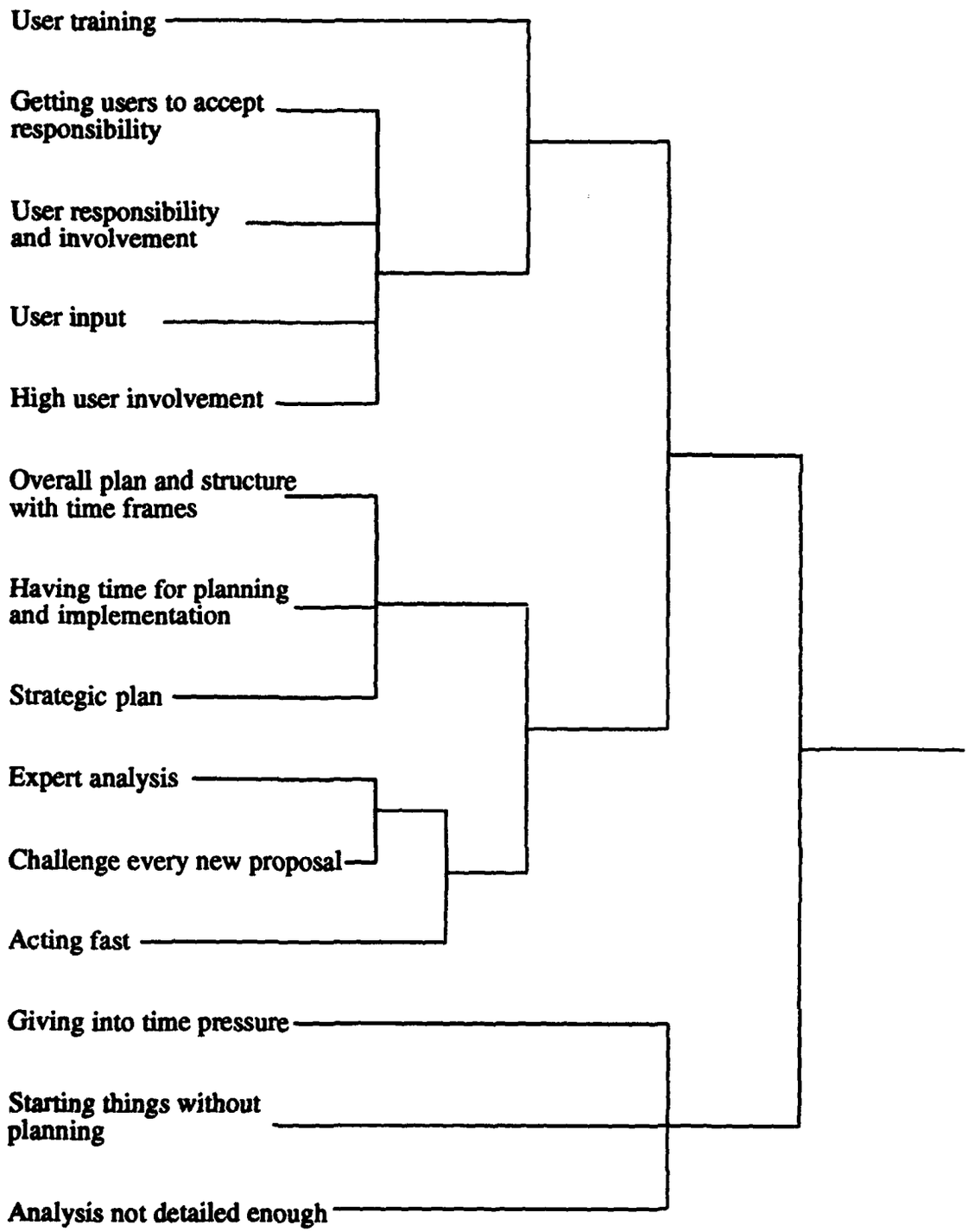

Figure 3. Respondent Recommendations

Another important trend was the establishment of organizational information networks. Figure 4 shows the data from columns 1 of Table 4, where five of six organizations described network initiatives. The data is ordered by size, smallest system to largest. The one organization who did not have a network installed had plans for one. While it is difficult to establish any firm relationship due to the limitations mentioned previously, the trend toward networks by all organizations interviewed seems to indicate that they see significant value for their organization in them. This area will be addressed further in the Recommendations section of Chapter V.

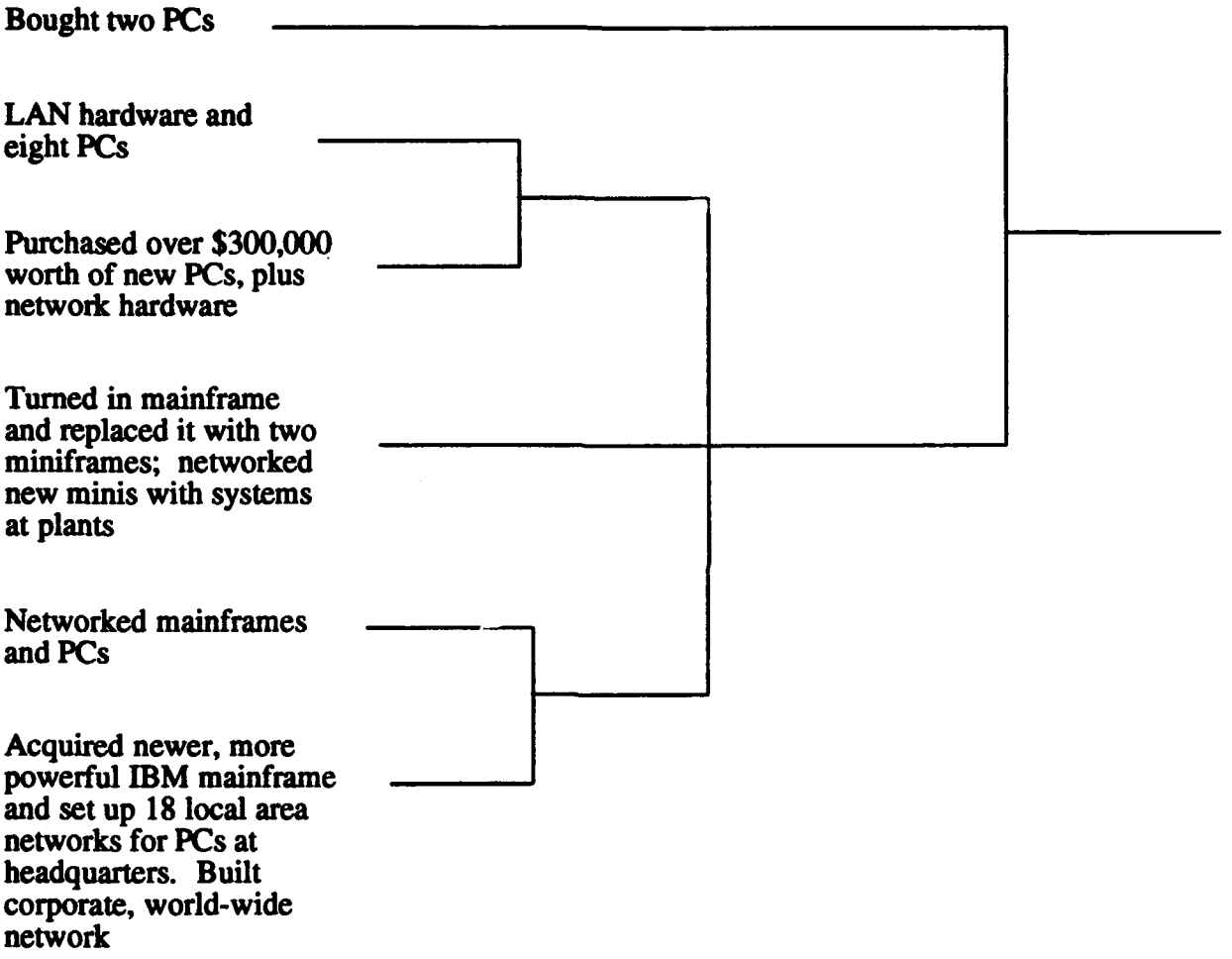

Figure 4. New Information System Hardware

Figure 5 shows the data from Table 1 grouped by the types of jobs cut. It is then cross-referenced with data from column 1, Table 7. From the relationships between the two sets of data, there is a weak indication that organizations that suffered greater losses of higher level managers were more inclined to feel that improved information systems helped the organization compensate for downsizing. This is not a strong indication, however, and it will take rigorous research well beyond the scope of this thesis to investigate the premise properly.

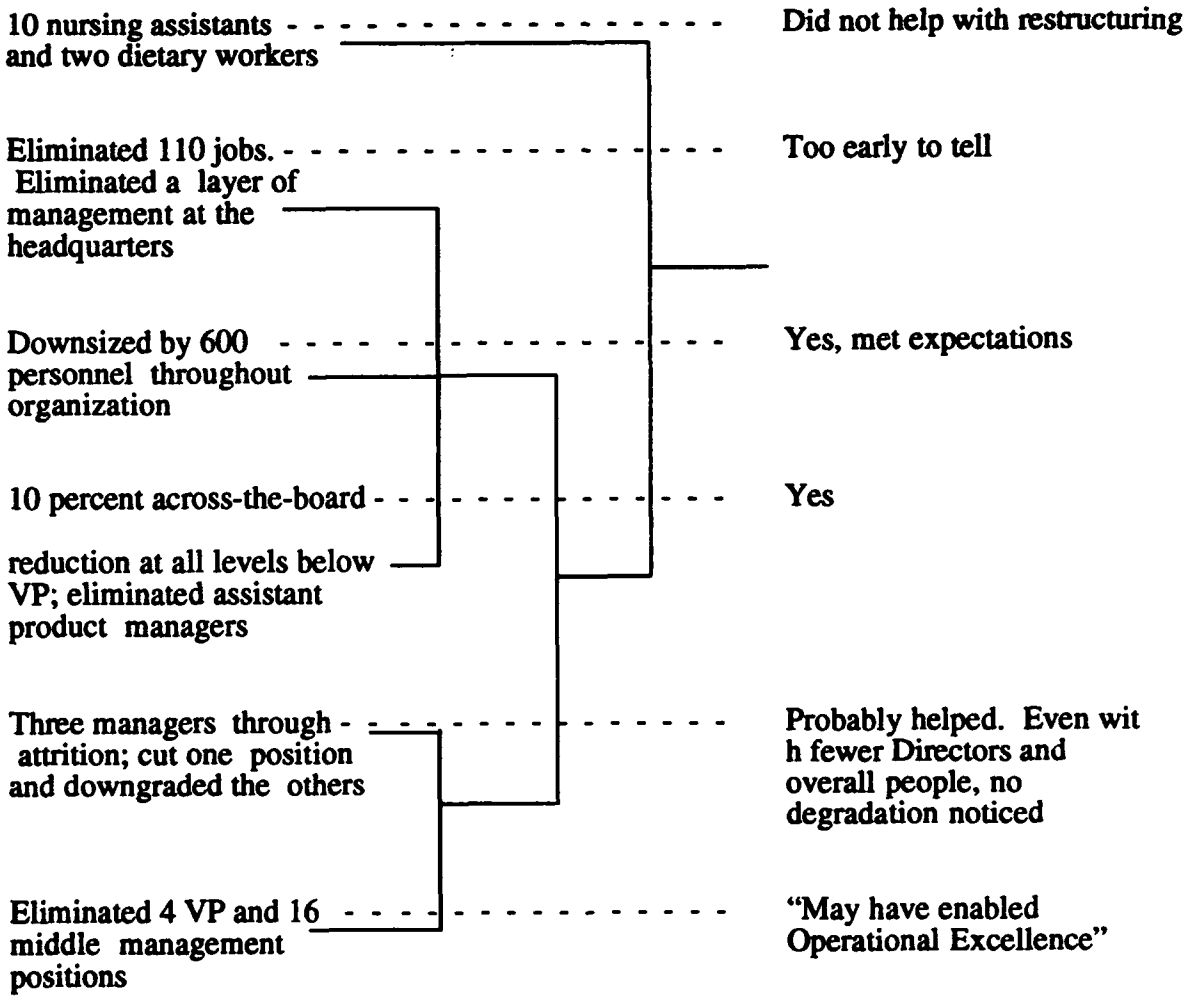

Figure 5. Job Cuts vs Information System Helping with Restructuring

Summary

This chapter examined the data collection and analysis methods used in the research to answer the investigative questions from Chapter I. After an analysis of the data in each area, possible relationships between management information system strategies and organizational downsizing were described. Some areas were identified where further research may be warranted.

Chapter V will present some conclusions drawn from the findings in Chapter IV and recommendations of possible strategies and tactics for approaching an organizational restructuring that includes strategic planning for both information system improvements and organizational downsizing. These conclusions and recommendations will be based on the responses of all six organizations who participated in this study. They will also outline areas where further research may help refine and improve the conclusions presented to the point where they may become useful enough to develop a strategic model for general application.

V. Conclusions and Recommendations

Chapter Overview

Chapter IV discussed the findings of the research. This chapter will outline specific factors which organizations that intend to both downsize and upgrade information management systems may find helpful during those processes. It will also recommend areas in which further research will more clearly define interrelationships between organizational downsizing and information management strategy.

Conclusions

The primary purpose of this research, as stated in Chapter I, was to examine information management strategies used by organizations during downsizing. After looking at data collected from the sample population, the researchers made some very broad categorizations about possible relationships between strategic planning for organizational downsizing and information management.

Having analyzed in Chapter IV what top management in some organizations considered effective in helping them through their downsizing processes, it appears that the following factors have a direct bearing on the relationship between successful downsizing and information management strategy. However, it must be considered that "successful downsizing," in this research, has been defined by the respondents, and not by an objective measurement. Therefore, the following factors may not apply to any given organizations faced with a similar situation.

User Involvement and Responsibility. The the first concern for a downsizing organization should be to solicit user input for both the downsizing and information systems change processes. Tomasko (1990:268) listed three communication objectives for downsizing:

1. Gaining a shared understanding of the situation facing the company and the actions required to keep the business healthy;
2. Enlisting the active involvement of the employees in the effort to plan those actions; and
3. Short-circuiting rumors and unfounded concerns before they have a chance to damage employee morale.

From the responses received during the interviews, it was apparent that the majority of organizations in the sample considered user involvement in the acquisition of new information systems important to the contributions those systems made to their organizations. Therefore, user involvement in planning both organizational restructuring and information system upgrades should be a high priority.

Long-range Strategic Planning. To benefit an organization that is downsizing, information systems improvements should be made as part of that organization's overall strategic plan. Every respondent in the sample included information system planning as part of their overall organizational restructuring, either initially or as the need arose.

Based on the findings in Chapter IV, planning should also be done well in advance of any change. Of the responses related to planning displayed in Figure 3, three of four dealing with the timing of planning indicated a distinct preference for planning without time pressure, while the other gave no indication either way.

Expert Analysis. A third conclusion is that detailed, expert analysis of existing information systems and organizational structures will benefit downsizing organizations. This analysis may come from either within the organization or from outside and should form the foundation for an organization's strategic plan.

Also, analysis should not stop when planning begins, particularly when new proposals are made. Each proposal should be challenged and analyzed to determine its compatibility with the overall strategic plan.

Change Business Practices. Organizations that undergo a significant loss of personnel should use new technology to help change business practices whenever

possible. Five of the six respondents shifted business practices in some manner due to loss of personnel. The other respondent (Org1) noted that without the capabilities provided by new software they would have probably had to hire additional personnel.

There are some examples in this area from the sample population. Respondents used new technology and more powerful applications to automate tasks previously performed manually, provide new capabilities that increased productivity or scheduling, and provided networked computing and communications channels throughout their organizations. Networks will be addressed in more detail in the next section.

Invest in Networks. Organizations seeking to maintain productivity with fewer people should expand and improve available lines of communication within their organization with computer networks. Every respondent in this study had either installed or planned to install new computer networks as part of their overall strategic plan. Several respondents credited networks with helping attain some of their organization's most important goals.

Suggestions for Future Research

This study only scratches the surface of the potential relationships between strategic information management and organizational downsizing. The findings and conclusions from Chapters IV and V may, however provide the basis for further research in this area.

The authors recommend further investigation of:

1. User involvement in the process of upgrading information systems while downsizing, with particular attention to examining specific uses of information technology to automate tasks.
2. The value of long-range strategic information management planning, including the identification and analysis of specific strategies used by organizations who survived downsizing. Research in this area could deal with two different target groups: proactive and reactive downsizers.

3. The depth and detail of information system and organizational analysis versus the perceived effectiveness of the process. Research in this area may help identify just how much analysis is sufficient for successful restructuring.
4. Identifying changes in business practices that allow information systems to compensate for personnel losses. Research in this area may include in-depth case studies of organizations or trends within similar types of organizations.
5. The impact of information system networks on organizations that have downsized, specifically identifying how networks may have affected or been influenced by personnel losses within an organization. Studies in this area may also wish to examine if implementation of networks increases overall computer literacy in organizations, and if so, does the increased facility with computers have a bearing on the applications chosen as part of long-range strategic information system planning?
6. A study of organizations that specifically planned their downsizing and information management upgrades as part of an overall organizational plan. As this study made no attempt to isolate that type of organization, further research in this area may reveal useful information from those organizations with well-developed strategic planning processes.

Summary

This research was undertaken to help identify potential links between information management strategies and organizational downsizing. There are some strong indications that such links do exist, but further research will be necessary to clearly identify in what ways strategic information management will help downsizing organizations maintain or improve capabilities.This research was undertaken to help identify possible links between information management strategies and organizational downsizing. Prior to beginning this research, the authors of this study felt the two might

somehow be intertwined. Information technology is integral to any organization--it is vital to the continued successful operation of an enterprise. Downsizing represents a major change to any organization's structure, no matter the number of people let go. Consequently, it is a significant process in an organization's life. Since both information management and downsizing are both very important to an organization, it would seem logical that the two be thought of together when the downsizing process is being planned.

While the above statement seems logical, it appears that most organizations do not plan organizational restructuring and strategic information management as a unified effort. In other words, decision makers and planners in organizations do not seem to think of their information management practices when planning downsizing, nor do they necessarily plan downsizing strategies based on their information management systems.

It is interesting to note that while the majority of the six organizations studied in this research did not consider their downsizing strategies and information management strategies together, they all considered their downsizings successful. This suggests success is not dependent on thinking of the two in tandem. Since the sample in this study is so small, caution should be exercised when generalizing these results to organizations across-the-board.

The authors feel that organizations will be more successful if they consider their information management and downsizing strategies as part of a single, overall organizational strategy. Managers should consider each and every facet of the organization, including existing systems, organizational culture, and advances in information technology, when planning for any major changes in an organizational sub-system. Changes in one area may affect every other area of the organization by driving or enabling other changes. Failure to consider the effects of a change in one area on other areas may result in a less success, or even failure, in an organization.

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13. ABSTRACT (Maximum 200 words)

Organizational downsizing and strategic information management are two important trends that have developed in the business world over the last 10 years. This study was conducted to identify possible links between these two trends. It also tries to identify some potential benefits and pitfalls associated with simultaneously restructuring an organization and upgrading its information management systems. This study is initial, descriptive research in this area. Interviews were conducted with six organizations of varying size and type that had both downsized and upgraded information systems within the past five years. While the small size of the sample and time constraints on the authors limited the depth and scope of the study, some significant information about relationships between downsizing and information management systems was found. Several areas were identified where additional research may help further define and clarify the relationships described in this study.

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